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कार्यालयीन वेळ

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“Devine Narratives Through Medium Of Arts”: Temple Architecture and Classical Dance Forms

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Abstract :

“Expressing divinity and culture through a medium of narratives.”

This study explores the intricate relationship between temple architecture and classical dance, focusing on the Brihadishwara and Nataraja temples in South India. Analyzing case studies and articles, it examines connections between Kuchipudi and temple iconography, emphasizing spatial geometry and the Natya Shastra's influence on design. The research highlights the symbiotic relationship where architecture and dance inspire each other. It aims to rekindle Kuchipudi's essence and advocate for a habitat integrating temple elements to support artists. This initiative seeks to preserve Kuchipudi's heritage in Andhra Pradesh, ensuring cultural traditions and fostering holistic growth across economic, lifestyle, and cultural dimensions.

Key Words : divinity, narrative, Temple architecture, Symbiotic relation, Kuchipudi heritage.

INTRODUCTION :

Indian mythology aims to procure divinity, sanctity, and prosperity through storytelling, expressed through music, dance, painting, and design. The evolution of arts and occupations is tied to historical movements in Vedas, Puranas, and shastras, where the art of designing evolved into architecture. Similarly, dance forms developed from principles in the Natya Shastra. King Indra's request to Vishwakarma for a theater marked the beginning of Indian classical dance forms, demonstrating the parallel evolution of architecture and dance. Temple sculptures and devadasis'

performances illustrate the deep interrelation and coexistence of these arts. Temple architecture, based on cosmic geometry from the Natya Shastra, uses spatial orientation to express divinity. Sculptures depict human figures in dance gestures like mudras, bedas, mandalas, and charis, aiming to convey stories and create a serene atmosphere. This connection shows how temples and performing arts mutually inspire each other, blending history and traditions.

1. LITERATURE REVIEW:

1.1. NARRATIVES AND INTRICACIES PERSPECTIVE

Perspective shapes the storytelling process, capturing the essence of a story's motive. Spaces, like stories, convey narratives directly or indirectly. To maintain the essence of a space, various art forms and elements—such as light, orientation, and structural components—are used. These elements interrelate intricately to express the space's essence. Temples, for instance, guarantee peace, calm, and divinity, achieved through these elements and inspired art forms.

1.2. PLANNING PRINCIPLES OF TEMPLE ARCHITECTURE

A Hindu temple's floor plan symbolizes the mandala in sacred geometry, precisely laid out to reflect cosmic principles. This mandala, typically a nine-square grid, is divided into smaller squares, each representing a deity with unique attributes. The VastuPurusha Mandala serves as the basis for Hindu temple



construction, allowing worshipers to perceive both earthly and cosmic realms simultaneously.



Figure – 1 Cosmic man
Stathopoulou, D. (2011). From Dance Movement

1.2.1. EVOLUTION AND GEOMETRIC AND SPATIAL ORIENTATION

The Vastushastra, a Vedic literature, details the dimensions and divisions of the Vastupurusha mandala, which the architect adheres to symbolically uphold terrestrial and cosmic laws. The temple, besides being a place of worship, is a tangible representation of the divinity it houses, akin to natural sacred structures like mountains and rivers. Its layout mirrors the cosmic design, with its placement and elevation aligning with the universe's axis.

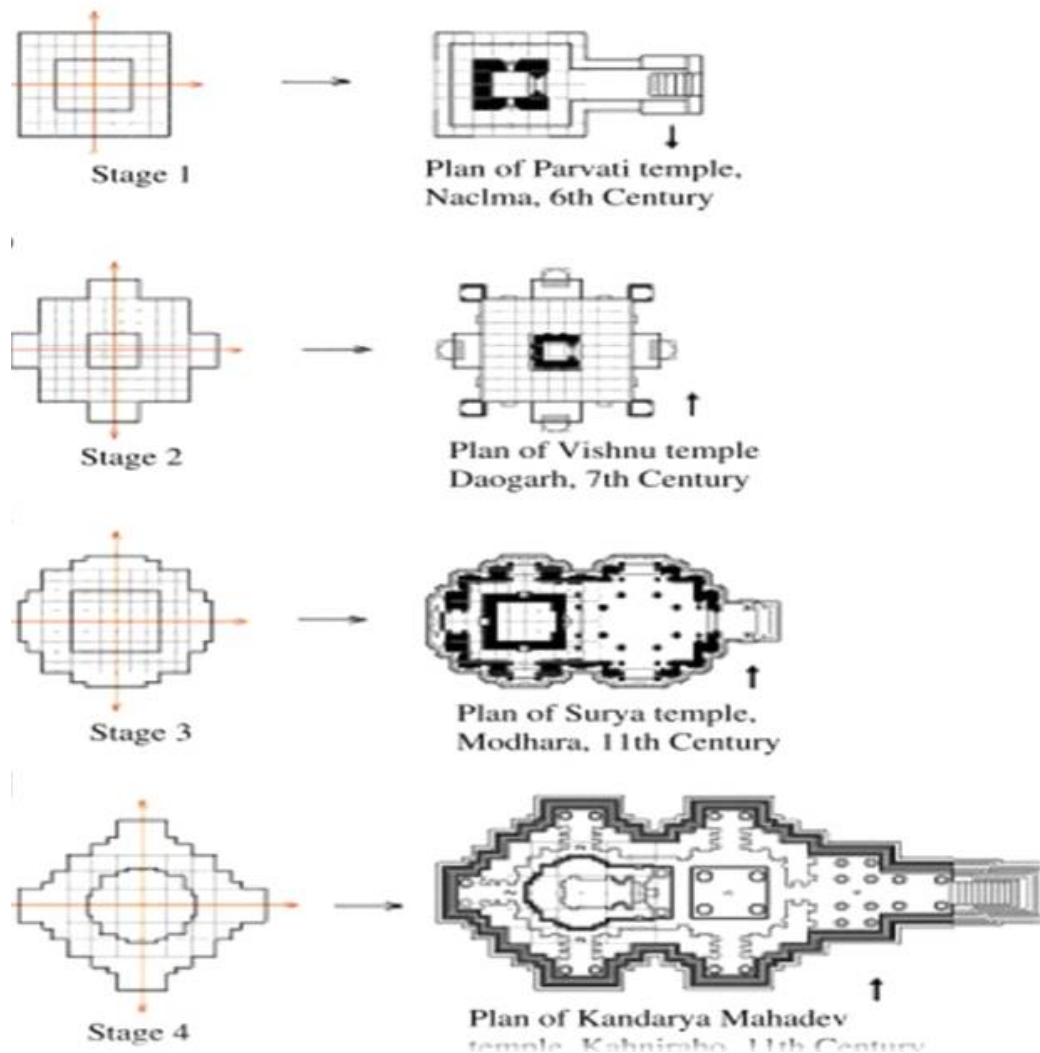


Figure – 2 evolution of geometry in planning of temples
Stathopoulou, D. (2011). From Dance Movement

1.3. REFLECTION OF DANCE FORMS IN ICONOGRAPHY

Dance is a crucial part of India's cultural legacy, historically used for religious and social propagation. The evolution of Indian classical dance spans prehistoric to present times, with dancers supported by temples and courts. Dance served as a medium of communication and awareness creation, influencing the iconography of temples. This interplay between dance and temple architecture underscores the cultural significance of both art forms.

In essence, the connection between space, storytelling, and cultural expression is profound, with temples and dance forms serving as mediums to convey divinity, expressiveness, and cultural heritage.

1.4. NATYA SHASTRA

Dance holds significant importance in Indian worship practices. The Natyashastra, attributed to Sage Bharata, is a comprehensive treatise on acting and dramatic critique, covering stagecraft, music, dance, and makeup. Divided into two halves—prose and rasa—the architectural chapter is included in the latter. Unlike European tragedies, which often prompt existential questioning, Indian theatre, as depicted in the Natyashastra, celebrates life and divine worship. Understanding the foundation of performing arts involves analyzing the South Indian dance framework, which encompasses technical aspects (Nritta), expressional facets (Natya), and musical components (Geetam and Vadyam).

Nritta, the technical aspect of dance, focuses solely on physical actions without considering theatrical elements or musical aspects like tempo and rhythm. It primarily examines the actual gestures and motions performed by the dancer's body. The Shilpa Shastra describes four fundamental poses—Sthanaka (standing), Aasana

(sitting), Shayana (reclining), and Yanaka (referring to deities like Hanuman or Garuda)—each with subcategories defining posture and attitude. Bhanga, or standing positions, involve specific stances, neck, shoulder, waist, knee, and feet movements, reflecting various expressions and attitudes. Linear spatial patterns and body shapes create dynamic aesthetics as the dancer moves, with anklets providing rhythmic foundations.



Figure – 3 postures
Krishna, k. j. (2011). dancing architecture

Natya theory, the expressional facet of dance, explores human emotions and personalities, contrasting with Nritta's focus on physicality. It delves into music (Geetam and Vadyam), encompassing vocal and instrumental components as essential supports for dance and theatre. Bharata Muni's Natyashastra elaborates on various aspects of music, including vocal and instrumental music's roles, stage dimensions, lighting, and audience seating arrangements. It categorizes instruments into four types—stringed, covered percussion, hollow flute, and rhythmic devices—detailing their materials, preparation, and craftsmanship.

The Natyashastra outlines the 22 swara octave, emphasizing the significance of swaras in vocal training. Jaatis and murchanas supplement the absence of a defined raga, organizing swaras as vadi, samvadi, anuvadi, and vivadi. Emotional expression, or bhava, is crucial in singing, with Bharata stressing the importance of conveying bhava to evoke rasa in the audience. Rasa, the essence or juice of emotions, drives artistic satisfaction and enjoyment. It is conveyed through anubhava, or



expression, engaging the audience in a shared emotional experience.



Figure – 4 Navarasa

In summary, the Natyashastra serves as a comprehensive guide to Indian performing arts, encompassing dance, music, and theatre. Its exploration of Nritta, Natya, and Geetam and Vadyam theories provides insights into the technical, expressional, and musical aspects of dance, enriching the cultural heritage and artistic practices of India.

DATA ANALYSIS

3.1. CASE STUDY BRUHADISHVARA TEMPLE

Location : balaganapathy Nagar ,Tanjavur, Tamil Nadu
Built by : Raja raja chola (chola Empire)

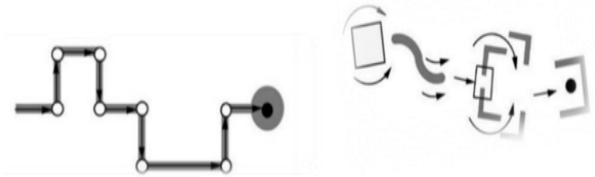
Built in :1009ce

Context : The Brihadishvara Temple, or Rajarajeshwaram, in Tamil Nadu, India, is a Saivite temple dedicated to Lord Shiva. Exemplifying Chola architecture, it is part of the UNESCO World Heritage Site “Great Chola Temples” and represents the pinnacle of Chola craftsmanship. During the Chola period, temples were centers of learning and cultural activities, promoting spiritual and intellectual growth through sacred texts, music, and dance.



**Figure – 5 Bruhadishwara temple
krishna, k. j. (2011). dancing architecture.**

Designed according to the vasthupurusha mandala, the temple includes outer and inner gopurams, Nandi mandapa, Dwajastamba, Garbhagriha, and Sanctum. It fostered community and artistic expression, symbolizing the Supreme Principle through art and architecture.



**Figure – 6 Layering for the sequential
unfolding of spaces, by Yatin Pandya
iitn. (18). engament between architecture
and dance.**

Light plays a crucial role, with illumination decreasing towards the inner sanctum, creating a journey towards “holy darkness.” Intricate carvings on columns and gopurams convey moral teachings, while grand stairs and entrances highlight its significance. Scholars highlight the profound relationship between light, darkness, and spiritual experiences, reaffirming the temple’s divine and cultural heritage.

3.2.CASESTUDYNATARAJA TEMPLE

Location : Chidambaram, Tamil Nadu

Built by : Raja raja chola (chola Empire)

Built in :1009ce



The Natarâja Temple, situated near Chidambaram in Tamil Nadu's Cuddalore district, holds profound significance in Hinduism, embodying the idea that

happiness resides within one's heart. Its architecture, sculptures, and dance portray the universe's creation, life cycles, and spirituality.

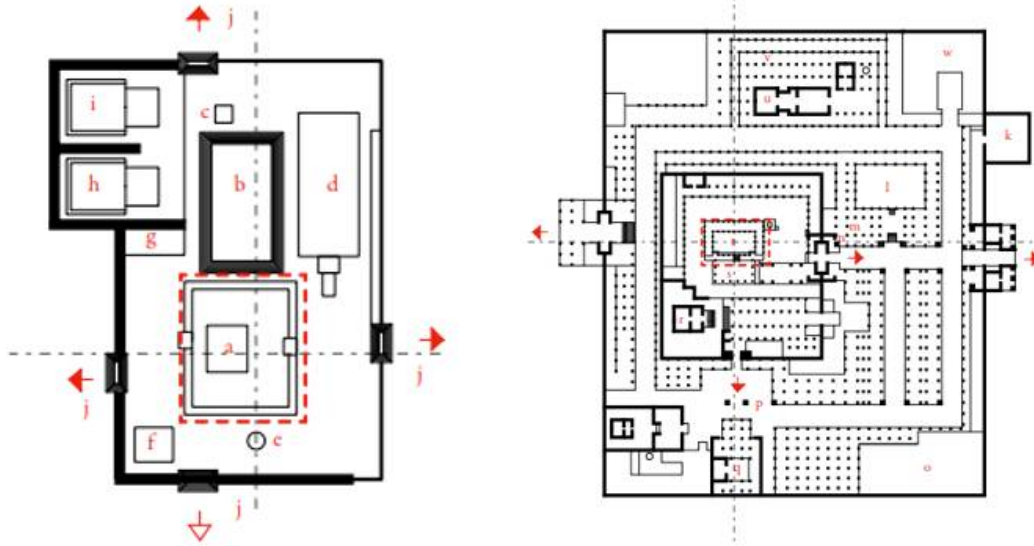
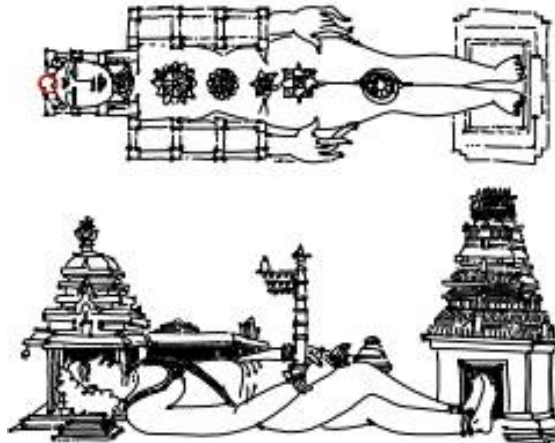


Figure – 7 Plans of the Nataraja Temple krishna, k. j. (2011). dancing architecture.

LEGENDS :

- a principle shrine
- b Shivaganga thirtha (tank); hiruvanaikâval linga visible during periods of low water levels
- c Temple of the 9 linga
- d Râja Sabha (1000 pillared hall)
- e Nandi statue (Sacred Bull; Shiva's vehicle)
- f Mukkuruni Vinâyaka shrine (Ganesh Temple)
- g 100 Pillared hall
- h Shivakâmasundari shrine (Amman Temple)
- i Pândya Nâyakan shrine (Murugan Temple)
- j Gopura gates
- k Yâga Sâla (Hall for sacrificial fires)

- l Deva Sabha (Hall for festival deities; for public worship)
- m Navagraha shrine (Temple of 9 planetary Gods)
- n Chandikeshvara shrine (Brahma Temple)
- o kitchen
- p lag mast
- q Nritta Sabha (Chariot-style Hall)
- r Govindarâja shrine (Vishnu Temple)
- s Kanaka Sabha (Golden Hall)
- t Chit Sabha (Hall of consciousness)
- u Mûlasthâna shrine (Lingam shrine)
- v gallery dedicated to 63 Nayanmârs (saints)
- w Kalyâna Mandapam (Marriage hall)





Mythology states Shiva's cosmic dance, the Ananda Tândava, occurred here, symbolizing renewal and transformation. The temple complex, with its four gopuras, reflects the Chola dynasty's architectural and spiritual significance. The Kanaga Sabha, the temple's heart, hosts Natarâja's dance, while the Râja Sabha symbolizes the Sahasradhara, or Crown chakra.

The layout mirrors the heart's chambers, with the eastern sanctum housing a crystal lingam and the western part resonating with "Om."

Natarâja's bronze statue exemplifies the convergence of religion, mythology, and cosmic order. The temple's architecture, sculptures, and rituals provide a profound experience of divinity and transcendent

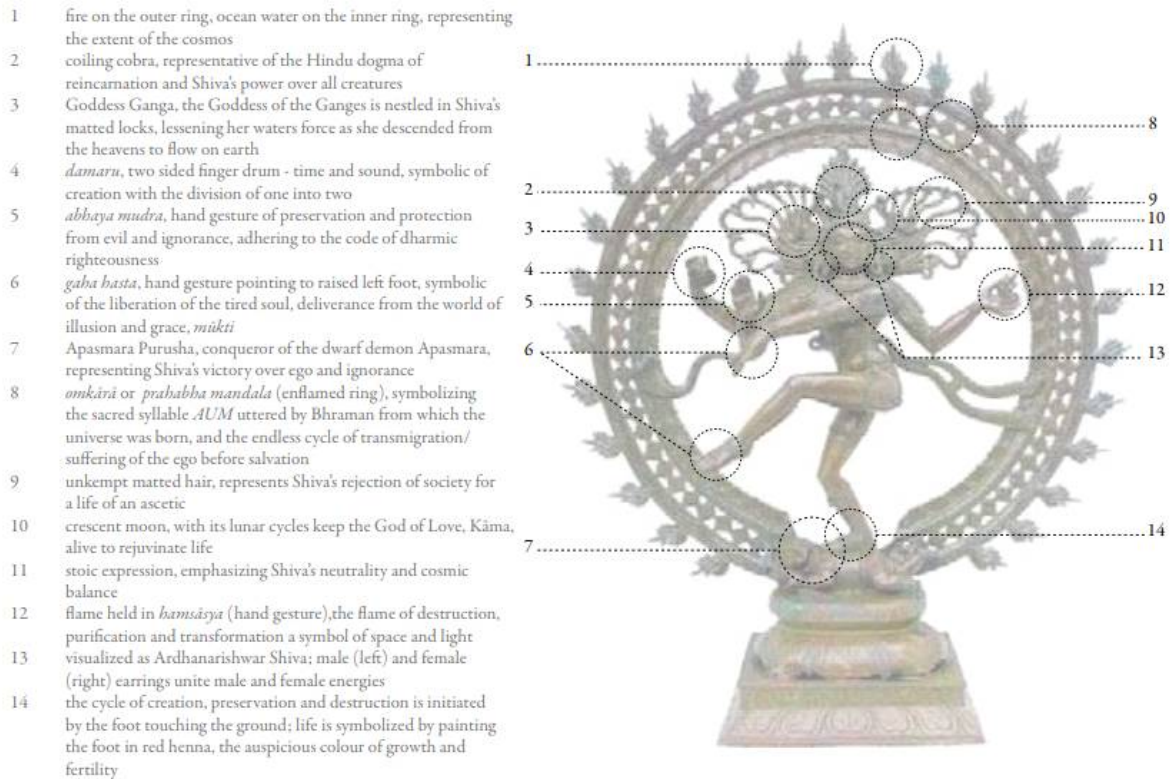


Figure – 8 Description Of lord Nataraja Posture krishna, k. j. (2011). dancing architecture.

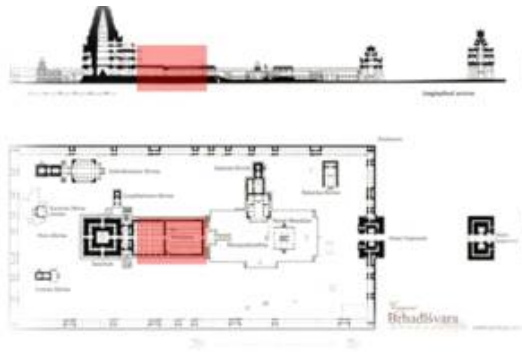
3.3 NARRATIVES :

The Hindu temple, a magnificent landmark, is adorned with intricate sculptures and expansive passageways, housing numerous gods around the central deity. Initially crafted from stone, these images evolved into metal, wood, and masonry. Sanctified through rituals, the sculptures, often depicting dynamic dance postures, add aesthetic beauty and profound philosophical meaning. Precision in numerical ratios guided their creation, adorning walls and ceilings. Beyond decoration,

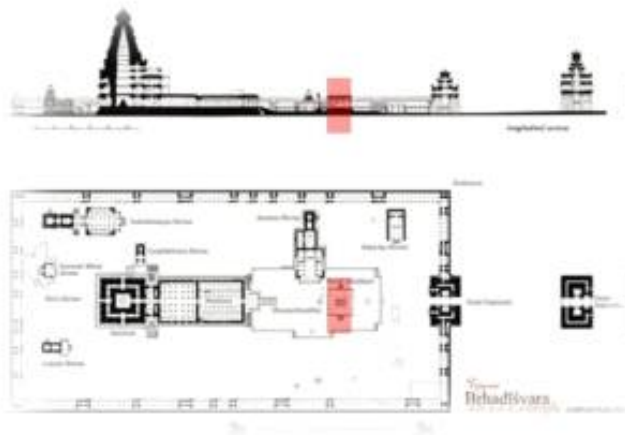
these sculptures symbolize the transition from chaos to order, representing a spiritual journey. Each sculpture embodies artistic mastery and metaphysical understanding, merging divine presence with architectural grandeur.

4. CONCLUSION :

Exploring temple architecture and Indian classical dance reveals a profound interplay between spatial essence, storytelling, and theology. Orientation, columns, courtyards, and openings convey narratives within the temple space. The cosmic man, embodied



Sculpture from themandapa



Sculpture from the Nandi mandapa

Suchi pada (the right heel is raised and the foot rests upon the great toe and the left foot is in the natural position)

Dola hastha (the elbow bone face down and the inner side of elbows face up)

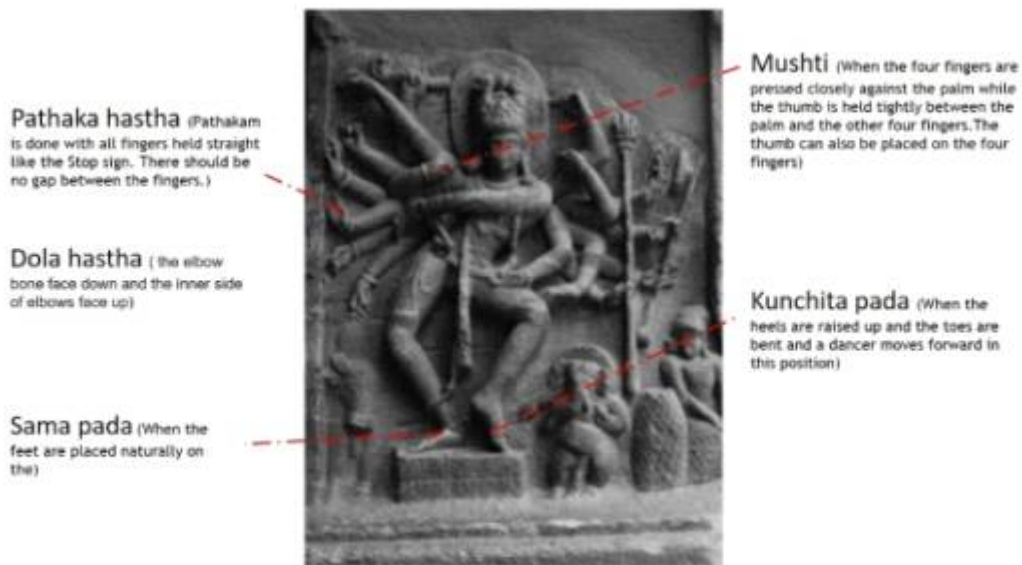


Prarivartita

(Here the neck is moved in a Semicircle or moonlike shape)

Tripathaka hastha (all the fingers are held straight and close together like the stop sign except for the ring finger and the little finger which is bent)

Sama pada (When the fore part of one foot rests upon the ground and then touches it with the heel, this position is called the Udghattitaha Pada)



by the classical dancer, merges dance forms with architectural symbolism, acting as the axis Mundi connecting heaven and earth. The dancer's body mirrors Nataraja's damru, symbolizing the universe's creation. Through linear movements, the dancer harmonizes with spatial orientation and

temple architecture, reflecting the sacred mandala's geometry. This intricate relationship highlights the cultural and philosophical connections in Indian traditions, with both art forms expressing divine creativity and inviting contemplation of existence's mysteries.



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Looming elegance in architecture: Integration of patola patterns in architectural fabric

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Abstract :

For centuries, Patola sarees have epitomized Indian textile artistry, distinguished by intricate geometric motifs and a vibrant color palette. This paper focuses on an exploration of the seamless possible integration of these iconic Patola saree motifs into the fabric of contemporary architecture. Embracing the geometric elegance and rich hues inherent in Patola, the study delves into the nuanced translation of these elements onto architectural canvases, envisioning a dialogue between tradition and modernity. Architectural elements such as facades, pergolas, staircases, flooring tiles, pivoted panels, glass panels, and installations become the tactile medium for this creative intersection. The methodology encompassed a multifaceted approach, employing visual analysis, case studies, and design correlations of Patola saree design elements with its possible integration in architectural fabric. This research is also supported with interviews of experts, local artists etc. The inferences and analysis indicates creative synergy not only visually enriching but also contributing to architectural spaces and cultural heritage. This study highlights the tangible benefits of the integration, correlative design opportunities. It further fosters a deeper connection between traditional craftsmanship and modern architectural expression.

Key Words : Patterns, Patola Saree, Geometric Motifs, Architectural Integration, Cultural Expression, Design Innovation, Architectural Fabric

1. Introduction :

The bright symphony of colors and elaborate geometric motifs adorning Patola sarees have contributed to its timeless beauty and embedded themselves into Indian culture for generations (Mili, 2014). As architectural realms develop, appreciating the wealth of cultural legacy becomes more than just an artistic endeavor; it also becomes a duty to create narratives that endure over time (Garg, 2020).

Representing the heartland of Gujarat, India, Patola sarees are a tribute to the brilliance of ancient Indian textile workmanship. Their geometric accuracy and kaleidoscope of colors convey historical narratives and skilled craftsmanship that have lasted the test of time. Culturally significant and rich in motifs (Mili, 2014), Patola sarees offer a chance to incorporate these stories into the structure of our constructed environment.

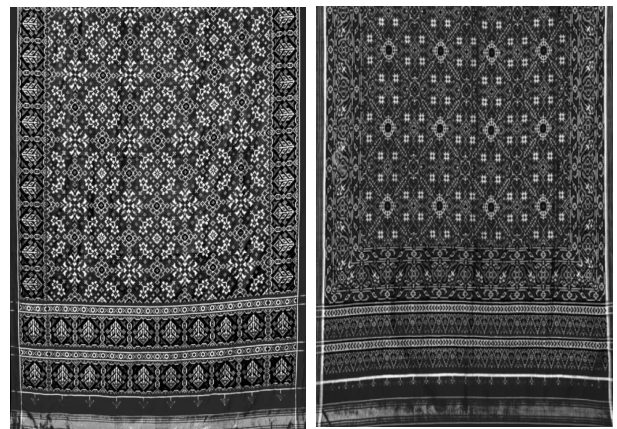


Image 1.1. Patola Sarees: Navratna Bhat Green (L) & Vohra Gaji (R)
Source : Ar. Rahul Salvi

The integration of Patola saree motifs presents an opportunity to connect the past and the present, creating spaces that echo with a deep sense of cultural continuity in a world where architectural narratives are shaped by a variety of influences. This paper unfolds a chapter where architectural design becomes a storyteller, each facade and element echoing the cultural resonance of Patola sarees.

2. Objectives :

- Examine the geometric grid-based motifs in Patola sarees.
- Explore ways to integrate Patola's color palette into architectural design.
- Discuss the possible tangible application of geometric motifs in architectural elements.

3. Methodology:

A multidisciplinary approach was adopted to investigate the incorporation of Patola saree motifs into contemporary architectural designs. The study begins with an exhaustive literature review of weaving techniques, and the symbolism embedded in their geometric motifs. The creative process involves transforming complex patterns into architectural elements by a visual analysis of Patola motifs. Additionally, the methodology incorporates design

correlations and the development of comprehensive design guidelines. The process is iterative, with continuous feedback loops and considerations for cultural sensitivity.

4. Results and Discussions:

4.1. Grid-Based Geometry :

The process of making Patola sarees is laborious and is controlled by a paper method or grid pattern. Prior to weaving, the pattern is carefully drawn on a grid resembling graph paper. The calculated geometric patterns that cover every inch of the fabric, ensure precision in motif placement and symmetry. The intricate double-ikat method, in which the warp and weft threads are resist-dyed before weaving, is guided by the grid. This calls for an extensive understanding of the complexity of the grid because every square stands for a different color and design element. To create the intended motifs, the weaver deftly positions the threads in accordance with the grid and meticulously intertwines them. This harmonious interplay of colors and shapes, is a testament to the weaver's mastery over the geometric intricacies tradition and underscores the mathematical beauty embedded in every Patola saree.



Image 4.1. Vivid Grid Based Designs with Ambi, Mor, Gaj, Vohra Gaji Motifs

Source: Patola DsignStudio



4.2. Colors and Motifs :

The vibrant hues of Patola sarees are a kaleidoscope, with each hue having deep cultural significance. Emerald green, which represents harmony and fertility, contrasts with ruby red, which represents lucky beginnings. Mustard yellow denotes hope and new endeavors, while royal blue radiates divinity and regality. Ivory and gold radiate luxury, earthy browns suggest stability, and peacock blues and greens encapsulate the vitality of the natural world. Vermilion orange radiates energy, while charcoal black provides a dramatic backdrop. The color scheme of Patola is a symphony of tradition, tying together stories of festivity, diversity, and Gujarat's ageless artistic talent. (Mili, 2014).

Patola is renowned for its intricate and diverse motifs that adorn the fabric. The motif range has cultural and symbolic importance for each motif and portray a rich tapestry of cultural narratives and traditions that have been passed down through time (Garg, 2020). The "Navratna," or nine gems, is a common pattern that represents cosmic harmony. The "Nari Kunj" motif is composed of gracefully rendered women in a variety of stances, representing femininity and grace. Another pattern is the "Ambi," which stands for natural regeneration and fertility. Symbolizing wealth, the "Pan" pattern, resembles a

betel leaf. The repeating pattern known as "Chhabdi Bhat," which resembles a checkerboard, stands for equilibrium and order. The exquisitely woven feathers in the "Mor" motif, symbolize beauty and grace. The "Vohra Gaji" motif stands for friendship and love (Mili, 2014).

4.3. Integration of Patola Motifs into Architectural Elements:

The rich legacy of Patola sarees, characterized by intricate grid patterns, provides a captivating foundation for infusing architectural elements with a blend of tradition and innovation (Baker, 2023). Considering each grid as a single unit opens opportunities for transforming various architectural elements into dynamic reflections of Patola aesthetics.

4.3.1. Dynamic Facade:

Envision a dynamic facade characterized by square-shaped, centrally pivoted revolving panels. Each panel serves as a canvas for replicating the precision of Patola saree grids. As the panels pivot, an enchanting play of colors and patterns unfolds, mimicking the graceful interplay of threads in a Patola weave. This dynamic facade introduces an element of movement and adaptability, creating a living, ever-changing architectural canvas that captures the essence of the craft.

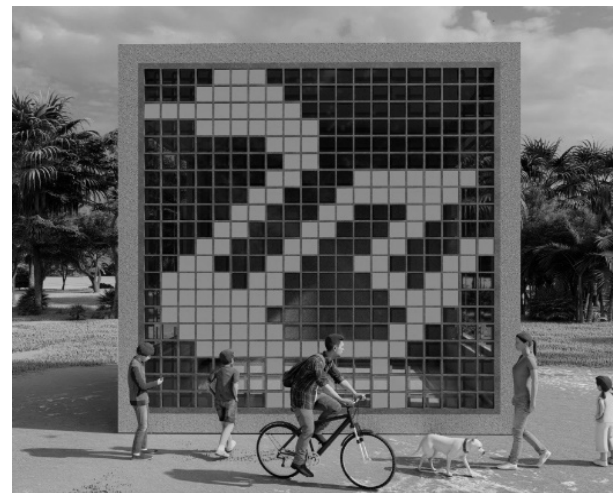
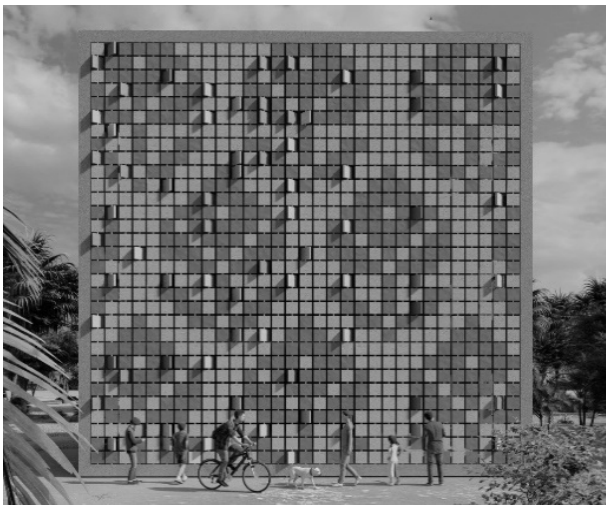


Image 4.3.1. Patola Inspired Façade Prototypes

Source: Author



4.3.2. Staircases:

Incorporating the grid patterns into the design of staircases, infusing each step with the geometry found in Patola sarees. Whether as subtle inlays or bold patterns on risers, the staircase becomes a transition space that seamlessly integrates Patola designs into the vertical circulation of the building.

4.3.3. Tiles and Flooring:

The tiles could become individual units of a Patola grid, each contributing to the larger Patola narrative. As visitors traverse the space, they engage with a symphony of colors and patterns reminiscent of the finely crafted grids in Patola sarees.

4.3.4. Railings and Balustrades:

Apply the grid patterns to railings and balustrades, introducing an ornamental yet functional aspect. The repetition of Patola motifs along these architectural elements would enhance their aesthetic appeal.

4.3.5. Glass Panels and Windows:

Integrate glass panels and windows with the delicate geometry of Patola grids. The play of light through these panels creates a mesmerizing display, casting shadows that echo the intricate patterns found in Patola sarees. It serves as a dynamic interplay between transparency and opaqueness, capturing the essence of the traditional craft.

4.4. Integration of Patola Colors into Architectural Elements :

The vibrant and distinct color palette of Patola sarees holds immense potential for translating the essence of this traditional craft into architectural design (Koirala, 2016). The colors associated with Patola sarees are not merely hues; they are symbolic representations of cultural stories, making their integration into architectural color palettes a nuanced and meaningful endeavor (Agrawal, 2023).

4.4.1. Ruby Red :

Integrating this color into architectural elements, such as accent walls or entrance features, can evoke a sense of celebration and cultural significance.

4.4.2. Emerald Green:

In architectural design, this color can find its place in landscaped areas, facades, or interior elements, fostering a connection with nature and the symbolism embedded in the craft

4.4.3. Royal Blue :

Including this regal hue in architectural elements like domes, pillars, or decorative detailing can evoke a sense of grandeur and cultural richness.

4.4.4. Mustard Yellow:

Incorporating this warm hue into architectural elements, such as entryways or public spaces, can create an inviting and optimistic atmosphere.

4.4.5. Earthy Browns:

Using these colors in flooring, wooden accents, or exterior finishes can convey a sense of rootedness and tradition in architectural design.

4.4.6. Ivory and Gold :

These colors can be integrated into architectural detailing, trims, or ornamental features, adding a touch of sophistication and cultural opulence to the design.

4.4.7. Charcoal Black :

This color can be employed for exterior elements, creating a dramatic contrast that highlights the craftsmanship and intricate detailing.

The integration of (but not limited to) these Patola-inspired colors into an architectural palette goes beyond aesthetics; it becomes a medium for conveying cultural narratives and connecting with the timeless traditions of Gujarat. Careful consideration of where and how these colors are applied can ensure a harmonious fusion of tradition and contemporary architectural expression (Agrawal, 2023).

5. Conclusions:

In conclusion, the integration of Patola saree elements into architectural design goes beyond aesthetics to represent Gujarat's rich textile history in a modern setting. The architectural environment is woven with cultural narratives that are conveyed



through every color, pattern, and grid. From dynamic facades mirroring the precision of saree grids to staircases, tiles, and railings adorned with Patola-inspired motifs, the architectural ensemble becomes a living testament to tradition's symbiotic dance with innovation. The designer could bring the Patola saree's vibrancy and cultural symbolism into spaces by embracing the rich color palette. By combining static architecture with dynamic narratives, this fusion invites people to interact with the enduring beauty of Patola weaving. As the architectural landscape becomes a canvas for tradition, it not only pays homage to the craft but also ensures its continuity, fostering a deep connection between the past, present, and future.

6. Acknowledgements :

The completion of this paper could not have been possible without the guidance of Ar. Rajgauri Kanchan, who was also my thesis guide and coordinator along with Dr. Vaidehi Lavand. I would also like to thank Ar. Ramiya Gopalakrishnan for guiding me throughout the research process. Their guidance carried me through all the stages of writing this paper. A debt of gratitude is also owed to all the artisans, weavers and people involved in the Patola Weaving without whom, the study would not have been a success. Last but not the least, I would like to thank SMEF's Brick School of Architecture for enabling my study.

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Durga Puja; An ephemeral expression of Art, Architecture and Culture in Kolkata

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Abstract :

This research intends to delve into the cultural tapestry of Durga *Puja*¹ in Kolkata, emphasizing its role as a community expression of art, craft, and architecture. Focusing on the cultural contextuality, it examines how the Puja Pandal, becomes a transient manifestation of Indian art, on the canvas of the City, within the Bengali neighbourhood or a “*Para*.”² The entire City comes alive to celebrate, becoming a stage, pampering the people with multi-sensory experiences.

The article uses a step-by-step methodology of analysis, that dissects Durga Puja, through transformation of the Bengali ‘*Para*’, to Puja *Pandals*³, highlighting the evolution of these structures into architectural marvels that reshape Kolkata’s urban landscape and create community memories through immersive experiences. The study explores the intricate interplay of time and Space in shaping this ephemeral experience through various case examples. It questions how current affairs and contemporary trends influence the thematic choices of the Puja, while also scrutinizing the qualitative aspects and symbiotic relationship between the intricate pandal designs and the urban architecture of the surrounding neighbourhood, while simultaneously understanding the logistical and economical impact of the festival. This research aims to enrich our understanding of Durga Puja as a multifaceted cultural phenomenon in Kolkata by unravelling the dynamic connection between Time, Space, and artistic expression.

Key Words : Durga Puja, Pandal, ‘*Para*’, Community expression, Cultural tapestry, Interplay of time and space, Art, Craft, Urban Architecture.

Introduction :

Durga Puja, tracing back to the 16th century, was initially observed by *zamindar*⁴ families in colonial Calcutta (the earliest known Puja was at the home of Sabarna Roy Choudhury family since 1610). Over time, these became more public and transformed into *Barowari*⁵ in 1909. These festivities have infused the city with profound creativity, introducing new elements that signify inclusivity, celebration, and joy.



Figure 1 Abstract Artwork of Ma Durga

Source – Author : Prajakta Chakra

In 2021, UNESCO declared the festival as an Intangible Cultural Heritage of Humanity. Durga Puja in Kolkata always transcends religious



observance, evolving into a vibrant celebration intertwining art, architecture, and culture. This annual spectacle, occurring in September or October, which transforms the city with a burst of colors and lights, leaves a lasting impression on residents and visitors alike. The event's magnitude is evident in the radical metamorphosis of the urban landscape, as ornate pandals, serving as temporary art installations, redefine Kolkata's streetscape for a week, turning Bengali neighbourhoods or 'Para', into captivating stages for creativity. The event's magnitude is evident in the radical metamorphosis of the urban landscape, as ornate pandals, serving as temporary art installations, redefine Kolkata's streetscape for a week, turning Bengali neighbourhoods or 'Para', into captivating stages for creativity.

The transformation of Bengali neighbourhood; 'Para'

In early times, Durga puja was a rich people's indulgence. The Zamindar homes, of which the 'Thakur Dalan'⁶, served as an interface between private and public spaces, accommodating Durga Puja rituals. This covered space, connected to the residence, allowed priests and women to prepare for the puja. The Thakur Dalan's design flexibility, seen in courtyards of homes, adapted by affluent families, became the prototype for Puja Pandals in the para-Puja (Puja being held in the courtyards formed within the houses of neighbourhood), fostering creativity in celebrating Kolkata's cultural identity. Ever since 1909, when the first barowari Puja was organised, every year, thousands of pujas are organised by varied clubs/ *Sanghas*⁷, dressing up and transforming the para, in turn, translating the entire Urban landscape, for these few days of the festival. Within these paras, selecting the event site is crucial, typically predetermined in traditional urban settings like footpaths, parking spaces, street corners, or even market areas. *Sarbojonin*⁸ pujas in fortunate areas may use formal open spaces, while constrained sites force more innovative and creative urban transformations, becoming key attractions. (Anjan, 2021)



Figure 2 - Calcutta during Durga puja (1830s–1840s)
Source – The Indian express



Image 3 – Calcutta during Durga puja (1830s–1840s)
Source – The Indian Express, October 2023

The Pandals

The heart of Durga Puja lies in the intricate and awe-inspiring artistic creations known as pandals. The pandals forming temporary structures, often resembling palaces or ancient temples, are constructed to house the idol of Goddess Durga. Each pandal is a testament to the artistic prowess of local craftsmen and designers who dedicate months to planning and executing these ephemeral marvels. It cannot be just called a pandal anymore, but has now become awe-inspiring pieces of art installations or temporary Architecture.

The core elements of Durga Puja include the Durga *Protima*⁹, the soul of the event, and the Pandal, a temporary abode for the awakened Divine. The *chala*¹⁰ or the backdrop, consists of idols of Durga, Lakshmi, Saraswati, Ganapati, Kartikeya, along with their *Vahans*¹¹ (spirit animals), and Mahishasur. The Pandal serves as a stage for live performances of sacred acts over five days, engaging spectators in the unique experience. Design challenges revolve around these components,



focusing on realizing a distinctive and meaningful portrayal of Devi Durga Protima and the Puja Pandal. Artists draw inspiration from a myriad of sources, blending traditional and contemporary elements. Themes range from mythology and

history to social issues and global concerns, reflecting the pulse of the society. (Shreya 2023) Durga Puja becomes a canvas for these artists to showcase their skills, creating a dynamic fusion of tradition and innovation.



Figure 4 & 5 Sreebhumi Sporting Club's Burj Khalifa Pandal from 2021 (Ht. 188ft. and Vatican City themed pandal from 2022 (Ht. 65 ft.) Photo Credit : Special Arrangement

The Art, craft, and Urban Architecture of Pandals

In recent years, Kolkata has witnessed the creation of over 6000 Puja pandals at a time, including 3000 barowari pandals, featuring diverse themes from Ayodhya's Ram Mandir to Vatican City. These structures, whose heights range from 65 ft. (Vatican City, 2022) to 180 ft. (Burj Khalifa, 2021), spread over an area of sometimes more than 4000 sq.ft., elevate beyond temporary art pavilions, to architectural marvels. The pedestals for Durga, Lakshmi, Saraswati, Ganapati, Kartikeya, along with their *Vahans* (spirit animals), and Mahishasur, span 50 to 200 ft. in width, with idol heights ranging from 12 to 90 ft. The estimated Puja budget for West Bengal in 2019 reached ¹ 32,377 crore. Pandals transcend artworks, becoming architectural statements, that captivate onlookers with intricate detailing, delicate craftsmanship, and innovative material use. From bamboo and cloth to clay and recycled materials, these structures tell unique stories through breathtaking edifices. Some pandals mimic historical eras, while others push imaginative boundaries with socio-political themes and abstract and modern designs, showcasing the celebration's versatility and embedded creativity.

Popular pandals like College Square, Jodhpur Park, and Sreebhumi Sporting Club attract around 3000 visitors daily. The competition for the most creative and unique pandal intensifies each year. For festivals, locations with promising features tend to attract larger crowds. A puja pandal offering diverse amenities and aesthetic appeal, such as food stalls, exhibition areas, water facilities, first aid, and bio-toilets, is likely to gain attention. However, many times users may prioritize visual appeal over amenities.

The transformed city; the cultural tapestry :

The annual Durga Puja festival in Kolkata gives rise to thousands of temporary Puja pandals, reshaping the city's identity in a way distinctive to Kolkata. While these transformations endure for five days, their impact on city space spans approximately two months, encompassing the preparation to dismantling phases. The city, synonymous with the festival, undergoes visible physical changes in the months leading up to the celebration. Temporary urbanism, demonstrated in the strategic use of spaces, not only accommodates large gatherings but also showcases art and idol worship with precision and surreal aesthetics. Durga Puja exemplifies



temporary urbanism, transforming quiet alleys into lively spaces by integrating public art, specially designed walkways, and lighting. Constantly changing spaces give rise to innovative ideas tailored to current needs, though radical changes may pose challenges of contextual fit. Nevertheless, this process prompts city administrations to create new spaces with diverse functions, extending the applicability of temporary urbanism beyond vacant lots and abandoned areas to strategic points in the city core for transportation plans as well.

As Manas Ray writes in his article, the entire city becomes one ongoing exhibition. The city stands transformed—into fantasyland palaces, make-believe fortresses, historical monuments, and glittering golden barge. The overall kaleidoscopic effect of Durga Puja, as public art, encapsulates the essence of transforming the familiar into the magical, small spaces into vast ones, crafts into art, workmen into craftsmen, craftsmen into artists, and folk art into a form akin to modernist folk art. (Manas 2015)



Figure 6 & 7 Nabin Palli, Hatibagan Located in a street behind Hatibagan bazaar (an area occupied by the lower middle-class and informal settlements), this puja was awarded the best puja of Kolkata in the year 2011. The theme was highlighting the weaving community. Provision for entrances for entering the houses integrated into the pandal. (Source: Anjan Moitra and Madhumita Roy)

Community Expression

Durga Puja extends beyond art and culture; it's a community celebration forging stronger local bonds. The collective effort in organizing and funding these events involves the entire community, fostering unity and a sense of belonging. Many times these communities (organisers and participants) belong to varied religious backgrounds. Kolkata becomes a vibrant stage for diverse artists during Durga Puja, uniting communities through cultural programs that entertain and bring people together. Besides its cultural and social significance, Durga Puja significantly impacts Kolkata's economy, attracting tourists and benefiting various businesses, emphasizing its role as both a cultural phenomenon and a catalyst for commerce and tourism. The spirit of togetherness during the preparations and celebrations is palpable. The temporal urban Spaces offer a versatile design opportunity to uphold a community's cultural

expression and actions, emphasizing universal values and intangible cultural heritage through place-making, image construction, and embedded symbolism. (Anjan, Madhumita 2021)

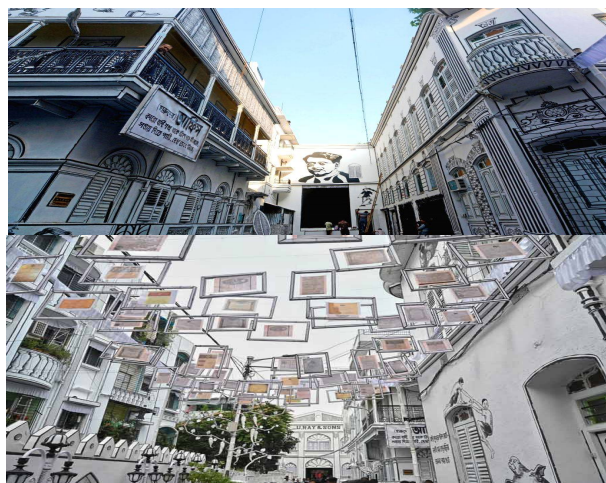


Figure 8 & 9 Haathi bagan, Nabin Pally, Pandal, Kolkata (2023) Tribute to the author Sukumar Ray where the entire neighbourhood turned into the land from his famous literary creation 'Abol Tabol' Source – <https://www.telegraphindia.com>



The interplay of time and space :

Public events are pivotal in shaping a city's identity, serving as temporal acts that, though brief, create lasting memories linked to Space, Culture, and Time. Durga Puja, observed in Autumn in Kolkata and its suburbs, epitomizes this concept. Rooted in collective imagination, the event weaves narratives of myth, symbolism, and rituals, fostering public engagement. Such events, like Durga Puja, provide extraordinary temporal experiences, where intangible emotions find expression through tangible art, architecture, installations, and imagery.

Durga Puja, like many festivals in India, brings temporary but significant urban transformations, attracting a large influx of people to the streets, requiring additional spaces for gatherings and exhibitions throughout the city. The precision in erecting temporary elements with unifying urban design elements like public art, walkways, and lighting, transforms quiet city alleys, making Durga Puja a prime example of temporary urbanism, where intangible folklore takes tangible form. Similar to the Citizens, the temporary regeneration during the festival, gives the city a distinct, festive, albeit temporary attire.

Multisensory experience

Durga Puja, is a cultural extravaganza blending diverse elements and welcoming people from all



Figure 10 Haathi bagan, Nabin Pally, Pandal, kolkata (2023) Tribute to the author Sukumar Ray where the entire neighbourhood turned into the land from his famous literary creation 'Abol Tabol', including the residents, participating as the characters. Source – <https://www.telegraphindia.com>

walks of life, offering unique multi-sensory memories. Traditional music, dance, and theatre performances, along with the unique sound of *Shonkho naad*¹² and fragrance of the *dhuni*¹³ during the *Sondhe dhuni puja*¹⁴ and the entrancing *Dhunuchi*¹⁵ dance, add vibrant rhythm to the festivities. The echoes of *dhak*¹⁶ beats, resonate through the streets as devotees and enthusiasts join in. The celebration is incomplete without acknowledging the food stalls, satisfying Bengalis' love for food.

Conclusion :

Spiritually conveying the transient philosophy of life, where Durga Ma's *protima* comes from the earth and after a few days' celebration, goes back to the earth, Durga Puja in Kolkata makes a statement of its own, while becoming a dynamic intersection of art, architecture, and culture. The pandals' ephemeral beauty, architectural marvels, cultural extravagance, and community spirit create a unique, unforgettable, and multi-sensory experience.

This multifaceted celebration transforms the city, showcasing how a religious festival can evolve into a cultural tapestry, erasing year-round identities to forge new memories and nostalgia, through the temporary nature of the pandals, which, though transient, are far from frugal.

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Foot Note :

1. Durga Puja – A festival related to Indian diety, Durga and her triumph over a demon named Mahishasur
2. Para – Bengali neighbourhood
3. Pandal – The temporary, covered pavilions or marquees created for the Goddess,
4. Zamindar – Landowner,
5. Barowari – Public organisation of religious entity in W.Bengal.
6. Thakur Dalan -An arched portico along the courtyard of 18th or 19th Century buildings
7. Sangha – Association or community,
8. Sarbojanin – For all people,
9. Protima – Idol,
10. Chala- Decorative backdrop,
11. Vahan- Spirit animal
12. Shonkho naad–Sound of blowing of Conch shell
13. Dhuni – Fragrant, incense smoke,
14. Sondhe dhuni puja – Evening puja where a pandal and especially the chala (stage where all the idols are) is filled with fragrant smoke,
15. Dhunuchi – derived from Dhunachi, a Bengali incense burner used for one of the stages during arti (ritualised worship) dance,
16. Dhak – Traditional drum





Festivals of India; Temporary on the ground, Permanent in lives “Our culture touches the ground lightly”

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Abstract :

Humans have an affinity towards permanency; hence civilizations and built-environment have occupied a permanent space on the surface of the Earth. In contradiction of this, Shrikrishna had stated in Shrimadbhagwadgeeta that the only thing which is permanent in life is the ‘Change’. Shrikrishna emphasized on ‘Love’, ‘Affection’, ‘Devotion’ and also ‘Detachment’. The tangible and intangible aspects of Indian culture reflect all these emotions in arts, crafts, architecture and planning. Indian culture has the importance of the festivals and rituals that artistically change the dynamics of spaces. The pop-up installations, structures, street arts, temporary markets, people and celebrations are true reflections of the philosophy of Shrimad bhagwadgeeta, as these tangible aspects of festivals involve people in the activities, with full devotion and dedication, despite knowing that these things will conclude in the form of “Visarjan”. The literal meaning of the Sanskrit word “Visarjan” is- sacrifice and detachment from the physical form of the favourite things. Festivals throughout India, including but not limited to Rathayatra of Jagannathpuri, Durga Puja, Ganeshotsav, Navaratri, and all forms of fairs and Teerthayatras involve sustainable ways of celebrating life. These occasions occupy a big space in the

calendar and cities (time and space). However, they originally planned to leave no physical mark on land after their conclusion, and still make huge space in the experience of life. This paper describes some festivals, and art forms of India, that reflect on this notion of a sustainable way of living and celebrating within a built environment at three hierarchical levels, i.e., buildings, neighborhoods and cities.

Keywords : Space dynamism of the festivals, pop-up structures, enthusiasm, celebrations, art forms, spatial conversion, sustainability of Indian festivals

1. Introduction

The traditional Indian way of living is more grounded in life skills and spirituality (Bhaumik P 2003). The experience of life is enhanced by celebrations and customs. The culture has a significant role in bringing humans close to each other, by planning, organizing, celebrating the festivals and concluding them. The indispensable factor for the display of culture is ‘Space’ (Shanta Pragyan Dash, 2021). Space refers to the physical environment where cultural activities and expressions take place. It plays a crucial role in shaping and preserving different cultures, as it provides the necessary conditions for people to interact and create artefacts that reflect their



traditions and beliefs. Space can also have a significant impact on cultural experiences, as it influences how people perceive and engage with cultural practices (Nancy Duxbury, 2013). Overall, the concept of space is central to understanding the complex ways in which cultures are shaped and expressed. The built and unbuilt environment forms the backdrop for the celebration of culture. Both built and unbuilt spaces have the nature to accommodate dynamics with time and people. The space celebrates cultural activities from the cellular level (households) to the urban level. The characteristic of space to transform for cultural appreciation and then return to its original form showcases the spatial dynamics.

The spatial dynamics (Sintusingha, S., Polakit, K., & Bruch, 2012) are much linked with the customs, traditions and rituals. This article throws light on some of these examples. This paper aims to study the dynamism of the festivals through examples of cultural ceremonies. The research intends to understand the deeper connection of the traditional rituals with the physical body and experience, space and its reversible behavior and the permanent aspect of impermanence and change.

2. Methodology

The methodology of observations is used in this paper. Observations have been made on various hierarchies of spaces and their dynamics concerning the celebration of festivals from Maharashtra state like Diwali, Janmashtami, Holi, etc. The another form of festivity is religious processions. Example of Pandarpur Wari has been taken in this study. The observations are made on spatial changes and addition of new forms in the conventional spaces, and how these temporal changes are impactful on human experiences, without impacting the land and environment in a negative way.

3. Culture of touching the ground lightly

In Geography, culture is defined in terms of “meaning-making and human imagining” (Aboutorabi, 2018). Culture then in its broadest sense refers to a

set of qualities/order defining the social and productive aspect of society. On the productive aspect, culture refers to the cultural practices representing the intellectual, literary, artistic and creative production of a society in a historical period (Little, William, 2023). This evolution ingrains the spaces which support the cultural continuity in the form of ritual, arts, crafts and art forms. The categories of time and space provide a comprehensive theoretical framework that allows not only integration of many areas across the cultural spectrum but also integration along a theoretical vertical axis from ‘high culture’ to popular culture and the material aspects of everyday life (Wohl 1985). The customs and festivals ranging from daily, monthly, yearly and once in 4 years and once in 12 years, eventually bring in a pleasant experience in life.

3.1. Respecting nature through culture

A series of festivals are part of the Hindu calendar, and a number of them are connected with ecology. An example of such a festival is Nagapanchami, a day when snakes are worshipped, and to give regard to snakes, farmers do not plough the field and people worship the burrow. The worship of sacred forests and water bodies (Patwardhan et al., 2021) is a common cultural practice. The festival of Vata Savitri Purnima is an example that has a ritual to bring women close to the Banyan tree in the hot summers to breathe excess oxygen. Several plants and flowers have been associated with some deities, and this association encourages them to plant these plants in the surroundings (Manjrekar, 2017).

3.2. Defining a space and then erasing the marks

“Base Plane” has been considered a major element defining space in the theory of design in architecture, by Ar. D.K. Ching in his book “Form, Space and Order”. In Indian festivals, rangoli adds up the quality of the base plane. Making Rangoli is an artistic custom, that defines the entrance and is made to welcome



the positivity in the space. As a part of daily ritual, it defines the entrance of the house in the form of a simple design, and on festivals, an elaborate form is given to the door fronts. The festivity is expressed by welcoming people, and during festive processions the streets are also decorated with rangoli to give importance to the route of the festivals. It is drawn on the surface, and at times there are chances that people walk or drive vehicles on it. Every time it is cleaned, and remade,

but the art in it is never compromised. Figure 1 (a) shows rangoli in front of the door on a regular day in Kolhapur city. After the celebrations, all these designs are wiped off. Still, people make these with full dedication. Figure 1 (b) shows Rangoli drawn for a procession for Goddess in Anjarle village. Figure 1 (c) shows a street decorated with rangoli for the Diwali procession in Menavali village of Maharashtra.



Figure 1 Rangoli defining spaces in houses and streets

3.3. Brining in spatial dynamism through cultural activities

The base plane is enhanced by rangoli, and human activities give it a vertical spatial dimension. The people dressed in traditional costumes and performing rituals define spaces. Any space on the streets becomes a stage of performance. Several festive group dances and rituals are performed in the form of a circle. These dance forms and people watching them

define a space for some time. The examples are Dandiya and, Bhondla during Navaratri, Ringan during Pandharpur wari and Balya or Jakhdi dance of Konkan during Ganeshotsava. Figure 2 (a) shows a scene of the celebration of the Hindu New Year, Gudi Padwa, this space is a street, which gets back to its regular function after these celebrations. Figure 2 (b) shows a Navaratri festival's Bhondala dance in a housing society in Pune city.



Figure 2 People defining spaces during the festivals (Image source: <https://www.news18.com/news/lifestyle/gudi-padwa-2020-date-history-and-importance-of-this-festival-2548603.html>, LatestLY on Sep 15, 2022 www.latestly.com)



Wari in Maharashtra, is a procession. A few millions of pilgrims walk in the collective form of Dindis from various villages to Pandharpur. They elevate the experience of the linear journey path with music, hymns and performing art forms. The

Ringan, a traditional procession, which is performed by devotees and a sacred horse in a circular form and witnessed by thousands of Warkari escalates the importance of the table plane to the holy ground.



Figure 3 Ringan held in Wari

MAHA INFO CENTRE on X: “#Pandharpur Wari : #Ringan, a huge circle of Warkaris (Devotees) defines zenith of Bhajans

The celebration of Janmashthami, which comes in August, brings height to the spaces through a custom called Dahi Handi. Human pyramids are formed and the space around them takes a circular shape only with the presence of people. This is a

skill-based, sporty tradition, that needs physical strength and concentration to reach till the height Dahi Handi (earthen pot of curd).

This celebration remains on the ground only for a few minutes till the Dahi Handi is reached, and broken by the topmost person on the pyramid. Figure 4 represents the photographs of this custom.



Figure 4 Scene of Dahi Handi in Mumbai (Photograph courtesy: Ujwal Puri // ompsyram.eth)



A similar example of space dynamism is found in Nashik City, where during festival of Rangapanchami is celebrated in certain locations of ancestral Rehads.

Rehad is a rectangular tank, which is located in the middle of the streets or city squares. It is



excavated up to 5-6' to fill in water and colour for celebration (Dewani, 2022). The whole excavated matter is again filled in the space after the celebration and the place becomes a regular street for commuting. Figure 5 shows some pictures of this custom.



Figure 5 Rahad celebration in Nashik (Image source: <https://youtu.be/w-ETDXJXBg0?si=tS4OMDIImVrf-i3bk>)

3.4. Brining in spatial dynamism through pop-up structures

The festivals bring dynamism in the cities. The places like squares in the city, the areas near temples and also along the streets get activated during festive times. A street that remains a regular commuting road becomes a pedestrian lane, with several street vendors, pop-up markets etc. Through these temporary arrangements, these festive environments subvert social conventions and blur the lines between sacred and profane locations on the streets, resulting in the creation of sacred spaces inside mundane spaces (Gopinath, 2019). Performative rituals that incorporate both physical and virtual spaces in this day and age bring

in the holiness of these locations. The pandals made for Ganapati and Durgapuja act like temporary community spaces accommodate a number of cultural and artistic activities, and give opportunity to the communities to come together and express their performing and visual arts in the organized events during the festival.

After the celebration, the space is reverted to its routine. Figure 6 represents the installations done on a street and a doorway to a festive pandal prepared during Ganeshotsava. Although sounds like religious rituals, these festivals aim to cross boundaries and become a political act that contributes to the creation of a story that shapes Indian society today (Gopinath, 2019).



Figure 6 Temporary decorative installations done for Ganeshotsav celebration (Source: Author)



3.5. Moving pilgrimage town in the form of Pandharpur wari

Pandharpur wari is a yearly ritual where devotees from all over Maharashtra start their journey by foot to the Padharpur temple. The pilgrims start their journey in groups named Dindi. Dindis from various villages embark on their pilgrimage to Pandharpur. Each Dindi is accompanied by a truck or other type of vehicle in which they store all the requirements of warkari. The Journey is performed by playing tals, which creates a musical and relaxing atmosphere, and by singing Abhang, a kind of devotional group hymn, in the correct order. Pune city serves as a hauling place for this Wari. The city's temple dedicated to Palkhi Vithoba established the custom of worshipping the Padukas of Saint Dyaneshwar Maharaj. This event dynamically changed the spatial dynamic from a cluster level to the street and urban level. The streets welcome the deity chariot along with Wari by halting and diverting the commute



system. Open ground and many school playgrounds serve as a halting plane for Warkari to set up tents and mobile sanitation facilities. To welcome and host the Wari, many pop-up installations accommodate the stay, food, health and medical requirements of Warkari.

Historically other than spiritual there has been an economic perspective too in terms of, pop-up markets, work distribution, promotion of products using innovative media mix, generation of economies through small, and medium scale businesses and a platform that provides employment opportunities are some of the features of this pilgrimage (Kulkarni, 2019). Pandharpur witnesses a massive influx of pilgrims, particularly Warkaris, who travel long distances on foot to reach the town. The number of devotees in the millions, creates a unique and vibrant atmosphere. Figure 7 represents various scenes of Dindies and Palkhi and its conclusion in Pandharpur town.



Figure 7 Photographs of Wari and stay arrangements done for Wari

4. Findings and discussions :

This study explored the dynamic interplay between festivals and the spaces in the built environment, focusing on the spatial transformations at different hierarchical levels. The dynamism of spaces during festivals can be observed from a scale of 50 sqm square in a neighbourhood to a 210 km long pilgrimage processional town. Grounded in traditional Indian living, and deeply connected to spirituality and life skills, festivals are portrayed as cultural indicators that leave a lasting impact on

people with the least impact on the land. The harmonious connection between culture and ecology in festivals is revealed by the observations done in the study. The spatial dynamism brought about by cultural activities, including traditional dances and rituals, defines spaces temporarily. The dynamism of the spaces is observed by receiving a completely different character during festivals with these rituals, which comes back to its normal immediately after 1-2 days of the celebrations. All these festivals are unique combinations of art, skills, aesthetics and faith. The dance increases the metabolism of the body



and as most of these rituals are performed barefoot, the texture of the ground is experienced by people. Not only has the aesthetic quality of the spaces changed, but it is filled with music, textures and fragrances too. There is some kind of “Prasad” to eat at these festivals always. The festive experience in totality touches all five senses and gets registered in the memories. All the props used in the installations on the streets, and making pandals are taken back and reused for the same or other purposes. People put their hearts, body and soul into putting in effort to make these festivals alive and happily say goodbye to the celebration with the hope that the same happiness will come in the next year of their lives. These festivals act as a promise of life that changes are permanent and the cycle of time is repetitive. In every rotation, it comes up with new essence, new energy to pump in life in the mundane routines. At the time of “Visarjan” of Ganeshotsava, when people bid adieu to God – they say in the Marathi language “Ganpati Bappa Moraya, Pudhchya Varshi Lavakar Ya” - gives enough justice to this notion of hope. In a nutshell, the culture guides people to engage themselves in collective activities, and collective prayers, that push them towards a healthy, skilful, artistic and spiritually enriched life, that does not demand materialistic things, but rather helps in gathering experiences, that make living more enjoyable and sustainable. Despite the temporary nature of spatial transformations, festivals have lasting impact on individuals and communities, asserting that the experiences become permanent in memories.

5. Conclusion :

The festivals demonstrate meaningful application of art, craft, placemaking, planning, economics and sociology in its numerous forms. Design, architecture and planning education and profession to date have given more importance to the permanent spaces, however, this study highlights that the focus of education and profession both can contribute to the festivity, as these events enrich the experience of life. The study was limited to observing the positive

dynamism of the festival and having awareness of the facts that there are some environmental negative impacts of these. However, these negative impacts are much less than the damages that are done by the rapidly increasing and highly energy-intensive building construction industry. This paper initiates the argument that life can be experienced in time and temporary spaces, and there is scope for present design, architecture and planning fraternity to intervene in these areas to make them more organized and richer in experience.

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Integrating Crafts in Architectural Design Education : Literature Review

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Abstract :

Architectural design education has long been a cornerstone of the built environment's evolution, reflecting the changing values and aspirations of society. As contemporary architectural practice grapples with issues of sustainability, cultural preservation, and a renewed appreciation for craftsmanship, it becomes increasingly crucial to examine the role of crafts in architectural design education. The analysis encompasses a rich repository of scholarly publications, utilizing advanced bibliometric tools to unveil evolving trends and connections within the field. this study reveals the historical lineage of crafts in architectural education Through systematic examination. Additionally, this paper provides a thematic analysis of the literature, identifying key recurring themes that shape the discourse. The study synthesizes the findings and further explores pedagogical implications. It emphasizes how the integration of crafts can enrich architectural education. The findings emphasize how integrating crafts enriches architectural education, contributing to ongoing discussions. The paper highlights the enduring relevance of crafts in shaping the profession and the built environment. It provides a foundation for a holistic and sustainable approach, bridging historical craftsmanship with contemporary challenges.

Keywords : Architectural Design, Education, Crafts, Cultural significance, Craftsmanship, Pedagogy

Introduction :

The transmission of craft skills to architects' traces back to historical traditions rooted in guilds, apprenticeships, and traditional teaching (Doshi, 1986). Guilds, such as those in medieval Europe, governed architecture and provided rigorous training to apprentices under master craftsmen, emphasizing discipline and specialized skills. Apprenticeships offered emerging architects a blend of formal education and practical experience, enabling them to acquire essential skills (Cohen, 2014). Traditional teaching in architecture underscored holistic education, integrating theory and practice, and highlighting the importance of craftsmanship, drawing, proportion, and materiality (Chhaya & Dil Sukh, 2004). These historical systems profoundly influenced architectural pedagogy, emphasizing the enduring value of hands-on learning and craft skills.

However, contemporary trends, driven by capital-intensive development, prioritize rapid production of space, often disregarding holistic spatial conception (Chauhan, 1999). This neglect of historical narratives results in an erosion of cultural and regional identity perceptions, rendering identity increasingly ambiguous and fragile (Charalambous & Christou, 2016). Addressing this challenge requires recalibrating design processes to embrace evolving identities (Mehta, 2001), yet many educational institutions have struggled to adapt to this imperative, maintaining pedagogical structures inherited from the West without substantial modification.



Aim and Scope of the study :

The study aimed to guide future research by exploring crafts' integration into architectural design education through interdisciplinary approaches in design studios. It reviewed trends to identify evolving areas relevant to investigating creative thinking in design research.

- What are the historical trends in the publication of academic literature related to the incorporation of crafts in architectural design education?
- What are the key research areas and themes that emerge from the literature on crafts in architectural design education?
- What gaps exist in the current literature on crafts in architectural design education, and what areas warrant further exploration or research?
- How do the historical and contemporary perspectives on crafts in architectural education inform the broader discourse on architectural pedagogy and design practice?

Crafts in Architectural Design Studio :

In architectural education, incorporating crafts enhances skills holistically. Hands-on learning, alongside theoretical knowledge, cultivates spatial understanding (Wigley, 2011; Schön, 1983), while emphasizing materiality promotes critical thinking (Lester, 2008). Cultural and historical perspectives enrich education, guiding architects in designing with sensitivity (Oliver, 2006). Crafts contribute to heritage conservation and sustainability goals (Ruskin, 1853; Kruft, 1994), reducing reliance on mass-produced materials. Crafts play a pivotal role in architectural education, empowering students with practical skills, enhancing cultural sensitivity, and promoting sustainable practices.

The study conducted by (Djabarouti & O'Flaherty, 2019) revealed a significant enhancement in students' understanding of building materials when experiential hands-on learning was integrated into the architectural design studio. This approach not only promised improved

comprehension but also hinted at the potential for more effective design solutions, particularly for preserving built heritage. Nonetheless, the pilot study encountered economic and logistical hurdles, shedding light on the broader challenges architectural institutions face when attempting to incorporate such immersive learning experiences into their curricula. In the realm of expanded knowledge, there exists a conceptual framework reminiscent of Plato's tripartite view of the world. Firstly, the cognitive space, governed by laws grounded in reason and knowledge, shapes our understanding. Secondly, the aesthetic space, intertwined with nature and cultural constructs, embodies harmony amidst contradictions. Finally, the ethical space, driven by a commitment to caring for others and all of creation, underscores our collective responsibilities to humanity (Baumann 1993, 145–1285).

Idea generation and Design development :

Inspiration and problem solving

In the design process, prior knowledge and experience are crucial. Designers utilize precedents to tackle diverse challenges effectively (Kim & Ryu, 2014). Crafts enhance creativity through hands-on activities, promoting problem-solving skills. (Corbett, 2005) highlight crafts' positive impact on design studios, deepening students' understanding and nurturing critical thinking. Integrating crafts in design education offers multifaceted benefits, amplifying cognitive processes and fostering cultural awareness. Crafts provide a tangible medium for experimentation, strengthening students' connection with design ideas and enhancing cognitive and creative processes.

Brainstorming

Brainstorming, a creative technique, prioritizes generating numerous solutions without immediate evaluation, fostering diverse and unconventional ideas ("1+1=3" principle, Osborn et al., 1971). In design studios, crafts encourage brainstorming by enabling students to freely experiment with materials, bridging abstract thinking with concrete realization (Schukken, 2016). Crafts influence divergent



thinking in architectural design, prompting exploration of various possibilities through hands-on activities. Analogies from crafts foster innovative thinking, applying historical knowledge to contemporary challenges (Charalambous & Christou, 2016). Thompson and Adams's review supports these insights, highlighting crafts' role in enhancing analogical thinking and problem-solving capabilities in the design studio.

Visualization

Crafts play a vital role in architectural education. (Gupta and Patel 2019) highlight their significance in improving visualization skills, aiding in understanding spatial relationships and material properties. (Reyes and Mitchell 2020) associate crafts with meta-cognitive processes, fostering reflection and elevating design thinking quality. (Gardner 2011) explores metaphorical reasoning, showing how crafts serve as powerful metaphors, enriching conceptualization skills and deepening materiality understanding in students.

Reflective Analysis

Hands-on craft activities encourage students to reflect and critically assess their work. Crafts provide a tangible medium for self-evaluation, fostering decision-making, problem-solving, and critical analysis throughout the crafting process (Schukken, 2016; Corbett, 2005). This iterative engagement enhances students' critical thinking skills, fostering creativity and innovation in architectural design (Landry, 2010).

Creativity

Understanding and Problem framing

Within design disciplines, nurturing creativity is fundamental, guiding students to develop their unique visions, expertise, and understanding of the design process. Recognizing creativity and spatial ability as crucial cognitive skills in architectural and spatial design, crafting activities refine students' perception of form, texture, and proportion (Djabarouti & O'Flaherty, 2019). Crafting enhances students' sensitivity to visual and tactile aspects, fostering divergent thinking and prompting

exploration of unconventional solutions (Schukken, 2016). It serves as a medium for experimentation, encouraging students to generate a diverse range of design ideas and expand their creative boundaries.

Clarity and incubation

Research underscores the nexus of creativity, cognition, and opportunity identification (Ward, 2004). Opportunity identification relies on diverse information processing influenced by knowledge disparities (Corbett, 2005). Marchand (2010) explored crafts' role in articulating design concepts, converting abstract ideas into tangible forms, aiding students in clarifying design thinking. Garcia and Martinez (2020) highlighted crafts' contribution to students' manual and technical skills, fostering aesthetic understanding by enhancing tactile and visual perception in design.

Application and innovation

Mutlu (2015) examined crafts' role in convergent thinking, where crafting processes compel students to synthesize ideas into tangible forms, fostering informed decision-making and refining design concepts. Garcia and Martinez (2020) advocated for craft-based learning to develop prototyping skills, providing hands-on experience in creating physical prototypes, promoting innovative application of ideas (Charalambous & Christou, 2016).

Pedagogy

The UK's Qualifications and Curriculum Authority underscores creative learning outcomes, highlighting questioning, making connections, envisioning possibilities, exploring ideas, and reflective critical thinking (Djabarouti & O'Flaherty, 2019). Creativity entails habits such as posing questions, play, immersion, innovation, risk-taking, imaginative thinking, and self-determination (Djabarouti & O'Flaherty, 2019). The National Advisory Committee on Creative and Cultural Education (NACCCE, 1999) advocates teaching for creativity, emphasizing beliefs, motivation, risk-taking, persistence, interdisciplinary connections,



and experiential approaches (Salama, 2008). Despite acknowledging active learning's significance in architectural education (Salama, 2010), design studio pedagogy has seen minimal evolution since 1985 (Webster, 2008). Studies by (Kvan and Yunyan 2005) utilize Kolb's model to examine architectural education and learning styles (KOLB, A., & KOLB, D. 2012), interpreting complexities rather than experimenting with pedagogic interventions. Integrating crafts into architectural design studios aligns with active and experiential learning, enhancing engagement and understanding (Andjomshoaa, Islami, & Mokhtabad-Amrei, 2011).

'Making' and 'thinking' (Salama, O'Reilly, and Noschis, 2002) embody an architect's knowledge stemming from this fusion, echoing contemporary literature on experiential learning, emphasizing

hands-on experience and reflective thinking in architectural education (Felicia, 2011). It's vital to prepare students for the broader context of architectural practice, encompassing sociological, environmental, ethical concerns, alongside technical aspects (Kurt, 2009).

Discussions

This study focuses on integrating crafts into architectural design studios, emphasizing hands-on learning to nurture students' creative thinking and understanding of the design process (Potur & Barkul, 2006; Schön, 1983). It explores how crafts enhance idea development, design, and pedagogy within design studios, presenting overarching themes and corresponding categories for detailed examination.

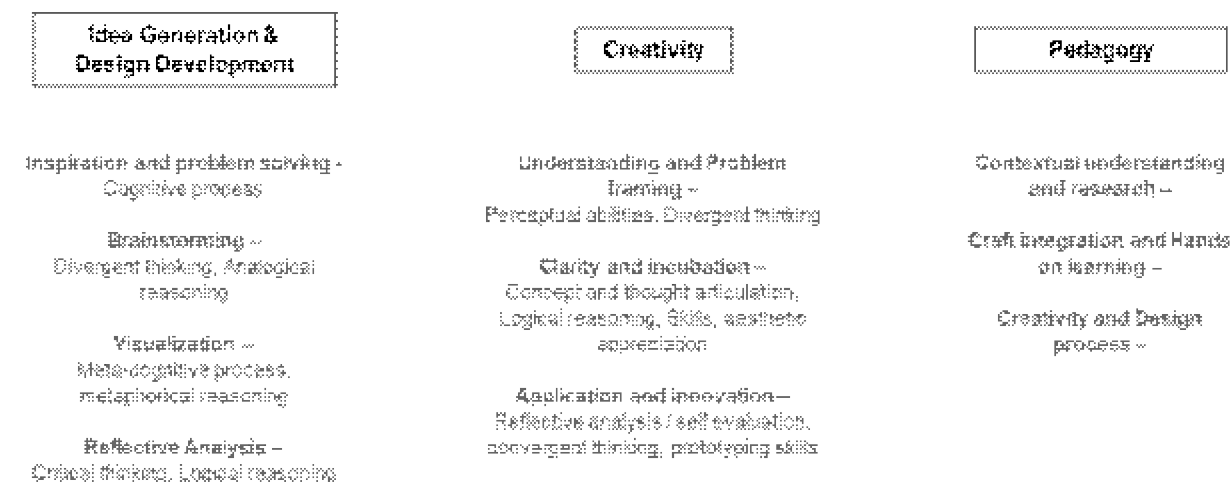


Figure 1: The overall themes and categories of the 47 selected article

(Source: Author)

Incorporating crafts into architectural education enhances students' knowledge and skills in various ways. Craft-based learning offers a hands-on approach that immediately immerses students in materials and processes, complementing theoretical knowledge (Wigley, 2011).

This engagement fosters an intimate understanding of space, shape, and structure, crucial elements in architectural design, thus enhancing students' spatial comprehension (Schön, 1983). Moreover, crafts emphasize the importance of cultural contexts in

architectural designs, as they often carry cultural significance.

Crafts play a vital role in idea development, design, brainstorming, visualization, reflective analysis, and creativity within architectural education. They facilitate multifaceted approaches to design, enhancing perceptual abilities, divergent thinking, concept articulation, logical reasoning, and skills application (Marchand, 2010; Martinez & Kim, 2021; Schukken, 2016). Through reflective analysis and prototyping skills, crafts promote clarity, incubation,



appreciation of the arts, and innovation. Additionally, they support active and practical learning, offering students tangible encounters with architectural concepts, thereby enriching architectural pedagogy (Reyes & Mitchell, 2020; Chhaya & Dil Sukh, 2004; Martinez & Kim, 2021).

Conclusion :

In the 21st century, architectural education confronts a pivotal juncture, balancing tradition and innovation while adapting to emerging trends like sustainable design, cultural preservation, and community engagement (Schön, 1983). However, the scarcity of research in the Indian context presents challenges in evaluating crafts' impact on learning outcomes such as design skills, problem-solving, and cultural awareness. The limited comparative analysis between students exposed to craft-based education and those who aren't impedes a comprehensive assessment of these approaches' effectiveness. Acknowledging that innovation in design extends beyond architecture, the study advocates for interdisciplinary collaboration with fields like neuroscience, psychology, and sociology to shape future cognitive models and tools. Envisioning the development of innovative yet practical ideas and methods, the study aims to enhance architectural education's effectiveness through collaborative design activities. Ultimately, it seeks to lay the groundwork for future research and inspire innovative teaching practices, fostering continuous advancement in architectural education.

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Beyond Concrete and Costs : Unveiling the Artistry and Comfort in Affordable Housing Materials

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Abstract :

This article explores the transformative role of materials in reshaping affordable housing paradigms. Beyond conventional financial considerations, materials emerge as catalysts for aesthetic expression, human comfort, and a profound sense of community identity. By guiding case studies through an imaginative reconstruction, we unveil instances where materials transcend their utilitarian role, becoming mediums for artistry and sustainable design. The article touches the three primary realms that make architecture art – expression, comfort, and attachment, by confronting challenges in shifting perspectives, underscoring the necessity for a nuanced approach. The article aims to evoke a call to action through a storied format which moves the architects and developers to adopt a more holistic perspective on materials, encouraging a departure from conventional norms. This exploration envisions a future where affordable housing transcends mere functionality, emerging as a dynamic canvas that balances the trifecta and all aspects across the board.

Keywords : Art, Architecture, Affordable Housing, Thermal Comfort, Community, Belongingness.

1. Introduction :

In the relentless pursuit of cost-efficiency and optimization, the realm of affordable housing has often been overshadowed by the unyielding focus on floor space index (FSI) and financial pragmatism. Amidst these calculations and blueprints, there exists an overlooked element that holds the potential to

reshape the very essence of our housing structures — the materials themselves. While the optimization of square footage and the balance sheets is undeniably crucial, we have inadvertently relegated two vital considerations to the periphery: the aesthetics that define our living spaces and the thermal comfort that dictates our well-being.

Affordable housing, with its utilitarian design and standardized materials, has long been associated with functionality over form, cost over comfort. This oversight is not only a missed opportunity for artistic expression but also a neglect of the profound impact that materials can have on creating a space that residents proudly call home.

It is time to question this status quo and recognize materials as more than mere structural components. The aim is not only to optimize financially but to harmonize aesthetically, to provide thermal comfort, and to evoke a deep sense of belongingness within the community through their aesthetic. In this exploration, we will unravel the forgotten influence of materials, tracing their ability to transcend the mundane and become conduits for artistic expression, thermal well-being, and a stronger communal identity. It is time to reimagine affordable housing as more than a utilitarian necessity, but as a canvas where materials play a crucial role in crafting spaces that resonate with the hearts and histories of those who call them home.

2. The Forgotten Influence of Materials :

Beyond the structural constraints and financial considerations that often govern the blueprints of



affordable housing, lie the untapped reserves of expression – the materials. When carefully chosen and thoughtfully integrated, materials possess the transformative power to shape not just the physical structures but the very essence of the communities they house (Mazzola, n.d.).

For this article, the authors have conducted the study by considering a scenario as the base case to build upon with introduction of new materials and construction techniques. Considering each development of the same as stages, the first stage is to draw comparisons using case studies on the impact of raw materials against covering them up. The second stage will be to satisfy the first requirement of invoking belongingness in a community, that is, comfort. Specifically, the comfort that can be achieved by exposing the rawness of thermally comfortable

materials. The third stage is to coalesce the raw materials with aesthetic expressions of detailing, modulation, and texturing. Finally, by manifesting the community's identity through mediums of history, culture and heritage on the architectural form actively involves the community in its creation and in turn, induces a greater sense of belongingness to their abodes.

2.1. Unveiling the Materials' Raw Beauty

Consider for a moment the visual impact of a neighborhood littered with affordable housings has on you. Besides the uncalled for pity after observing the windows decorated with hanging clothes and painted over in a dull grey peeling away, it never really leaves a lasting impact on us, and for the right reasons. These masses meant to barely house the families, their aspirations and expressions are standardized and mundane.



Fig. 1. MHADA's Ruby Mill, Dadar, Mumbai

Source: <https://www.mhada.gov.in/en/content/ruby-mill-dadar> (accessed 16 January 2024)

But now, consider the impact that same neighborhood would have on you had it been constructed in a blend of concrete for exposed structural members as it held together walls in brick masonry with a textured plaster on top, that springs out of dense green foliage. It already sounds characteristic and detailed. Now let's dive deeper;

imagine those walls to be in a random brick bond order, the concrete polished and the rustication in ordered brick masonry. It now appears even more characteristic and detailed. It is closer to something that the residents can identify with, something they call their expression, something to set them slightly apart.



Fig. 2. Correa's Tara Housing, Delhi

Source: <https://www.nirman.com/post-independence-delhi-architecture/#gsc.tab=0>
(accessed 19 January 2024)

Whether through the warm embrace of natural wood, the cool elegance of concrete, or the vivid expressions of recycled materials, the choices made in materials play a pivotal role in defining the overall visual appeal of a housing project as the silent storytellers of architecture (Zhang et al., 2023).

2.2. The Thermal Equation

Now, considering the same building from before, but this time, instead of fired clay bricks, the walls are made in unfired clay bricks, the fenestrations in timber with a brick masonry vault for the roof and absolutely no steel. This time not only is the housing further enhanced in terms of aesthetics, but it is



Fig. 3. Doshi's ATIRA Housing, Delhi

Source: <https://www.sangath.org/projects/ahmedabad-textile-industries-research-association-atira-ahmedabad/> (accessed 16 January 2024)

The thermal comfort aspects of a building are another realm completely overlooked in affordable housing on the pretense of achieving fsi and budgetary optimization. However, the thermal equation of materials in affordable housing is a critical aspect that not only impacts the residents' daily lives but also carries significant implications for energy consumption and environmental sustainability. From insulation that retains warmth during colder months to reflective surfaces that mitigate heat absorption in warmer climates, the role of materials extends beyond their structural integrity to directly influence the indoor climate of housing units. Furthermore, innovative technologies and sustainable practices are reshaping the thermal dynamics of affordable housing (Rosso et al., 2018). This dual benefit not only aligns with the global imperative for sustainable living but also plays a crucial role in minimizing the long-term costs associated with energy use, making affordable housing not just affordable in the short term, but sustainable in the years to come. And when done right, these addendums or incorporations come together to paint a picture that balances all aspects across the table- financial, cultural, and thermal!

2.3. An Aesthetic Expression

To establish the artistry that materials can achieve, let's consider the same building once more. With the same material palette of adobe blocks, brick, concrete, and stone, let's assume that certain vertical or even horizontal sections of the building are now laid in an extruded brick façade that seamlessly blend with the small openings in timber and steel, creating an iteration of a traditional pattern of the state. Maybe certain sections of the podium are clad with concrete panels over the stone to give space for foliage to take over and maybe allow the youth to paint and graffiti. Almost immediately, one can imagine how the materials can become both the canvas and sometimes even the paint. Artistic expression through materials is not a luxury but can possibly be considered a fundamental human need, influencing the emotional resonance of the built environment. The housing's architecture can metamorphose into canvases for murals that tell the stories of the community's journey, becoming a source of pride and connection for its residents to come (Lagueux, 1996).



Fig. 4. SEA's Sai Mandir, Vennached, Telangana

Source: <https://www.architectural-review.com/buildings/sai-mandir-temple-by-sea-straddling-the-world-of-memory-and-history> (accessed 20 January 2024)



2.4. Belongingness in Material Choices

One last time, we revert back to our imaginary housing. Imagine the building with those patterns and blank walls for artwork. Consider several of these housings clubbed into a small township in the center of Mumbai which is otherwise littered with inhumane and completely uncharacteristic buildings for people to simply survive in. With patterns in an extruded brick façade that traces back to the craft of a rural community of the state, 2D artworks and graffiti

installations on the paneled walls of the podium, and carved fenestrations from reclaimed wood for the openings; the people in that complex suddenly realize that they may be in an alien city, but they are together as a community. It is the duty of the designer and the community to sit together and transcend a shelter into a home. The choice of materials can either reinforce or detract from this sense of belongingness (Lagueux, 1996). When involving the community, belonging is more than by product.



Fig. 5. St+art India's Dadasaheb Phalke Mural, Mumbai

Source: <https://www.designpataki.com/the-start-india-wave/> (accessed 20 January 2024)

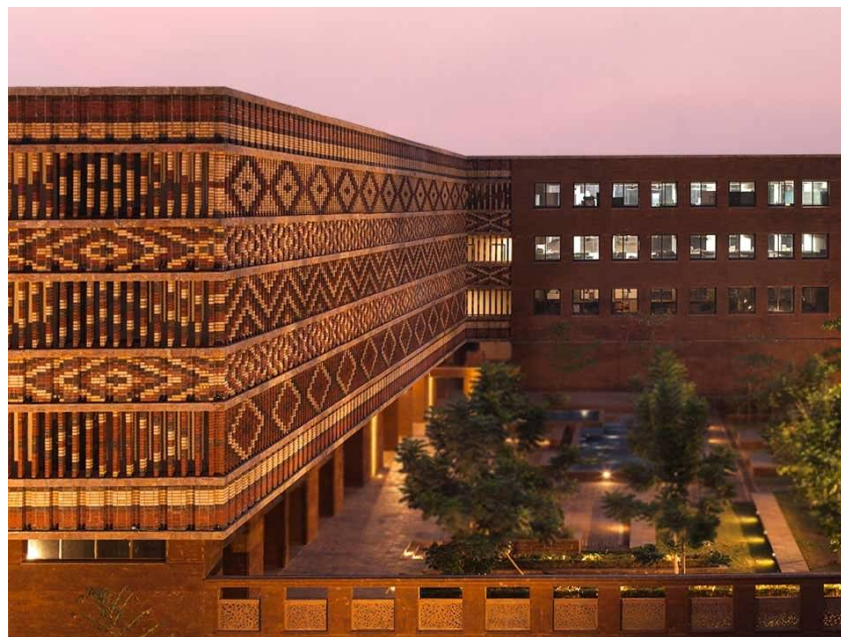


Fig. 6. Studio Lotus' Krushi Bhawan, Bhubaneshwar, Odisha

Source: <https://studiolotus.in/showcase/krushi-bhawan/115> (accessed 19 January 2024)



Integrating artistic elements into materials can pay an homage to the history, can foster inclusivity with rural communities, celebrate the urban poor, and most importantly, instill the sense of individual pride through them (Mazzola, n.d.).

3. Challenges in Shifting Perspectives

Each stage after considering a scenario for the base case built itself with inclusion of a new palette of materials and techniques. The development in choice of materials sequentially integrated thermal comfort, aesthetics and finally belongingness in the base case. Changing the material in the first stage to include more thermally comfortable materials than the conventional choices for affordable housing introduced a higher and more humane standard of living for the residents. Suggesting changes in the construction technique of the same materials as before introduced the presence of distinction and consequently, ownership for the housing. The third stage involved the study and proposal of creative representations of the community in the form of culturally inspired and architecturally manifested artforms which, as per the precedents, encourage the community to participate, contribute and maintain.

But, while the vision of materials as conduits for art, thermal comfort, and a sense of belonging is compelling, the journey towards a holistic approach in affordable housing design is not without its challenges. The conventional paradigm, entrenched in optimization and financial constraints, presents a formidable barrier to the integration of materials for multifaceted purposes. The entrenched mindset that prioritizes immediate financial gains often resists the consideration of materials as more than utilitarian components (Lagueux, 1996). Architects and developers may face skepticism from stakeholders who question the feasibility and cost effectiveness of embracing a more expansive role for materials. Shifting perspectives demands not only a commitment to change but also a concerted effort to educate and advocate for a

more comprehensive understanding of materials' influence on affordable housing.

4. Conclusion and Call to Action

In unraveling the forgotten influence of materials, we have embarked on a journey that transcends the traditional boundaries of affordable housing design. From their role in shaping aesthetics to their impact on thermal comfort and community identity, materials emerge as dynamic agents of change, capable of transforming mere structures into vibrant, holistic living spaces. As we conclude this exploration, the call to action resounds architects, developers, and stakeholders must reconsider the prevailing norms and embrace a more nuanced approach to material selection. The integration of materials as mediums for art, thermal comfort, and community identity is not a compromise but an elevation—a pathway to affordable housing that fosters pride, comfort, and a genuine sense of belonging. The challenges outlined are not insurmountable barriers but opportunities for innovation.

In urging a departure from the status quo, we encourage the architects of tomorrow to wield materials not merely as tools of construction but as instruments of positive transformation. It is time to reimagine affordable housing as an embodiment of art, comfort, and community—a space where the influence of materials extends far beyond the visible and into the very fabric of human experience.

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Architecture Alchemy : Unveiling the Knowledge within Building Crafts

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Abstract :

Experts estimate that ten thousand hours are needed to become the best at any given craft. Whether it's glassblowing, wood joinery, music, or the culinary arts, the goal is to create something that can be seen, heard, touched, and/or used. The idea of craft seems to be fading in popularity. By embarking on a journey to uncover the intricate skills and hidden wisdom inherent in traditional crafting techniques, this study seeks to illuminate the invaluable contributions these age-old practices can make to contemporary architecture. Through a combination of case studies and qualitative analysis, this research aims to identify the nuanced expertise and tacit knowledge that underpin traditional crafts. Furthermore, it explores how integrating these traditional techniques into modern architectural projects can lead to innovative design solutions and sustainable building practices.

Keywords : craft, building craft, human-material interaction, traditional craft, sustainability, sustainable architecture, experiential learning, Shigeru Ban

Introduction :

Crafts endure as a means of skillful interaction with materials, underscored by a craft ethos that emphasizes both practical skill and a sense of tradition (Adamson, 2007) (Sennett, 2008) (Minna Huottilainen, 2018). Amidst the pervasive influence of digital technology, crafts retain their tactile, corporeal nature, offering a respite from the constant inundation of digital interfaces and

screen-based activities. In settings such as stitch-and-bitch circles or knitting groups, crafts catalyze face-to-face interactions, providing a valuable contrast to online engagement (Bryan-Wilson, 2013). Moreover, crafting involves transforming abstract ideas into tangible artefacts, reflecting a process that intertwines design with inventive learning. This dynamic suggests that crafting not only involves the mastery of existing techniques but also encourages exploration and innovation, thereby embodying a form of creative expression deeply rooted in human ingenuity (Seitamaa-Hakkarainen, 2011).

Aim :

To explore the intricate skills and hidden wisdom within traditional crafts, ultimately enhancing both architectural theory and practice.

Objectives :

1. To investigate the historical significance of traditional building crafts in architecture.
2. To explore how traditional crafting practices can inform and enrich contemporary architectural theory and practice.
3. To examine case studies that demonstrate the integration of traditional building crafts into architectural projects.

Methodology :

A case study research is done for the paper to explore the intricate skills and knowledge embedded in building crafts.

**Data Collection :**

With Sustainable Development Goal 11, countries have pledged to “make cities and human settlements inclusive, safe, resilient, and sustainable” at UNESCO (SDG 11). As part of this goal, Target 11.4 aims to “intensify efforts to protect and safeguard the world’s cultural and natural heritage.” UNESCO believes that focusing on cities is vital since creative industries contribute to social structure, cultural diversity, and improved daily life, as well as strengthening communities and defining a common identity.

Craft is progressive because it provides a different microeconomy of local manufacture, a system of exchange that is more akin to bartering, emphasising trade and tactile connections to supply and demand.

It is ecologically conscious and mindful of the planet’s finite resources. Craft has embraced the digital because of the rise of craft blogs, social networking sites, and personal internet interfaces, it has gone online. Craft is a wedge that exposes significant disparities in taste and value beliefs. Craft is modern because it bridges the gap between art and commerce, work and play, and the past and the future (Bryan-Wilson, 2013).

While craft is the stem of the tree from which it grows and diversifies, the practice of craft, material, the craftsmen and their tools, and empirical knowledge are the roots of this industry like illustrated projects in Pune by Studio Roots and Basics.



Image 1 : Ongoing project with experimentation of tessellations using cob in Pune, India.
(Source : Studio Roots and Basics)

According to (Thakkar, 2011), there are multiple values of building crafts which one should recognise.

- **Evidential value :** This provides us with proof of our rich architectural heritage when it is visible on traditional buildings. This value is based on one’s visual perception
- **Historic value :** This provides an insight into the past and gives an idea of the life of people and their craft in olden times.
- **Aesthetic value :** The carvings seen on the rich architectural heritage give a sensory and intellectual motivation from the past.
- **Communal value :** Recognising a Craft provides people with a sense of belonging to the place to which it is related and also to its people and society

A new generation of Indian architects defies convention by emphasising sustainability as a significant feature of their work. Rather than depending on green rating systems and sustainability certifications, these architects choose tried-and-true construction methods to create structures that have the least amount of environmental impact feasible, both in terms of design and materials employed. They build in accordance with local socioeconomic and environmental conditions, using reused and renewable materials and traditional construction techniques.

They show that being ecologically careful doesn’t have to mean being shabby, drab, or boring. They are designing homes of the future, fusing sustainability with contemporary, modern designs and a range of



materials, textures, and colours to produce homes that are gaining popularity for their small footprint, various health benefits, and aesthetic appeal. We want rooms that reflect our culture, surroundings, and needs, rather than mimicking a bland Western style. A few of them are Biome Environmental Solutions – Bengaluru, The Auroma Group – Puducherry, Kamath Design Studio – Delhi, Thannal Hand Sculpted Homes – Tiruvanamalai, Footprints E.A.R.T.H. – Ahmedabad, Mozaic – Goa, Benny

Kuriakose – Chennai, Made in Earth – Bengaluru, Eugene Pandala – Kollam, Dustudio – Auroville, Studio Roots and Basics – Pune, Imarat – Chandigarh, Didi Contractor (Dharmalaya Institute, Himachal Pradesh), COSTFORD and Vasthukum (Kerala), Auroville Earth Institute (Puducherry), Gerard da Cunha of Architecture Anonymous (Goa), K Jaisim of Jaisim – Fountainhead and Sathyaprakash Varanashi of Sathya Consultants (Bengaluru). Some offbeat projects are listed below.

A Case Study on Traditional Construction Techniques Merging with Nature and Crafts



Image 2: Bodhi house Designed by Ar. Eugene Pandala made by the cob method of mud construction (Source: @eugenepandala)

The project (as shown in Image 2) was constructed utilising the cob structure technology, but it was modified by using 20% clay mixed with mud and 5% cement to strengthen it. This put a lot of trust in the client's understanding of their area,

which helped them achieve their goal of tranquillity. The home is so boldly linked with its roots and surroundings that it says a lot about how elegantly it allows everyone in, even nature.

A Case Study on the intricacies achieved by craftsmen for Ar. Prasanna's Kondan Resort

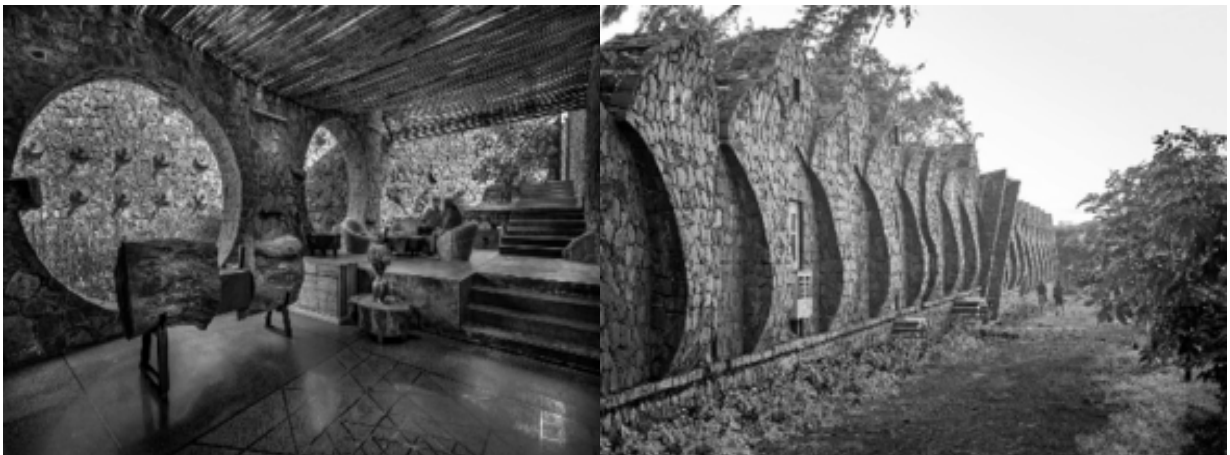


Image 3: Kondan Resort Pune by Ar. Prasanna More Source: (Madhushala, 2017)



The Kondan Resort's (as shown in Image 3) concept includes concerns concerning the resort's social, regional, and environmental context in addition to the primary purpose of providing modern amenities in a beautiful setting. The majority of the building materials were sourced on-site. From dry pack to dressed masonry to composite boulder concrete, stone from water bodies and

foundations has been employed widely in vernacular ways. Objects like stone light fixtures were purchased from local craftsmen during construction, and daily-wage labourers from adjacent villages were trained in masonry or other vocational skills that would ensure their employment as part of the resort's maintenance crew. (Madhushala, 2017)

Didi Contractor's Architecture: A Case Study on her structures harmony with nature



Image 4: A project by Dharmalaya Institute

Source: (Bahga, 2018)

A close examination of Didi Contractor's architecture reveals that her structures appear to sprout from the ground and are in perfect harmony with the natural world. This is in stark contrast to today's modern structures, which appear to be at odds with nature. An important element of her design is the precise yang-yin interaction between her

buildings and the surrounding landscape. Didi's architecture is also notable for its innovative use of native materials like mud, bamboo, riverstone, and slate.

She's honed the art of treating these materials in such a manner that they evoke feelings of kinship, joy, and humility throughout the years.

Shigeru Ban's Architecture: A Case Study In The Context Of Traditional Craft Techniques



Image 5: The Veneer Grid Roof House in Chiba

Source: (Mireva)



Image 6: The Paper Dome in Amsterdam, Holland

Beppu is frequently referred to as the hub for the preservation and appraisal of Japanese bamboo traditions. Bamboo is a material that may be used to

make columns, beams, trusses, steps, porches, floors, and even bridges due to its physical properties. Repetitions of knits, knots, or modular



elements can now be found in structures such as fences, flooring, partition walls (internal and external), and roofing. In some situations, Ban just alters the scale of the knit, transitioning from decorative art features to roofing construction details by employing materials such as wood, paper pipes, and metal extenders.

Origami is another prominent small-size “vernacular” art form. Origami ideas can be found in both simple roofs and complicated shell-type surfaces. Curved surfaces generated by repeating the same fold, resulting in stable shapes, are a well-known architectural approach. These are often associated with folded constructions and the literal replication of folding principles in the art of origami.

Discussions and Findings :

1. The Indian architects are changing how we think about building sustainably. Instead of relying on fancy certifications, they use simple, proven methods and materials that have less impact on the environment. They’re showing that eco-friendly doesn’t mean boring—by blending modern styles with traditional techniques, they’re creating homes that are both stylish and good for the planet. It’s not just about being green; it’s about embracing our culture and surroundings while still enjoying all the comforts of modern living.
2. Looking at Ban’s designs and his interpretation of modern architectural traditions, we may infer some basic concepts that other architects could follow:
 - Learning from the past, but not literally copying it
 - The correct interpretation of traditions can lead to Up-to-date solutions - traditions are the foundation of the present
 - The use of modern, even innovative, materials could reveal new fields of expression and experimentation
 - Accessible materials are a sustenance

- (Contemporary) Repetitions of a (traditional) module can be fascinating and perhaps sufficient for a project’s final concept. (Mireva)

Conclusion :

Traditional craftsmanship has often been marginalized in contemporary society, perceived as out of sync with the march of technological advancement and societal progress. However, there has been a notable shift in recent years, with a growing appreciation for craft and craftsmanship. These domains have expanded their influence to encompass endeavours such as the preservation of the world’s Intangible Cultural Heritage, as recognized by UNESCO in 2015.

The traditional design methods must be recalibrated to develop more robust solutions that appreciate and include developing identities. The majority of journals explain that traditional architecture is strongly tied to the culture of the community in a place that is identical to regional ethnicity. As Charles Correa once stated, unlike music, architecture is deeply grounded and rooted in its environment.

The case studies and literature on building crafts and identity conclude that the context and climate create the circumstances that make our architecture and becomes more relevant to society. By examining each of those typologies on the parameters of sustainability and identity they determine how they are spatially articulated within the context of modern India. It is possible that the amalgamation of building craft in architecture could support the concepts of interdisciplinary value of integrated practice. The architects could master the ability to respond to complicated, ever-changing scenarios and transform them into emergent, unprecedented architecture that illuminates a more promising and intriguing future through preaching and practising. From this viewpoint, building craft could be a catalyst that can bring the realities of architecture into the design practice.



Craft possesses distinctive ecological qualities, rooted in localization and systems thinking, and embodies fundamental concepts of existence. Moreover, the understanding of design for sustainability has evolved beyond mere technological considerations, embracing holistic approaches such as Transition Design and the Quadruple Bottom Line, which prioritize broader human values in fostering transformative change. By bridging the realms of craft mastery and sustainable design, profound connections emerge, characterized by ecological consciousness, communal engagement, resilient systems, and a profound sense of existence.

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Brick by Brick: The Evolution of Experiential Learning in Architectural Studies

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Abstract :

Experiential learning, often described as “learning by doing,” has emerged as a transformative force in both architectural education and real-life practice, shifting from the periphery to the forefront. The imperative of adaptability propels this evolution in an ever-changing world and a contemporary understanding of learning processes. Grounded in the Experiential Learning Theory (ELT), as elucidated by prominent scholars, this paper delineates a dynamic model anchored in the dual dialectics of action/reflection and experience/abstraction. Global research underscores the cross-cultural relevance of ELT, highlighting its significance across diverse societal contexts. Employing a methodology centered on literature review, this paper aims to analyze the evolutionary trajectory of experiential learning and its profound impact on architectural education. By scrutinizing ELT's role in education reform and beyond, this study seeks to illuminate the transformative potential of experiential learning paradigms.

Aim :

To explore the historical development, current practices, and future potentials of experiential learning within architectural education.

Objectives :

1. To examine the historical roots of experiential learning in architectural education.

2. To investigate the theoretical frameworks and educational philosophies underpinning experiential learning in architectural studies.

Methodology :

A literature review methodology is used for the paper to explore the evolution and significance of experiential learning in architectural education.

Introduction :

Experiential learning has risen from the periphery of education to the foreground in the recent decade. What accounts for this shift in perspective? First, there has been a dramatic change in our conception of learning and how we perceive data. Second, in today's rapidly changing environment, there is an increased demand for flexibility and the capacity to leverage previous knowledge and experience in new and different ways. (Linda H. Lewis, 1994)

For over 35 years, research based on experiential learning, the theory has advocated for and contributed to this shift in perspective. Experiential learning theory draws on the work of prominent twentieth-century scholars who gave the experience a central role in their theories of human learning and development - notably John Dewey, Kurt Lewin, Jean Piaget, William James, Carl Jung, Paulo Freire, Carl Rogers, and others – to develop a dynamic, holistic model of the process of learning from experience and a multi-linear model of adult development. ELT is a dynamic view of learning based on a learning cycle driven by the resolution of



the dual dialectics of action/reflection and experience/abstraction. A holistic theory defines learning as the primary process of human adaptation involving the whole person. ELT is applicable not only in the formal education classroom but also in all areas of life. The process of learning from experience is ubiquitous, present in human activity everywhere all the time. The holistic nature of the learning process means that it operates at all levels of human society, from the individual to the group, to organizations and society as a whole. Research based on ELT has been conducted all around the world, supporting the cross-cultural applicability of the model. (Kolb, 1984)

Data Collection :

Inquiry-Based Learning (IBL) :

Inquiry-based learning is an instructional method developed during the 1960s but continues to characterize current interests in higher education. (Potter, 1964) In essence, it was developed in response to a perceived failure of more traditional forms of instruction, where students were required to simply memorize and reproduce instructional materials (Ackoff, 1974).

Sub Forms Of IBL :

Inquiry-based learning (IBL) includes active and experiential learning. Students' progress is measured by how well they develop experiential, critical thinking, and analytical skills rather than how much knowledge they have gained. The main feature of active learning is that students participate in solo or group tasks such as reading, writing, and discussion throughout the class. While the students carry out these activities, the professor facilitates them and receives immediate feedback (Bonwell, 1996).

Experiential Learning Theory By David Kolb

Kolb's experiential learning theory works on two levels: a four-stage cycle of learning and four separate learning styles. Much of Kolb's theory is concerned with the learner's internal cognitive processes. Kolb states that learning involves the

acquisition of abstract concepts that can be applied flexibly in a range of situations. In Kolb's theory, the impetus for the development of new concepts is provided by new experiences.

"Learning is the process whereby knowledge is created through the transformation of experience" (Kolb, 1984)

The Cycle Of Experiential Learning

ELT defines learning as 'the process whereby knowledge is created through the transformation of the experience. Knowledge results from the combination of grasping and transforming experience.' (Kolb, 1984)

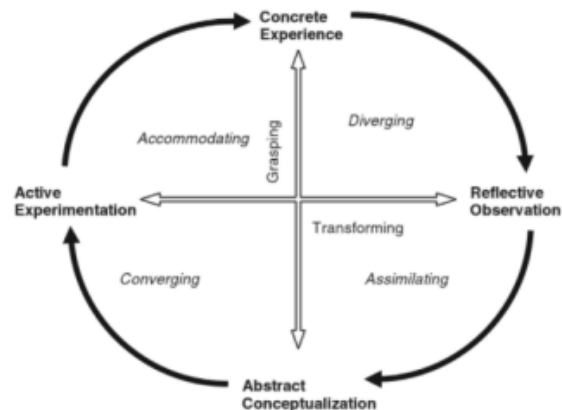


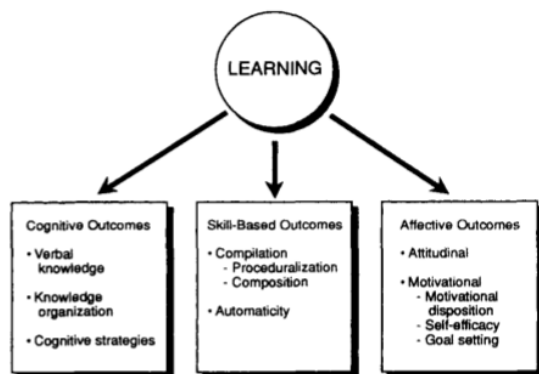
Figure 1: The Cycle of Experiential Learning (Kolb, 1984)

- 1. Concrete Experience** - a new experience or situation is encountered, or a reinterpretation of existing experience.
- 2. Reflective Observation of the New Experience** - of particular importance are any inconsistencies between experience and understanding.
- 3. Abstract Conceptualization** reflection gives rise to a new idea, or a modification of an existing abstract concept (the person has learned from their experience).
- 4. Active Experimentation** - the learner applies their idea(s) to the world around them to see what happens.



Result and Discussion :

Skill Based Learning And It's Outcomes



**Figure 2: Outcomes of Skill based learning
(Kurt Kraiger, 1993)**

Skills-based learning is where we teach an individual a specific set of skills. This allows an individual to achieve a positive outcome in each task. It mainly concerns the development of technical or motor skills. Characteristics of skill development include a goal orientation and a linking of behaviours in a sequentially and hierarchically organized manner. Traditionally, skill development has been evaluated by observing trainee performance in role plays (simulations at the end of training) or in actual job behaviours. Behavioural observation may be an appropriate evaluation tool, provided the assessment strategy is developed in concert with a theoretical conceptualization of skill development. Theories of skill development generally posit three definable stages: (a) initial skill acquisition, (b) skill compilation, and (c) skill automaticity. Initial skill acquisition involves the transition from knowledge that is declarative to knowledge that is procedural. Procedural knowledge enables the reproduction of trained behaviours. Compilation skills occur with continued practice beyond initial successes at reproducing trained behaviour. (Kurt Kraiger, 1993)

Conclusion :

Teaching architecture without teaching how the everyday environment works is like teaching medical students the art of healing without telling

them how the human body functions. You would not trust a medical doctor who does not know the human body. Knowledge of the everyday environment must legitimize our profession. (Habraken, 2006).

Active and experiential learning as concepts and instructional strategies appear to be two sides of the same coin underlying the inquiry-based learning method. While they differ in terminology they represent interactive learning mechanisms and share similar aims and qualities. They both aim to increase students' motivation and place emphasis on the exploration of attitudes and values. In both of them, less emphasis is placed on knowledge transmission but greater emphasis is placed on developing students' critical thinking abilities.

Linking assessment research and active and experiential learning as interactive learning mechanisms, one can argue that architecture students need to be involved in assessment processes that should be conducted objectively and systematically - not through casual interviews or observations that may only reveal what is already known. In this context, they learn about problems and potentials of existing environments and how they meet people's needs, enhance and celebrate their activities, and foster desired behaviors and attitudes.

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स्थापत्यकलेतून सामाजिक शाश्वतता आणि परवडणारे राहणीमान

१. श्री. सुधीर देशपांडे

एस एम ई एफ्स ब्रिक स्कूल ऑफ आर्किटेक्चर, पुणे

२. डॉ. मीरा शिरोळकर

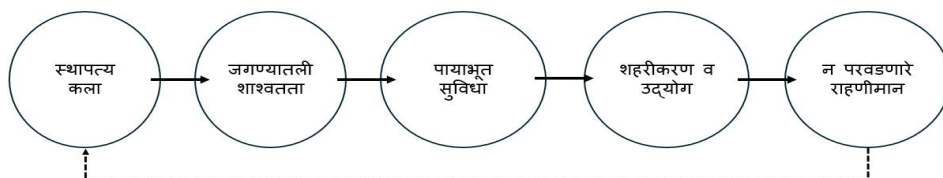
भानूबेन नानावटी कॉलेज ऑफ आर्किटेक्चर, पुणे

स्थापत्य कलेमुळे समाजात पायाभूत सुविधांचा विकास झाला. बदलत्या संदर्भासोबत ह्या स्थापत्य कले मधल्या संरचनांमध्ये बदल घडत गेले. आणि जगण्यातली शाश्वतता मिळवण्यासाठी झालेल्या पायाभूत सुविधांमधून परत शाश्वत जगण्याचाच शोध घ्यायची गरज आता भासू लागली आहे. हा शोध परत एकदा स्थापत्यकलेकडेच जातो. न परवडणारे राहणीमान ही सान्या जगात भेडसावणारी समस्या आहे. सामाजिक, आर्थिक, पर्यावरण, राजकीय धोरणांमधील बदलांचा परिणाम हा शहरी परिसरातल्या राहणीमानावर होत असतो. पुणे शहराची ओळख ही सांस्कृतिक, पेशनर लोकांचं शहर, त्यानंतर शैक्षणिक आणि आता आय टी शहर अशी बदलत गेली. जशी शहराची ओळख बदलली तशी शहरी विकासाची व्याख्याही बदलत गेली. आणि त्याचा परिपाक म्हणून येथील घराच्या किंमतीही उंचावत जात आहेत. पण परवडणाऱ्या किंमतीतले घर म्हणजे परवडणारे राहणीमान होईलच असे नाही. या तुलनेत परवडणारे सामाजिक वातावरण आणि सामाजिक शाश्वतता आजूबाजूला असणे आवश्यक असते. हा शोधनिबंध स्थापत्यकलेनुसार सामाजिक शाश्वततेमधील महत्वपूर्ण बाबींवर प्रकाशझोत टाकतो. हे संशोधन काही ठळकपणे प्रकाशित झालेल्या शोध साहित्यावर आधारलेले आहे. तसेच हे संशोधन गिडन्सच्या सामाजिक सिद्धांताशी असलेला संबंधही प्रस्थापित करते. हे संशोधन शहराशी साधर्म्य साधणारे स्थापत्य आणि प्रादेशिक संदर्भ, लोकघनतेचे विकेंद्रीकरण आणि राहणीमानानुसार गृहोपयोगी संवादी जागा असे सामाजिक शाश्वतता पूरक परिमाणांवर चर्चा करते. हा अभ्यास सामाजिक शाश्वतता आणि परवडणारे राहणीमान यांचा परस्पर पूरक संबंध स्थापत्य कलेतील संरचनेसोबत अधोरेखित करते.

महत्वाचे शब्द : सामाजिक, शाश्वतता, साधर्म्य, राहणीमान, स्थापत्यकला

१ परिचय :

आत्तापर्यंत सामाजिक शास्त्रांमध्ये समाजाच्या तीन महत्वाच्या गरजा सांगितलेल्या आहेत आणि त्या म्हणजे अन्न, वस्त्र आणि निवारा. निवारा ही गरज मानव निर्मित स्थापत्य कलेमधून भागवली गेली. आधी गुहा, कुटी, आजूबाजूला मिळणाऱ्या दगड विटांपासून बांधीव वास्तू आणि आता आर. सी. सी., स्टील, ग्री कास्ट आणि अनेक प्रकारच्या प्रणाली स्थापत्यकलेमध्ये आल्या. या स्थापत्य कलेमध्ये बांधकाम प्रणाली बरोबर वस्तूच्या संरचनेचाही खोलवर विचार करण्यात आला. मानवाच्या निवार्यामध्ये एक प्रकारची शाश्वतता आणण्यासाठी सामाजिक, शैक्षणिक, सरकारी, दवाखाने, मंदिरे अशा अनेक प्रकारच्या वास्तू बांधल्या गेल्या. या पायाभूत सुविधांचा विकास झाल्याने शहरीकरण आणि उद्योगांना विशेष महत्व प्राप्त झाले. अर्थकारणासही चालना मिळून विशेषतः शहरांमध्ये लोकसंख्येचे केंद्रीकरण झाले. आणि या लोकसंख्येचा शहरीकरणावर आता बोजा वाटू लागला आहे. त्यामुळे महागाई आणि न परवडणारे राहणीमान ह्यासारखे न मोजता येणारे पण लोकांच्या रोजच्या जगण्यावर मुलभूत परिणाम करणारे घटक उदयाला आले. माणसाचे महिना दरडोई आर्थिक उत्पन्न आणि त्याचा राहण्यावर होणारा खर्च याचे गुणोत्तर विविध देशांनी मांडलेले आहे (Organization for Economic Co-operation and Development, 2021). अमेरिका, कॅनडा, इंग्लंड, ऑस्ट्रेलिया यासारख्या देशांनी राहणी खर्चाचे प्रमाण हे जास्तीत जास्त महिना दरडोई आर्थिक उत्पन्नाच्या ३० टक्के सांगितलेले आहे. भारतातही हे गुणोत्तर याच प्रमाणात सांगितलेले आहे. हे प्रमाण ओलांडल्यास राहणीमान हे परवडणारे राहात नाही. आणि राहण्यातली शाश्वतेवरही याचा दूरगामी परिणाम होतो. त्यामुळे आकृती १ मध्ये दाखवल्याप्रमाणे जगण्यातल्या शाश्वतता



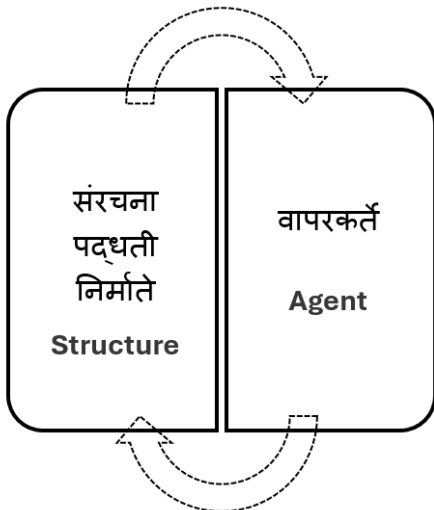
आकृती १ शाश्वततेचा उगम आणि शोध (स्रोत : लेखक)



मिळवण्यासाठी झालेल्या पायाभूत सुविधांमधून परत शाश्वत जगण्याचाच शोध घ्यायची गरज आता भासू लागली आहे. हा शोध परत एकदा स्थापत्यकलेकडेच जातो.

२. महत्व आणि पार्श्वभूमी :

स्थापत्य कलेचा परीघ हा बराच मोठा असून तो माणसाच्या जगण्यात मुलभूत फरक घडवून आणतो. काळाच्या ओघाप्रमाणे स्थापत्य कलेमध्येही बदल होत गेले. आणि बदल पुढेही होत राहणार. त्यामुळे शाश्वतता आणि स्थापत्यकला या एकाच नाण्याच्या दोन बाजू आहेत. गिडन्स (१९८४) च्या मते, आकृती २ मध्ये दाखवल्याप्रमाणे संरचना म्हणजे सामाजिक पुनरावर्तित परंपरा, प्रणाली आणि विचार पद्धती आहेत ज्या सतत प्रणालीप्रमाणे चालत असतात. एजंट हे माध्यम आहे ज्याद्वारे संरचना पुन्हा सुधारित किंवा पुनर्विकास केला जाऊ शकतो (Whittington, 2015). उदा. वापरकर्ते किंवा समाज विचारांच्या कोंडीत राहतो, म्हणजे परवडणाऱ्या गृहनिर्माण प्रकल्पांमध्ये केवळ लहान, मर्यादित जागा शक्य आहे, आणि विकासक आणि डिझाइनर देखील त्याची रचना करताना असाच विचार करतात. परंतु एजंट, म्हणजे सरकारी आणि खाजगी संस्था ही विचार प्रक्रिया बदलण्यासाठी प्रयत्न करू शकतात. एक नवीन रचना विकसित करून वापरकर्त्यासाठी एक सुव्यवस्थित आणि सुव्यवस्थित जागा प्रदान करू शकतात आणि ती भविष्यात शाश्वत होऊ शकते. गिडन्स (१९८४) यांनी एक द्वैत सांगितले जे एजंट किंवा सामाजिक संरचनांना प्राधान्य देते - संरचना सिद्धांताद्वारे पलीकडे जाण्याचा प्रयत्न केला जातो. मानव रचना तयार करतात, परंतु ते मानवी वर्तनास अनुमती देतात आणि प्रतिबंधित करतात. त्यामुळे स्थापत्य कलेतील संरचना ही शाश्वतता प्रदान करू शकते.



आकृती २ निर्माते आणि वापरकर्ते (स्रोत: गिडन्स, १९८४)

२.१ सर्व समावेशक शाश्वतता

स्थापत्य कलेमध्ये परवडणाऱ्या राहणीमानासाठी आणि सर्व समावेशक शाश्वततेसाठी एकात्मिक, टिकाऊ संरचना धोरण आवश्यक असते. शाश्वतता ही सामाजिक-आर्थिक, पर्यावरणीय, कार्यात्मक इत्यादी संबंधित घटकांशी जोडलेली असते आणि ती केवळ हरित प्रकल्पांपुरती मर्यादित राहू शकत नाही. मजल्यावरील क्षेत्र समायोजन आणि मर्यादित जागेच्या डिझाइनच्या व्यतिरिक्त गृहनिर्माण परवडण्याकरिता टिकाऊ धोरणांचा विचार करणे अत्यावश्यक आहे. सर्वसमावेशकपणे टिकाऊ होण्यासाठी, एखाद्या व्यक्तीने आर्थिक, सामाजिक आणि पर्यावरणीय स्तरावर स्वतःचे समर्थन करण्यास सक्षम असणे आवश्यक आहे (Ibem & Aduwo, 2015). परवडणारया राहणीमानासाठी परवडणारे सामाजिक वातावरण आणि सामाजिक शाश्वतता आजूबाजूला असणे आवश्यक असते. हा शोधनिबंध सामाजिक शाश्वततेमधील महत्वपूर्ण बाबींवर प्रकाशझोत टाकतो.

२.३ संदर्भ

परवडणाऱ्या घरांची उपलब्धता ही साऱ्या जगात भेडसावणारी समस्या आहे. सामाजिक, आर्थिक, पर्यावरण, राजकीय धोरणांमधील बदलांचा परिणाम हा शहरी परिसरातल्या घरांच्या किमतीवर असतो. पुणे शहराची ओळख ही सांस्कृतिक, पेन्शनर लोकांचं शहर, त्यानंतर शैक्षणिक आणि आता आय टी शहर अशी बदलत गेली. जशी शहराची ओळख बदलली तशी विकासाची व्याख्याही बदलत गेली. आणि त्याचा परिपाक म्हणून येथील घराच्या किमतीही उंचावत जात आहेत. पण परवडणाऱ्या किमतीतले घर म्हणजे परवडणारे राहणीमान होईलच असे नाही. त्या किमतीला परवडणारे सामाजिक वातावरण आणि सामाजिक शाश्वतता आजूबाजूला असणे आवश्यक असते. म्हणून हा शोधनिबंध सामाजिक शाश्वततेमधील महत्वपूर्ण बाबींवर प्रकाशझोत टाकतो.

३. संशोधन पद्धत :

या संशोधनाचे उद्दिष्ट हे स्थापत्य कलेतील सामाजिक शाश्वतता ही संकल्पना परवडणारे राहणीमान साध्य करण्यासाठी कशी पूरक आहे हे तपासणे आहे. या अभ्यासाची सुरुवात हे स्थापत्य शास्त्रातील आणि सामाजिक शाश्वतता यांचा परस्पर पूरक संबंध विदीत करते. हे संशोधन काही ठळकपणे प्रकाशित झालेल्या शोध साहित्यावर आधारलेले आहे. तसेच ह्या अभ्यासात काही सामाजिक सिद्धांतांचा ही सामाजिक शाश्वततेच्या दृष्टीने अभ्यास मांडला आहे. पुढील भागात सामाजिक शाश्वततेची विविध अंगे



विश्लेषणात्मक रेखाचित्रांनी अधिक तपशीलवार वर्णिली आहेत.

४. सामाजिक शाश्वतता

शाब्दिक आणि व्हिज्युअल संभाषणा द्वारे त्यांच्या अतिपरिचित क्षेत्राशी संलग्न होण्याची सर्व लोकांची सामाजिक इच्छा असते. सामाजिक इच्छा पूर्ण करण्यासाठी केलेले पूरक स्थापत्य आणि संरचना ही सामाजिक दृष्ट्या शाश्वत ठरते. परिणामी, सामाजिक आरोग्याच्या समावेशामुळे संरचनेचा अवलंब सकारात्मकरित्या प्रभावित झाला आहे (Bordignon 1998; Salama 2006; Sidawi 2008). सामाजिकदृष्ट्या शाश्वत राहणीमाना मध्ये जागा, कार्य आणि ओळख यांच्या रचनेनुसार लोकांच्या सांस्कृतिक गरजा आणि जीवनशैलीचा समावेश असतो. हे सामाजिक संरचनेमधील सौंदर्यशास्त्र, सुरक्षितता, पूर्णतेची भावना इ. गुणात्मक बदल वापरकर्त्यांच्या राहणीमानात घडवून आणतात (फ्रीडमन २००५). सामाजिक शाश्वततेची मजबूत व्याख्या समानता आणि लोकशाहीच्या आवश्यक मूल्यांवर केंद्रित असणे आवश्यक असते. कोनिंग (२००२) च्या मते, सामाजिक शाश्वततेची व्याख्या “सामाजिकदृष्ट्या न्याय्य, समान, मुक्त आणि सर्वांसाठी सन्माननीय परवडणारे जीवनमान किंवा उपजीविका असलेला समाज अशी आहे.” दर्जेदार संवादी जागा आपुलकीची भावना निर्माण करतात आणि शहरी भागातील रहिवाशांच्या तणावाची पातळी करतात. बांधलेली जागा आणि मोकळी जागा सामाजिक संवाद सुलभ करतात. कार्योपयोगी आणि गृहोपयोगी जागा आणि त्या संबंधित असलेली भौतिक रचना हे इमारतीचे निवास्थानापासून ते सोसायटी आवारातील प्रमुख सामाजिक घटक आहेत (हिलियर आणि हॅन्सन १९८४).

४.१ प्रादेशिक संदर्भ

घरांची रचना ही स्थानिक वास्तुकला आणि संस्कृतीची अभिव्यक्ती असते. व्यक्ती त्यांची घरे एका विशिष्ट प्रदेशाशी जोडतात. व्यक्तिनिष्ठपणे, विचारशील ओळख प्रादेशिक चेतना वाढवते. प्रादेशिक संदर्भ हा इमारतीच्या वैशिष्ट्यामध्ये व्यक्त केला जातो. ज्यामध्ये आकृती ३ मध्ये दाखवल्याप्रमाणे प्रादेशिक वास्तुशिल्प शैली, फॉर्म, दर्शनी वैशिष्ट्ये, रंग योजना आणि स्थानिक वैशिष्ट्ये समाविष्ट असतात. ही प्रादेशिकप्रचूर शहर रचना, मानवी मानसशास्त्र, देखावा, मानववंशशास्त्र, दृश्य अभिव्यक्ती आणि समाजशास्त्र यांच्यातील संबंधांना प्रस्थापित करते (Ettehad et al., 2014). कार्यात्मक रचना आणि स्थानिक संदर्भ आणि संस्कृतीचा आदर करून सामाजिक शाश्वतता प्राप्त केली जाऊ शकते (Karuppannan Sivam, 2014). सामाजिक-सांस्कृतिक घटक शहराच्या दृष्ट्याचे आकर्षक गुण वाढवतात आणि त्याचे वैशिष्ट्य टिकवून ठेवतात.. संरचना प्रक्रिया ही जीवनशैली, संस्कृती आणि लोकांच्या त्यांच्या सभोवतालच्या मनोवैज्ञानिक संबंधांशी आंतरिकपणे जोडलेली असते. रहिवाशांनी फक्त राहण्याचे ठिकाण म्हणून न पाहता ती वास्तू ‘आपलं घर’ म्हणून पाहणं आवश्यक असते (Sharma, 2018). यामुळे खाजगी विकासकही परवडणाऱ्या घरांच्या प्रकल्प हाताळताना लोकांच्या जीवन शैलीशी तसेच शहराच्या स्थापत्याशी साधर्म्य साधणारे घटक अंतर्भूत घ्यायला उद्युक्त होऊ शकतील. आपण या निवासाचे एक घटक आहोत ही आपलेपणाची भावना तो प्रकल्प चांगल्या स्थितीत ठेवण्याची प्रेरणा तेथील रहिवाशांना देते. यामुळे ही देखभाल आणि दुरुस्ती खर्च कमी होण्यास मदत होते (Kenny, 1994).



आकृती ३ प्रादेशिक संदर्भ : पुणे शहर
(स्रोत: लेखक)



४.२ लोक घनतेचे केन्द्रीकरण आणि विकेंद्रीकरण :

सामाजिक शाश्वततेसाठी घराची योग्य घनता हे आणखी एक परिमाण आहे. तसेच ही घनता परवडणार्या राहणीमानासाठी सहाय्यक ठरते. घनता ही फक्त लोकांच्या संख्येबद्दल संबंधित नसून यांच्यातील परस्पर संबंधित उपलब्ध असलेली वापरण्यायोग्य जागा असलेल्या आणि लोकांची संख्या ह्या घटकांवरही ठरते. आकृती ४ मध्ये दाखवल्याप्रमाणे संकुचित जागेत उच्च लोक घनतेचे केन्द्रीकरण ही चिंतेची बाब आहे. अशा पद्धतीमुळे, परवडणाऱ्या राहणीमानाचा दर्जाही खूप प्रभावित होतो (Ismail et al., 2015). सदनिकेमध्ये प्रत्येकी पाच ही लोकांची सर्वसाधारण घनता ठरवण्यात आली आहे. इमारतीमध्ये लागणाऱ्या सुविधाही ह्याच घनतेमध्ये संरचित आणि पूर्तता केलेल्या असतात (UDCPR, 2020). म्हणून घनतेनुसार संरचना केलेली खुल्या किंवा निम्न खुल्या जागा ह्या लोकांच्या राहणीमानात गुणवत्ता आणतात. ह्या अशा जागांमध्ये वापरकर्ते हे त्यांच्या दुय्यम गरजा भागवू शकतात. पुण्यामध्ये वाडा, चाळी, अपार्टमेंट, गेटेड कम्युनिटी, टाउनशिप अशा विविध प्रकारांची निवास व्यवस्था आहेत. ह्या सर्व प्रकारांमध्ये निवास आणि निवास परिसर पातळीवर स्थापत्याकलेद्वारे घनतेचे योग्य विकेंद्रीकरण हे सामाजिक शाश्वततेसाठी पूरक ठरू शकतात.



आकृती ४ संकुचित कॉरिडोर
(स्रोत: म्हाडा, २०२३)

४.३ संवादी जागा :

स्थापत्याकले मध्ये संवादी जागांना विशेष महत्त्व आहे. गृहनिर्माण निवासस्थानांना सुद्धा अशा संवादी जागा आणि अनौपचारिक दळणवळणाच्या जागांची आवश्यकता असते. ही आवश्यकता अपार्टमेंट स्तरावर आणि सदनिका स्तरावरही गरजेची असते. पुण्यातील घरांच्या प्रकारांमध्ये जसे की वाडा, चाळी किंवा अंगण-देणारं अपार्टमेंट्स संवादाची भावना निर्माण करतात. आतील आणि बाहेरील संवादी जागा आणि दळणवळणाची जागा बांधीव आणि खुल्या जागांमध्ये सुसंवाद आणि जोडणी निर्माण करतात. निवासी खुल्या जागा निवासी वातावरणात महत्त्वाची भूमिका बजावतात. ह्या स्थापत्यकलेच्या रचना बांधीव निवास, आकार, योजना, आणि त्यामध्ये योजलेली कार्ये ह्या सगळ्यांमध्ये एक सुसंगत संबंध निर्माण करतात (Trancik 1986). म्हणून, घटक आवडतात समोरासमोर असणाऱ्या बाल्कनी, मध्यवर्ती आंगण/अंगण, आणि मधले हे रहिवाशांमध्ये अंतरिम संप्रेषण प्रस्थापित करण्यासाठी महत्त्वपूर्ण असतात. इमारतीमधील मध्यवर्ती अंगण (courtyard) रहिवाशांना त्यांच्या अपार्टमेंटमध्ये प्रवेश करण्यासाठी आणि बांधीव व न बांधलेल्या जागेच्या दरम्यान एक उत्तम संवादी जागा प्रदान करते (Wood, 2017). खेळ खेळणे, वर्तमानपत्रे वाचणे, इंटरनेटवर बोलणे आणि हलके घरकाम करणे यासारख्या दुय्यम क्रियाकल्पानेसाठी घरांच्या निवासस्थानातील संवादी जागा आणि दळणवळण क्षेत्रे महत्त्वपूर्ण असतात. हे घटक खर्च न वाढवता रहिवाशांचे जीवनमान सुधारण्यास मदत करतात (Kote Deshpande, 2020). परिणामी या स्थापत्य कलेद्वारे संरचित केलेल्या संवादी जागा सामाजिक शाश्वततेला अनुकूल ठरतात.

५. निष्कर्ष :

सामाजिक शाश्वतता आणि परवडणारे राहणीमान हे स्थापत्य कलेद्वारे प्रादेशिक संदर्भ, लोक घनतेचे केन्द्रीकरण आणि विकेंद्रीकरण आणि संवादी जागा या घटकांना संबोधित करून साध्य केले जाऊ शकते. स्थापत्य संरचना ही वापरकर्त्यांच्या रोजच्या जगण्यात गुणात्मक बदल घडवून आणू शकतात. वापरकर्त्यांच्या सवयी या आजूबाजूच्या स्थापत्य संरचनेमुळे प्रभावित होत असतात. वापरकर्त्यांच्या प्राथमिक आणि दुय्यम गरजा जर त्यांच्या निवासस्थानी भागत नसतील तर या गरजा भागवण्यासाठी त्यांना अजून खर्च करावा लागतो. त्यामुळे परवडणारे राहणीमान हे सामाजिक शाश्वततेसाठी स्थापत्य कलेद्वारे जोडले गेलेले आहे. स्थापत्यकला ही माणसाला आणि समाजाला समृद्ध करत असते. माणसाच्या मुलभूत जीवनामध्ये



परस्पर संवादी बाल्कनी रचना

अंगणप्रचूर जागा (courtyard)



अंतर्गत कॉरीडोर खुल्या गुणवत्तात्मक जागा
आकृती ५ निवास परिसरातील संवादी जागा (स्रोत: लेखक)

बदलत्या संदर्भानुसार बदल घडवून आणणे हे स्थापतीचे उद्दिष्ट असायला हवे.

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गोष्टवारा :

कुठल्याही कलाकृती मध्ये तिच्या निर्मिती मागे एक विचार निश्चितच असतो. नाटक हा कलाविष्कार असा आहे ज्यामध्ये हा विचार मांडण्याची ताकद सर्वाधिक आहे. विविध पद्धतीने प्रेक्षकांबरोबर संवाद साधत त्यातली संहिता पुढे जाते. संवाद, कलाकरांचे भाव, प्रकाशयोजना, नेपथ्य या सर्वांनी मिळून लेखकाचा विचार प्रेक्षकांपर्यंत पोहचवला जातो. महाराष्ट्रातील कोल्हापूर मधील प्रत्यय नाट्य संस्था, त्यांनी सादर केलेली अनेक नाट्य कलाविष्कार हे एक विचार घेऊन येतात आणि दृश्य स्वरूपात व्यक्त होतात. ही एक नाट्य चळवळ आहे जी वेगवेगळ्या पद्धतीने समाज उपयोगी संवेदनशील विचार प्रेक्षकांपर्यंत प्रोसिनियम थिएटर मार्फत पोहोचवण्याचा प्रयत्न करतात. यामध्ये नेपथ्य रचना ही खूपच प्रभावकारी आणि सूचक पद्धतीने प्रत्येक नाटकांमध्ये वापरण्यात आलेली आहे. त्यामध्ये काही महत्वाच्या निर्मिती आणि त्यातील लक्षात राहिलेल्या नेपथ्यरचना यांचं विवेचन प्रस्तुत लेखामध्ये करण्याचा प्रयत्न केलेला आहे. यामध्ये स्टेज वरती दिसणारा मुख्य भाग त्यातून प्रेक्षकांना काय दाखवायचे आहे, काय दाखवायचे नाही, काय सूचक पद्धतीने मांडायचे आहे, कुठल्या रंग संगतीने मांडायचे आहे याचा विचार काळजीपूर्वक केलेला आढळतो. यातून निर्माण होणार्या अवकाश निर्मितीचा सांगोपांग विचार इथं मांडायचा हा प्रयत्न. यासाठी काही जुने दस्तऐवज, छायाचित्र, दृश्यस्वरूपाचा अभ्यास, मुलाखती, इत्यादी माध्यमांचा वापर केला आहे.

महत्वाचे शब्द : नेपथ्य रचना, अवकाश निर्मिती, प्रत्यय नाट्य चळवळ, मराठी रंगभूमि, डावा विचार आणि कलाविष्कार

पार्श्वभूमी :

प्रत्यय या नाट्यसंस्थेची स्थापना ४ सप्टेंबर १९८१ या दिवशी काही डाव्या विचाराने भरवलेले तरुण एकत्र येऊन झाली. आपल्या आवडत्या नाटक ह्या कलाविष्कारात काही

प्रायोगिक पद्धतीने राजकीय विचार नाटकातून दाखवण्याच्या दृष्टीने प्रत्यय या नाट्य संस्थेची स्थापना झाली. १९६० नंतरचा भारतीय तरुणांचा काळ हा डाव्या विचाराने भारावून टाकणारा काळ होता. वेगवेगळे लेखक वेगवेगळ्या मानवी जाणीव घेऊन येत. उदाहरणार्थ बादल सरकार, विजय तेंडुलकर, गोकुळ देशपांडे, हबीब तनवीर आणि असे अनेक दिग्गज त्या काळात लिखाण आणि नाटक यातून राजकीय विचार मांडू लागले. त्यातून वेगवेगळ्या नाट्य चळवळी उभ्या राहत होत्या. त्याच्या इतिहासात जास्त खोलावर न जाता काही इतर महत्वाच्या गोष्टींची नोंद करणं आवश्यक आहे. त्याच काळात लिटिल मॅगझीनची एक चळवळ उभी राहिली त्यात काहीतरी कमी आहे या विचाराने नाट्य या विषयाकडे एकूण फक्त करमणूक म्हणून न बघता त्या कलाविष्काराकड राजकीय दृष्टिकोनाने बघण्याचा प्रयत्न होऊ लागला.

कोल्हापूरच्या काही तरुण मुलांनी एकत्र येऊन प्रत्यय ह्या नाट्यसंस्थेची सुरुवात केली. यामध्ये काही लेखक, कवी, चित्रकार अशी मंडळी होती. त्यांनी आधुनिकता वाद व त्याची नाटकाच्या अवकाशाशी असलेली नाळ, मग नाटक करताना त्याची भाषा, त्यातील रंग, प्रकाश याचा नाटकाच्या दृश्यात्मक परिभाषेवर होणारा परिणाम या गोष्टी महत्वाच्या म्हणून त्याकडे प्रायोगिक पद्धतीने कालात्मकतेनं बघण्याचा प्रयत्न केला. प्रत्ययने मराठी नाट्य चळवळीत एक महत्वाचे केलेले काम म्हणजे जागतिक मापदंड असलेली अनेक नाटकं मराठीत सादरीकरण करण्यामध्ये त्यांचे मोठे योगदान मानले जाते (लोकमत, २०२२, Times of India, 2018). त्यातली महत्वाची उदाहरणे म्हणजे राशोमान, किंग लियर, दुशिंगराव आणि त्याचा माणूस, एका राजकीय कैद्याचा अपघाती मृत्यू, घोडा, क्राईम अँड पॅनिशमेंट, कोपन हेगन, आईन्स्टाईन आणि इतर काही. तसेच प्रत्ययने जी काही महत्वाची मराठी नाटकं सादर केली त्यामध्ये वाटा पळवाटा, उध्वस्त धर्मशाळा, उत्तर रामचरीत इत्यादी अतिशय उल्लेखनीय अशा निर्मिती म्हणता



येतील या सगळ्या नाटकांच्या निवडी मागे एक राजकीय विचार होता आणि अजूनही आहे (pratyay.in).

नाटक हे केवळ करमणुकीचे साधन नाही त्याचा विचार व त्याची मांडणीही तेवढीच महत्वाची आहे. नाटकातलं नाट्य महत्वाचंच पण त्याचबरोबरच ते मांडताना, त्यातला अवकाश समजून घेऊन, तो तितक्याच ताकदीने मांडण्याचा प्रयत्न हा नेपथ्यरचनेना केला. दुर्दैवाने प्रत्ययने सादर केलेल्या सर्व जुन्या नाटकांचे खूप दस्तैवजीकरण न झाल्याने सर्व छायाचित्रं मिळावण हे शक्य झालं नाही. पण काही निवडक नेपथ्यरचनांची उदाहरणे छायाचित्रं स्वरूपात या लेखात प्रस्तुत केली आहेत. अर्थातच प्रत्यक्ष कलाकृतीचा आस्वाद घेणं आणि दुमितीय चित्रं यामध्ये अनुभव आणि अवकाशनिर्मिती करण्याचं, आणि त्या कलेच्या अनुभूतीचा फरक आहेच. ह्या मर्यादा लक्षात घेऊनच हा लेख लिहिण्याचा हा एक प्रयत्न याकडे या मर्यादा लक्षात घेऊनच बघावे.

विचार आणि अवकाशनिर्मिती : नेपथ्यरचनेची लक्षणीय उदाहरणे

नाटकाचं प्रकटीकरण ज्या दृश्य स्वरूपातून प्रकषिने दिसते, त्याचा विचार ज्यामाधून लोकांपर्यंत पोहोचतो ते म्हणजे नाटकाची स्टेज अरेंजमेंट अथवा नेपथ्यरचना. ही जरी तात्पुरती असली तरी सुद्धा त्यातून अवकाश निर्मिती करण्यामध्ये त्याची महत्वाची मदत होते. त्या रचनेतून नाटकाची कथा, विचार, त्यातील विविध पात्रं उलगडत जातात आणि ते नाटक त्याची संहिता प्रेक्षकांपर्यंत पोहोचते. प्रत्यय निर्मित अशा काही महत्वाच्या नाटकांविषयी आपण या लेखांमध्ये बोलूया.

पहिले नाटक म्हणजे राशोमान हे एक जपानी भाषेतील क्लासिक मानले जाते. अकिरा कुरोसावा या जागतिक ख्यातीच्या दिग्दर्शकाने यावर आधारित अप्रतिम असा सिनेमा बनवला आहे. या नाटकाचा गाभा मनुष्य स्वभाव व त्यातील द्वंद्व या भोवती फिरत राहतो. राशोमान याचा अर्थ डिस्प्युट प्रत्येक गोष्टीला एक असं सत्य असतं आणि नसतंही. सांगणारा आणि पाहणारा याच्या दृष्टीकोनाने ते बदलत जातं. हे नाटक सादर करताना नेपथ्यकार अनिल सडोलीकर यांनी एका बाजूला एक पडीक कमान उभी केली होती ज्यामध्ये सगळं नाट्य घडते. मध्यभागी असलेला एक लाकडी ओंडका जिथे महत्वाचा प्रसंग, म्हणजे त्या नाटकांमधला खून घडतो. खास नेपथ्य म्हणून एवढेच पण ती कमान, त्याचं अपूर्ण असणं, त्यावर पडणारा प्रकाश या सगळ्यांचं मिश्रण नाटकाला वेगळ्या उंचीवर घेऊन जाते. त्याचबरोबर बाहेर न थांबणाऱ्या पावसाचा आवाज, अंधुक अंबर रंगाचा प्रकाश, आणि त्या प्रकाशात व अर्धवट

कमानी खाली चार लोक आपापली कथा सांगतात. ती अर्धवट कमान त्या प्रत्येकाच्या मनाची मनोवस्था प्रकट करते. तो मध्यभागी असलेला ओंडका जंगलाचा, तर एका अवजड पडद्याआड सगळं नाट्य घडतं पण खरं काय घडतं हे कुणालाच काही कळत नाही. अश्या कमीतकमी, सूचक नेपथ्यानं अवकाश निर्मिती अतिशय ताकदीनं इथं केली जाते. जीचं दृश्यस्वरूप अधिक गंभीर, खोलवर नेणारं, आणि माणसाच्या अंतरंगाचे अनेक पदर उलगडण्याचे प्रयत्न करते.

दुसरं नाटक राजा लियर, ज्याचं उदाहरण देणं खूप आवश्यक आहे. विल्यम शेक्सपियर लिखित विं. दा. करंदीकर रूपांतरित हे फक्त इंग्रजीतील नाही तर मराठी भाषेतील सुद्धा एक मैलाचा दगड असं नाटक आहे. हे नाटक सादर करण्याचे आव्हान प्रत्यय ने स्वीकारले. ह्या सादरीकरणामध्ये अथक कष्ट तर होतच, पण त्याचबरोबर नाटकातले विं. दा. करंदीकरांचे डावे विचार समजून ते मांडताना किती मांडणं आणि किती मांडू नये ही कसरत, दिग्दर्शक डॉक्टर शरद भुताडिया यांनी केली. नाटकाचा अवकाश दोन अंकात बसवताना अचूकपणे नेमके प्रसंग डॉक्टरांनी नाटकात घेतले आहेत त्यामुळे ते नाटक आटोक्यातले व सादरीकरण करता येण्याजोगे झालं. नाटकाचे नेपथ्यकार व प्रकाशयोजनाकार अनिल सडोलीकर व भूषण खेबूडकर यांचा या सादरीकरणामध्ये मोलाचा वाटा होता. एक तर त्यामध्ये शेक्सपियर पद्धतीचा बाज आणणं तसंच त्या नाटकाची लय, त्यातली शोकांतिका, त्यातले चढ उतार, त्यातली भयानकता, आणि उद्विग्नता, नेपथ्यातून उतरवण हे कमालीचं अवघड काम होतं अतिशय आव्हान कारक होतं. त्याची रंगसंगती, दगडीपणा, प्रकाश योजना ही बेफाम होती. लियरच्या आयुष्यात होत जाणारे नाट्यमय प्रसंग, त्याचं निसर्गाशी असलेलं नातं जसं नाटकातून येतं तसंच ते विं. दां. च्या संवादातूनही येतं. ते अजून ताकदीनं पुढे आणण्यासाठी नरहर कुलकर्णी यांनी दिलेलं संगीत व प्रकाश योजना तेवढेच महत्वाचे होते. या सगळ्यांचा एकूण परिणाम म्हणून किंग लियर या नाटकाला विजय तेंडुलकरांनी मराठीतील एक मैलाचा दगड असे म्हटलं आहे. कमीत कमी नेपाथ्यसामग्री, वेगवेगळ्या उंचीचे लाकडी चौथरे, गंभीरता आणि आर्तता वाढवणारे गडद रंग हे या नाटकाच्या नेपथ्याचे वैशिष्ट्य. याशिवाय ह्या नाटकाची संहिता प्रेक्षकांपर्यंत पोहोचवणं कठीणच म्हणता येईल (पुण्यातील प्रत्यय नाट्यप्रयोग २०१६).

असंच एक मनात घर करून राहणारं नाटक म्हणजे सत्यशोधक. गो. पु. देशपांडे लिखित, महात्मा ज्योतिबा फुले यांच्यावर, त्यांच्या कर्तृत्वावर व शिक्षणातील कामगिरीवर भाष्य करणारे हे नाटक. या नाटकातून फुले एक व्यक्ती



म्हणून न राहता एक विचार म्हणून जास्त लक्षात राहतात. हा माणुसकीचा, सर्वसमावेशक, विचार या नाटकाच्या संहितेचा मध्यवर्ती विषय आहे. दिग्दर्शक डॉक्टर शरद भुताडिया,

नेपथ्य प्रकाश योजना अनिल सडोलीकर व भूषण खेबुडकर यांनी याच्या नेपथ्यामध्ये एक क्लिष्ट असा प्रयोग केला होता.

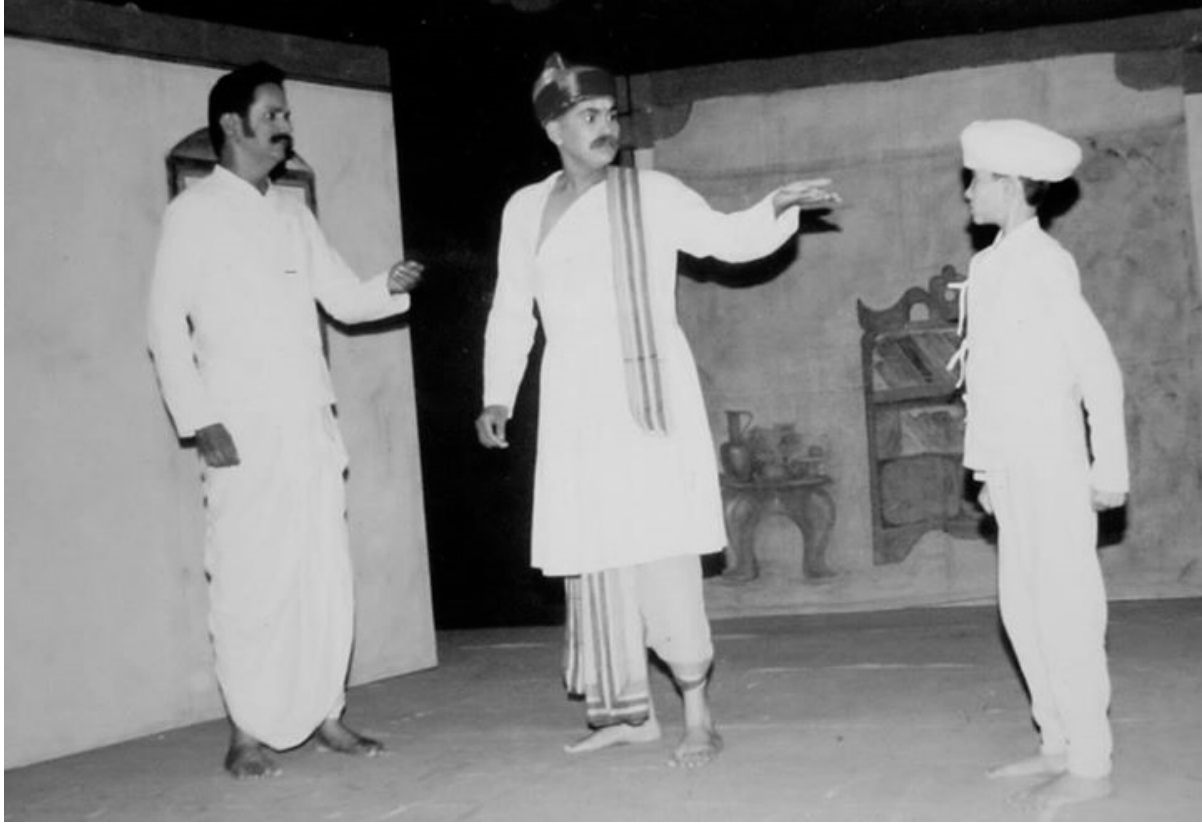


Figure 1 सत्यशोधक मधील एक दृश्य आणि नेपथ्य

शोधक मधील एक दृश्य आणि नेपथ्य

फुलेंचा ऐतिहासिक काळ उभा करण्यासाठी, जमिनीच्या जवळ जाणारा असा मातकट रंग आणण्यासाठी नेपथ्याच्या पार्श्वभूमीला किल्लानाचा वापर करण्यात आला आणि आवश्यक सीननुसार त्या किल्लानावर वेगवेगळी चित्रे काढण्यात आली होती जी त्या प्रसंगाला जेवढ्यास तेवढा उभारा देतील. त्यातील ही चित्रे रिलिस्टिक न वाटता थोडी इंप्रेशनिझम कडे जाणारी पण प्रासंगिक अशी होती. त्यामुळे संपूर्ण नाटकाला एक वेगळी

उंची प्राप्त झाली कारण नेपथ्य स्टॅटिक न राहता या प्रसंगानुसार बदलत राहणाऱ्या चित्रांमुळे नाटकाबरोबर नेपथ्यही प्रवाही झालं होतं. असे अनेक प्रयोग प्रत्ययने प्रायोगिक नाट्य चळवळीमध्ये केले. क्राईमन अँड पॅनिशमेंट सारख्या रशियन क्लासिक मध्ये वापरण्यात आलेल्या मोठमोठे चौकोनी खांब आणि तुळ्या जे एक प्रकारचा औद्योगिकरणाचा परिणाम नेपथ्यावर झालेला प्रभाव दाखवतात. तसेच आर्किटेक्चरल ब्रुटालिटी ही सुद्धा त्या पात्रांच्या मनाच्या घालमेलीवर भाष्य करते.



Figure 2 : क्राईम अँड पॅनिशमेंट नाटकाचे सूचक नेपथ्य



तसंच कोपनहेगन सारखं वैज्ञानिक विचार आणि दोन शास्त्रज्ञांच्या संवादावर आधारित नाटक अतिशय सुंदर पद्धतीने उलगडत जातं. या नाटकाच्या सादरीकरणामध्ये विशेष लक्षात राहते ते याचं नेपथ्य. नेपथ्यकार अभय मणचेकर यांनी या नाटकाचा गाभा लक्षात घेता त्याची पार्श्वभूमी ही दुसरी महायुद्ध तसेच दोन शास्त्रज्ञांमधली काल्पनिक भेट अशी आहे हे लक्षात घेऊन नेपथ्यामध्ये सूचकता आणली. त्यामध्ये एक प्रकारची भीषणता आहेच, त्याचबरोबर एक प्रकारची गुढता, असंदिग्धताही आहे. सर्व रंग अगदी कपड्यांपासून ते नेपथ्यापर्यंत हे करड्या रंगाच्या छटांमध्ये आहेत. ही कल्पना नेपथ्यकाराला “राख” या कल्पनेतून सुचली. युद्धामुळे बेचिराख झालेली शहरं आणि उरलेली राख. संपूर्ण नाटक तीन शक्यतांना समोर आणतं

म्हणून करड्या रंगाच्या अनेक छटा तर नाटकाला ऐतिहासिक पार्श्वभूमी असल्याने एका टोन चा वापर केलेला दिसतो. नाटकाच्या कथेला आणि पात्रांना जास्ती उठाव मिळावा असाही विचार यामागे दिसतो. मध्येच एखादी लाल रंगाची छटा ही हाइसनबर्ग ची क्रांतिकारक भूमिका दर्शवतं, हे अतिशय सूचक तर आहेच तसेच ते कथेला पुरक असं आहे. नाटकाचे नेपथ्य, प्रकाशयोजना आणि पोशाख हे अभय मणचेकर यांनी केल्यामुळे दृश्यस्वरूपामध्ये अधिक कलात्मकता व एकसंधता आहे. प्रकाश, काळोख आणि त्यामधील सावल्यांचा न संपणारा अनिश्चिततेचा खेळ, असा कोलाहल आपल्या मनामध्ये नक्कीच हे नाटक निर्माण करते (पुण्यातील प्रत्यय नाट्यप्रयोग २०१७).

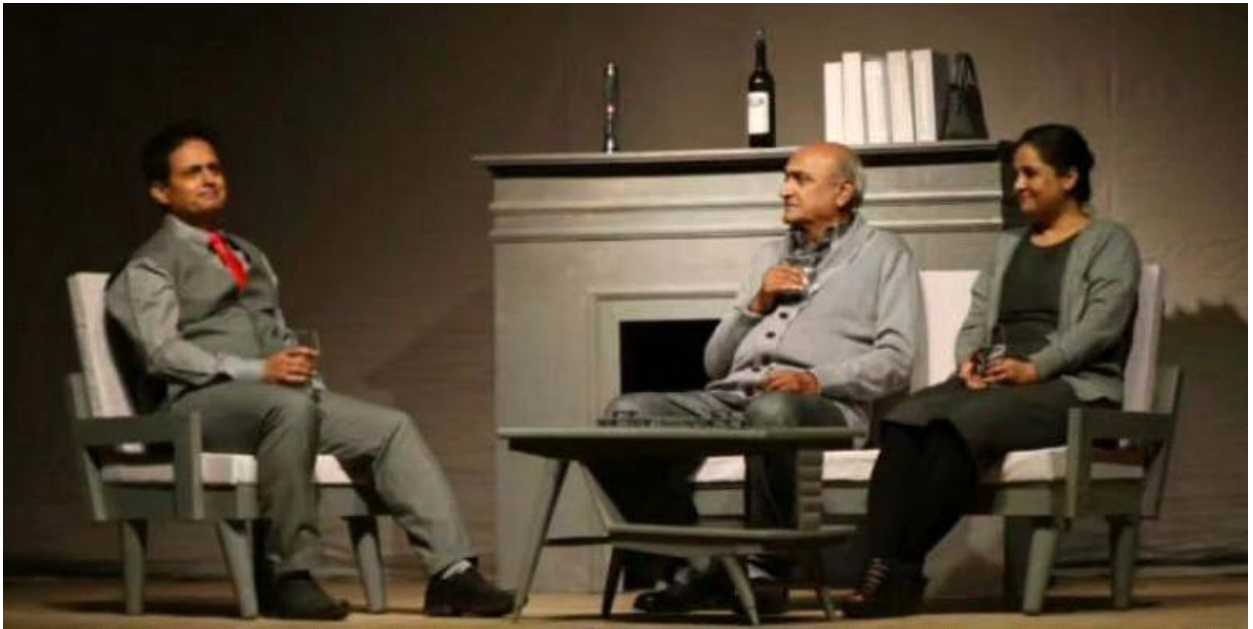


Figure 3 कोपनहेगन नाटकामधील एक दृश्य

तसंच बर्तोल ब्रेक लिखित ची. झीपींळश्रर रपव कळी चरप चरींळ ज्याचे मराठीत भाषांतर प्रत्यय चे चंद्रकांत कळोळी यांनी दुर्शिग राव आणि त्याचा माणूस अशा नावाने केले. या नाटकाचे दिग्दर्शन पवन खेबुडकर यांनी राज्य नाट्य स्पर्धेसाठी केले होते हे बसवताना दिग्दर्शकाने पूर्ण ब्रेख्तीयन पद्धतीचा वापर केला होता, त्यामध्ये गाणे गाणारे पात्रच गाणं म्हणत नेपथ्य हलवतात. त्यामुळे त्यातली गाणी, नाच व नेपथ्य हलवण्याचे काम हे एकमेकात मिसळूनजातं. नाटक, प्रेक्षक, नेपथ्य, एकमेकांशी संवाद साधत एकरूप होतात व संहिता पुढे जाते.

असे बरेच प्रयोग हे प्रत्ययने गेली अनेक वर्षे त्यांच्या नाट्यप्रयोगांमधून केली आहेत ज्यात नाटकांची संहिता ही वैचारिक दृष्ट्या महत्त्वाची आहेच पण त्याबरोबर त्याची

मांडणी तिचे स्वरूप हे देखील विषयानुरूप असेल याचा प्रयत्न केला आहे. कोल्हापूर सारख्या गावात सांस्कृतिक आणि सामाजिक पुरोगामी विचारेच्या परंपरेला पुढे घेऊन जाण्याचं काम प्रत्ययने निश्चितच केलं आहे.

निष्कर्ष

नाटक त्याचे दृश्य स्वरूप त्याच्यातून पोहोचवलं जाणारं त्याचं गाभा, हे सर्व विविध अंगाने प्रेक्षकांपर्यंत पोहोचवलं जातं. त्यातील नेपथ्य हे खूपच प्रभावकारी असं माध्यम आहे ज्याच्यातून अवकाश निर्मिती केली जाते जी महत्त्वाची अशी कला मानली जाते. विविध प्रकारच्या नाट्य अविष्कारांमध्ये नेपथ्य रचना ही वेगळा प्रभाव पाडून जाते आणि प्रेक्षकांच्या मनात खूप काळ कदाचित कायमच घर



करून राहते. प्रत्येक निर्माण केलेली नाट्यरचना सादर केलेली आतापर्यंतची प्रोसेनियम नाटकं ही कायमच लक्षात राहण्याजोगी आहेत ती वेगळा विचार मांडणारी प्रभावी माध्यम म्हणून नक्कीच पाहता येतील. यामधील नेपथ्यरचना रंगभूमीच्या इतिहासामध्ये नवीन प्रयोगांनी अधिकाधिक समृद्ध होत आहे. सौन्दर्यशास्त्राच्या सर्व प्रमाणाना लक्षात घेऊन काही वेळा नाकारून नवीन रूपकांचा वापर करत ही नेपथ्य रचना दृश्य स्वरूपाच्या कलाविष्कारात नाविन्य आणते आहे.

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४. प्रत्यय निर्मित नाट्य प्रस्तुती कोपनहेगन ८ सेप्टेंबर २०१७, बालगंधर्व रंगमंदिर पुणे.
५. <https://www.facebook.com/pratyaytheatre/>
६. <http://pratyay.in/>
७. निवडक छायाचित्र आणि नेपथ्य रचने मागील विचार समजून घेण्यासाठीची माहिती ही प्रत्ययच्या कलाकरांकडून मिळाली. त्यासाठी डॉक्टर शरद भूताडीया, किरण खेबुडकर, अनिल सडोलीकर, रसिया पडळकर, सागर तळाशीकर व अभय मणचेकर यांचे विशेष आभार.





व्हेनीस बिनाले - कला आणि वास्तुकलेचा अविष्कार

वैदेही लावंड

असोसिएट प्रोफेसर एसएम एस ब्रिक स्कूल ऑफ आर्किटेक्चर, पूणे

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गोषवारा :

दृष्यकलांची जागतिक पातळीवरचे दर दोन वर्षांनी वेनिस येथे आयोजित करण्यात येणारे प्रदर्शन म्हणजे वेनिस बिनाले. १८९५ मध्ये वेनिस इटलीमध्ये बिनालेच्या प्रदर्शनाची सुरुवात झाली त्याला इटलीचे एकीकरण आणि युरोपीय राष्ट्रांची निर्मिती ही पार्श्वभूमी होती. १९९० नंतर २०० ठिकाणी अशी प्रदर्शने भरवली जातात. समकालीन कलेचे प्रदर्शन हे मुख्य उद्दिष्ट असलेलं वेनिस बिनाले हे जगभरातील अनेक कलाकारांना वास्तुविशारदांना आकृष्ट करणारं असं ठिकाण आहे. वेनिस ला कायमस्वरूपी मुख्यत्वे युरोपीय राष्ट्रांचे तर काही हंगामी तिसऱ्या जगातील देश जसे की चीन, दक्षिण अमेरिकेतील काही देश, दक्षिण आशियाई देश, यांची पॅव्हिलियन पाहायला मिळतात.

व्हेनीस बिनाले मध्ये आर्किटेक्चर किंवा वास्तुकलेचे प्रदर्शन भरवण्याची सुरुवात १९८० मध्ये झाली. पूर्वी ते इतर दृश्य व सादरीकरणाच्या कला इतपतच मर्यादित होते. सदर लेखामध्ये १९१४ ला भरवण्यात आलेल्या वेनिस इटली येथील वास्तुकलेच्या बिनाले विषयीचा अनुभव शब्दबद्ध करण्याचा प्रयत्न केला आहे. १९१४ मध्ये वेनिस बिनाले चे क्युरेटर हे जगविख्यात वास्तुविशारद रिम कुल्हास हे होते. यावर्षीच्या बिनालेची कल्पना ही अबसोर्बिंग मॉडर्निझम अशी होती. ज्यामध्ये अनेक देशाच्या पवेलियन ने त्यांच्या गेल्या शंभर वर्षांच्या वास्तुशैलीचा इतिहास मांडण्याचा प्रयत्न केला. वास्तु विशारद कार्लो स्कार्पा यांनी येथील बऱ्याच पवेलियन्सची रचना केली आहे.

महत्वाचे शब्द : वेनिस बिनाले, वास्तूकला, दृश्याकला, आधुनिकतावाद, औद्योगिक क्रांती

पार्श्वभूमी :

मागील शतक आणि आधुनिकता वाद त्याचा वास्तुकलेवरील परिणाम

आता थोडं आधुनिकता वाद हा समजून घेण्याचा प्रयत्न करू. आधुनिक असणं म्हणजे वागणं जगणं बोलणं, असं या

सगळ्यातून तो दिसतो इतपत मर्यादित नाही. ही फारच गुळगुळीतपणे आधुनिकता वादाकडे बघण्याची पद्धत म्हणता येईल. आधुनिक असणं म्हणजे जे जुनं ते नाकारून देणे असा एक समज झालाय. खरं पाहता काही अंशी ते खरं पण आहे पण त्याच्याकडे इतक्या वरवर बघता येणार नाही. त्यासाठी त्याचा इतिहास समजून घेणे म्हणजेच त्यातील या चळवळीचे योगदान काय आहे हे समजणे महत्वाचे आहे . ती एक चळवळ आहे जिने समाजातल्या प्रत्येक क्षेत्रातील महत्वाच्या मुद्द्यांना प्रश्न विचारायला सुरुवात केली.

आधुनिकता वादाचा उगम हा सोळाव्या शतकात पाश्चिमात्य देशांमध्ये झाला. प्रश्न विचारायला सुरुवात झाली म्हणजे काय तर विविध क्षेत्रांवर विशिष्ट वर्गाची मक्तेदारी होती. कामगार वर्ग व सामान्य जनता यांच्या रोजच्या आयुष्यातील प्रश्नांकडे शास्त्रीय दृष्टीकोनाने बघण्यास सुरुवात झाली. त्याने राजेशाही, व्यापारी व धार्मिक वर्चस्व यांना हादरे बसायला सुरुवात झाली. लोक धर्माला, देवाला प्रश्न विचारू लागले, नवीन वैज्ञानिक विचार उदयाला आला. यामध्ये फ्रेंच राज्यक्रांती चा मोठा हातभार होता. समाजामध्ये मनुष्य केंद्री विचार होऊ लागला. वेगवेगळ्या स्तरातील समाज घटक मग ते कामगार असतील, स्त्रिया असतील, आपला आवाज वेगवेगळ्या माध्यमातून मांडू लागले. या सगळ्याला सर्वात महत्वाची पार्श्वभूमी होती ती म्हणजे औद्योगिक क्रांतीची. औद्योगिक क्रांतीमुळे खूप गुंतागुंतीचे सामाजिक आणि आर्थिक प्रश्न समाजाच्या पृष्ठभागावर येऊ लागले. मग ते रोजच्या जगण्यामरण्याचे असोत, वा सौंदर्यशास्त्राबद्दल च्या संदर्भातले असोत. या सर्वांना एक सामाजिक राजकीय आयाम येऊ लागला. तो जास्त प्रमाणात पुरुषसत्ताक असला तरीही बऱ्याच अंशी संवेदनशीलतेने मांडला जाऊ लागला. याची सुरुवात पहिल्यांदा साहित्यातून झाली मग नंतरचे कलाविष्कार पुढे येत गेले. यामधील इम्प्रेसनिझम नंतर येणारी रियलीजम यातून समाजाशी निगडित मूलगामी प्रश्न मांडले. या सगळ्याचे पडसाद हे हळूहळू वास्तू कलेमध्येही दिसू लागले. म्हणजे आधुनिकता ही वास्तुकले मध्ये एक शैली म्हणून प्रस्थापित झाली, त्यामागे विचार नव्हता असे



नाही पण त्याहीपेक्षा तो मांडण्याचा विषय म्हणून जास्त अस्तित्वात आला. या सगळ्याला औद्योगिक क्रांतीची पार्श्वभूमी आहेच त्यानंतर येणारे पहिले व दुसरे महायुद्ध त्यानं शहरांची झपाट्यानं होणारी वाढ, बदलत जाणाऱ्या लोकांच्या गरजा, याही कारणीभूत होत्या. यातून वास्तुकलेची एका वेगळ्या पद्धतीने मांडणी होऊ लागली. यामध्ये पाश्चिमात्य वास्तुकलाकारांचा खूप मोठा वाटा आहे. वास्तुकले मधील आधुनिकता वादाने अत्यंत महत्वाचे मुद्दे उपस्थित केले.

सर्वात महत्वाची कल्पना ज्याच्यामध्ये ज्याला फॉर्म फॉलो फंक्शन म्हणजेच तुमच्या वास्तुतील जागा कशा वापरल्या जाणार आहेत त्याप्रमाणे त्या वास्तूची रचना घडवली जाते. म्हणजे तुमची वास्तू कशी दिसते यापेक्षा त्याचा उपयोग कसा होणार आहे हे जास्त महत्वाचं याकडे जास्त लक्ष दिले जाते यावर भर दिलेला दिसतो (Frampton, 1992).

दुसरे म्हणजे इमारीच्या बांधकामासाठी ज्या साधनसामग्रीचा उपयोग होतो आहे ती जशीच्या तशी दिसणे. यामध्ये प्रत्येक बांधकाम सामग्री चा स्वतःचा एक पोत आहे, दृश्य सौंदर्य आहे ते आहे तसे दिसावे ते झाकण्याची गरज नाही असा विचार वास्तुरूपातून प्रखरपणे मांडण्यात आला.

क्युबिझम मधला सरळ साध्या रेषा यांचा वापर जास्तीत जास्त करण्यात आला यामध्ये अधिक सौंदर्य रचनेची आणि इतर काही घटकांचा वापर करायची गरज नाही असं मांडलं गेलं (Bruno Zevi, 1978).

कमीत कमी मांडणीमध्ये जास्तीत जास्त विचार पोहोचवणं ज्याला मिनीमॅलिझम असे म्हणण्यात आलं याचा वापर, सुंदर स्वच्छ रंग यांचा वापर, हे प्रभावीपणे दिसू लागले. जगविख्यात वास्तुतज्ञ वॉल्टर ग्रोपीअस यांनी सुरुवात केलेल्या स्कूल ऑफ आर्किटेक्चर या जर्मनीतील शिक्षण संस्थेमध्ये हा विचार सर्वतोपरी प्रभावीपणे मांडण्यात आला. यात केवळ वास्तुकला असा मर्यादित विचार न करता इतर सर्व कलाविष्कार जसे की चित्रकला, मूर्तिकला साहित्य, याच्यावरचा आधुनिकतेचा प्रभाव शिवाय वास्तुकलेवरचा या सर्व कलांचा होणारा प्रभाव याच्यावरती अतिशय महत्वाचे असे काम झाले. रॉयल डॅनिश स्कूल ऑफ आर्ट हेही त्यातील अतिशय महत्वाचे उदाहरण. आधुनिकता वादाचा वास्तुकलेवरचा प्रभाव पुढे येणारे जगविख्यात वास्तु विशारद म्हणजे ले कोर्बोसियर, लुईस कान, फ्रँक लॉईड राईट या दिग्गजांचा प्रभाव त्यांचे शिष्य चार्ल्स कोरिया, बि. व्ही. दोशी, अच्युत कानविंदे, राज रेवाल या भारतीय वास्तु शिल्पकारांच्या कामांमधून प्रभावीपणे भारतात पोहोचला (Curtis, 2007).

नेहरूंनी चंदीगड शहराची मांडणी, फ्रेंच आर्किटेक्ट ले कोर्बोसियर यांच्याकडून करून घेतली. त्याचबरोबर इतरही वास्तूची रचना त्यांनी केली. चंदीगड एक मॉडेल म्हणून उदयास आलं त्याचबरोबर इतर रचना स्वतंत्र भारताची ओळख म्हणून जगात प्रसिद्ध झाले (Le Corbusier, 2014). आणखीन एक महत्वाची गोष्ट झाली विसाव्या शतकाच्या सुरुवातीला ती म्हणजे वर्ल्ड आर्किटेक्चर थेअरी उदयाला आली ज्यामध्ये काही काही नियम ठरवण्यात आले म्हणजे सर्व जगात एकाच वास्तुशैली आहे व असावी यातून व कोणती साधनसामग्री वापरली जावी उदाहरणार्थ काँक्रीट, काच, बीम-कॉलम असलेले फ्रेम स्ट्रक्चर, स्टीलचा वापर, हे उपयुक्त व काम लवकरात लवकर स्वस्त पद्धतीने बांधता येईल अशा पद्धतीची वास्तुशैली उदयाला आली आणि त्यांनी जगाचा चेहरा मोहरा बदलला.

व्हेनीस बिनाले मध्ये २०१४ मधील विविध देशांनी प्रदर्शनाचा मागोवा

व्हेनीस बिनाले मध्ये डॅनिश आधुनिकतावाद, स्पेन, बेल्जियम, नॉर्वे, ब्राझील, पोलंड, रोमानिया, सर्बिया, इजिप्त, ऑस्ट्रेलिया, आफ्रिका, फ्रान्स, हंगेरी, व जपान येथील मागील शतकातली वास्तुकला वेगवेगळ्या पद्धतीने बांधलेल्या पवेलियनमध्ये पाहायला मिळाली. याशिवायही गेल्या शतक भारतातील वास्तुकलेच्या विविध अंगांचा विकास दर्शवणारे जसे की दरवाजे, खिडक्या, रेलिंग, पायऱ्या, आणि घरामधील फर्निचर या सर्वांमध्ये होत जाणारे बदल या वेगळ्या पवेलियनमध्ये मांडण्यात आले होते.

डच पॅवेलियन जिथे वास्तु विशारद जेकब बाके मा याच्या ओपन सोसायटी या विचाराचा आजच्या काळाशी असलेला संबंध मांडण्याचा प्रयत्न केला होता हे पवेलियन त्यांच्या वास्तुकलेतील योगदानाला समर्पित केले गेलेले होते (<https://www.Labiennale.Org/En,n.d.>).

हे नोंद करणे अतिशय आवश्यक आहे की वास्तुकला ही इतर कलांपासून, समाजापासून वेगळी पाहता येऊ शकत नाही आणि या सर्व देशांच्या पवेलियनमधून हेच प्रकर्षाने जाणवलं की समाजात घडणारे बदल त्यात जन्माला येणाऱ्या विविध कला यांचा वास्तुकलेवरती खूपच मोठ्या प्रमाणामध्ये प्रभाव पडतो आणि वास्तुकला ही इतर कलांपेक्षा शाश्वत कला असल्यामुळे ती जास्त काळ टिकते लोकांना अनुभवता येते.

व्हेनीस बिनाले कला आणि वास्तुकलेचा अविष्कार :

व्हेनीस बिनाले हा कला आणि वास्तुकला या दोन्हीचा उत्कृष्ट मिलाफ असे उदाहरण म्हणून बघता येते. वेनिस



च्या प्रत्येक कोपऱ्यावर, मोकळ्या जागांवर कोणत्या ना कोणत्या प्रकारचे कलेचे अविष्कार बघायला मिळाले. याची असंख्य उदाहरणे देता येतील, पण पुढील मांडणी मध्ये वास्तुकलेचे प्रदर्शन आणि त्या संदर्भातले अनुभव यावरच भाष्य केले आहे. विविध देशांच्या पवेलियन व प्रदर्शनाची मांडणी दृष्यअविष्कारचा मागोवा पुढील चर्चेमध्ये घ्यायचा प्रयत्न केला आहे (Gregotti et al., 2010; Keith Roberts, 1976).

१. **डेन्मार्कचे पवेलियन** – डॅनिश आधुनिकतावाद हा बाहाऊज स्कूल ऑफ थॉट (जर्मनी) पासून प्रेरणा घेऊन स्वच्छ सरळ रेषा, साधे सोपे फर्निचर, कमी भपके बाजपणा याविषयीची मांडणी करते. जेकबसन जे आधुनिक वास्तुकलेचा चेहरा दर्शवणारा विसाव्या शतकातील महत्त्वाचे वास्तुविशारद आहेत, त्यांच्या कामापासून प्रेरणा घेऊन ह्या पॅवेलियन ची रचना केलेली

होती. माणसाच्या पंचेंद्रियांना सर्व संवेदनांना जसे की वास, स्पर्श, दिसणं, अवकाश, आवाज या सर्व संवेदनाना जागृत करणार्या पॅवेलियन ची रचना इथं केलेले होती.

२. **स्पॅनिश पॅवेलियन** – आपल्याला स्पेन आणि त्याचे कलाक्षेत्रातील महत्त्वाचे म्हणजे वैशिष्ट्यपूर्ण चित्रकारितेच्या संदर्भातील योगदान माहीतच आहे. २०१४ च्या बिनाले मध्ये या पॅवेलियनमध्ये एक विशिष्ट गोष्ट बघायला मिळाली. उभ्या आणि आडव्या पृष्ठभागांचा चा बेमालूम वापर आणि वास्तविक प्रमाण, १:१ या प्रमाणातच कट आउट त्यांनी न्यू क्लासिकल स्टाईल आणि मॉडेल स्टाईल चा एक मिलाफ करून उभा करायचा प्रयत्न केला होता. हा विचार आणि खोलीमधील सर्व कोनाड्यांचा भिंतींचा कल्पनातीत वापर हा खूपच सुखावणारा असा अनुभव होता.



Figure 1 स्पॅनिश पवेलियन मधील एक दृश्य

३. **बेल्जियम पॅवेलियन** – एक अत्यंत सुंदर मिनीमलिस्टिक पद्धतीने फक्त पांढरा रंग कोपऱ्यात उभी ३१ खुर्ची आणि मेटल फ्रेम्स याचा वापर इथे दिसला.

४. **फिनलँड, स्विट्झर्लंड, नॉर्वेजियन पॅवेलियन** – या ठिकाणी पारंपारिक साधनसामुग्रीचा वापर करून

एकास एक या प्रमाणात काही रचनांची मांडणी केलेली होती. बऱ्याचदा लाकूड किंवा बांबूचा विचार वेगळ्या पद्धतीने होत नाही. ह्या मटेरियल ची भाषा बदलण्याचा प्रयत्न आणि प्रयोग इथं आढळला.



Figure 2 बांबू च वापर करून तयार केलेला किओस्क

५. **ब्राझील पॅवेलियन** - एक परिपूर्ण प्रदर्शन ज्यामध्ये त्यांनी त्यांचा शंभर वर्षांचा बरा वाईट वास्तुकलेचा इतिहास सर्व रेखाटने व छायाचित्रं या माध्यमातून मांडायचा प्रयत्न केला. ऑस्कर नेमर नावाच्या जगविख्यात वास्तुविशारदाच्या कामाचा एकूण प्रवास इथे मांडण्याचा प्रयत्न केला गेला. लोकांसाठी ची वास्तुकला ते व्यक्ति केंद्र किंवा व्यावसायिक वास्तुकला हा प्रवास खूप चांगला व अनेक प्रश्न उपस्थित करणारा ज्याला रॅपिड ग्रोइंग इकॉनोमी खूप वेगाने वाढणारी आर्थिक व्यवस्था असं आपण म्हणतो त्याचे दृश्य स्वरूप इथे आढळले. ऑस्कर नेमर हा अति डाव्या विचारसरणीचा व मार्क्सवादी कम्युनिस्ट पार्टीचा सदस्य होता. त्याने ब्राझिलियन वास्तुकला तसेच जगातील वास्तुकले ची परिभाषा बदलण्याचा खूप मोठा काम केलेलं आहे.
६. **पोलंड/ पोलीश पॅवेलियन** - यामध्ये वास्तु विशारद डॅनियल लिबिस्किन या पोलीस वास्तुविशारदाच्या चित्रांचा व त्याने केलेल्या कामाचा आढावा घेतलेला दिसतो. ज्यामध्ये एखाद्या स्पेसचं आणि त्याच्याशी संलग्न माणसाचं परिवर्तन दाखवलं होतं, ज्यासाठी प्रकाशाचा बेफाम वापर केला होता. त्यांनी रचना केलेले, त्यामधील अवकाश निर्मिती, प्रकाशाचा वापर, आणि संवेदना निर्मिती, याची झलक या छोट्याशा जागे मध्ये मिळाली असं वाटून गेलं.

७. **सर्बियन पॅवेलियन** - अत्यंत अंधार असलेल्या अशा खोलीमध्ये आपण प्रवेश करतो आणि फक्त एक प्रकाशझोत आपल्याला दिसत राहतो आणि खोलीत गेल्यावर आपल्याला अचानक प्रकाशाचा अर्थ समजतो. ज्या ताकदीनं हे निर्माण केलेले आहे त्याचा प्रभाव आपल्यावर कायम राहतो.
८. **ऑस्ट्रेलिया, झेक रिपब्लिक, आणि आफ्रिका यांचे पॅवेलियन** - झेकरिपब्लिक च्या पॅवेलियन बाहेरची भिंत ही एक महत्त्वाची प्रदर्शनाची जागा म्हणून वापरली होती. फक्त मॉडेल्स पांढऱ्या भिंतीवरती मांडण्यात आली होती. ऑस्ट्रेलिया ने डिजिटल डिस्प्ले चा वापर केला तर आफ्रिका च्या मांडणीमध्ये एकूण वर्ग संघर्ष वर्णभेद आणि निसर्ग यांचा वास्तुकलेवरील प्रभाव दिसून आला.
९. **फ्रेंच पॅवेलियन** - मोन अंकल या जगविख्यात चित्रपटाची मांडणी या ठिकाणी केलेली दिसली यामधून जगण्यातला एक खोटा आधुनिकतावाद याचा माणसाशी केला जाणारा अनोखा खेळ, या पॅवेलियन मधून दिसतो.
१०. **ग्रीक पॅवेलियन** - ग्रीसला केलेचा, साहित्याचा आणि वास्तुकलेचा खूप मोठा इतिहास आहे. त्यांच्या ऐतिहासिक कालखंडापासून ते अजून आधुनिकतेपर्यंतचा त्यांच्या वास्तूकलेचा केलेला प्रवास अप्रतिम अशा मॉडेल्स, ड्राइंग्स, आणि छायाचित्रा मधून मांडलेला दिसला.



११. हंगेरीयन पॅवेलियन - हंगेरी मध्ये नवीन भेटलेल्या माणसाची आठवण म्हणून चिमट्यावर नाव लिहिण्याची प्रथा आहे त्याचा वापर करून या पॅवेलियन मध्ये



Figure 4 हंगेरीयन पवेलियन मधील एक दृश्य

अप्रतिम स्क्रीन अथवा पारदर्शक भित्त तयार केली. लाकडात केलेल्या फर्निचर मधून नैसर्गिक साधनं वापरून एक वेगळाच आभास तयार केला.



Figure 3 जापनीज पवेलियन मधील दस्तैवजीकरण केलेले एका गावाचे रेखाटन

१२. जापनीज पॅवेलियन - एखाद्या देशाची प्रखर इच्छाशक्ती म्हणजे काय असू शकतं याचं अतिशय ताकदीनं प्रदर्शन या ठिकाणी केलेले दिसलं यामध्ये प्रचंड दस्तैवजीकरण, हाताने केलेली रेखाटनं, यांची उत्कृष्ट मांडणी वैशिष्ट्यपूर्ण पद्धतीने केलेली दिसली.

१३. डिटेल्स/ वस्तूकलेतील विविध घटकांची मांडणी - आर्किटेक्चरल इलेमेंट्सचा प्रवास इथे मांडलेला होता.

१४. डच पॅवेलियन - यामध्ये आर्किटेक्ट जेकोब बाकेमा च्या ओपन सोसायटी ह्या विचाराचा आजच्या काळामध्ये संदर्भ मांडण्याचा प्रयत्न केला. जेकोब बाकेमा (१९१४-१९८१) हा आधुनिक वास्तु कलेच्या इतिहासामधलं खूप मोठं नाव असलेला डच वास्तूविशारद आहे. प्रदर्शनामध्ये त्यांनी बाकेमाच्या एक अखंड समाज, शासन संस्था आणि तिचा प्रत्येकाच्या आयुष्यातील सहभाग, मुक्त व्यापार, वास्तुकला आणि समाज या विषयाचे विचार त्यांच्या रेखाटणांमधून, लिखाणातून, चित्रपटातून मांडला.

बाकेमाची वास्तुकले विषयीची मतं खूप प्रभावी होती. त्यांनी वास्तुकलेला एक हत्यार जे समाजाला त्याच्या विशिष्ट पद्धतीच्या मानसिक जखडातून मुक्त करू शकेल व स्वतःचा प्रत्यय देईल असेच मानले. त्यांनी वास्तुकलेकडे एक नवी मुक्त लोकशाहीवादी सामावून घेणारी समाज रचना निर्माण करेल अशी कला म्हणूनच कायम बघितले.

निष्कर्ष:

या सर्व पॅवेलियन मधून खूप काही शिकण्यासारखे होते. महत्वाचे म्हणजे वास्तूकलेचा इतिहास, विचार, आविष्कार हा तुटकपणे समाजापासून, इतर कला यापासून वेगळी बघता येऊ शकत नाही. त्याच्या परिभाषेवर, कलाविष्कारावर अनेक गोष्टींचा प्रभाव व परिणाम होतो. जसे की राजकीय, सामाजिक बदल, आर्थिक व्यवस्था, कला, मानुष्यकेंद्री विचार, या सगळ्यांचा परिणाम वास्तूकलेच्या रचनेवर होत असतो. वेनिस बिनाले सारखी अतिशय उत्कृष्ट दर्जाची प्रदर्शने अनेक कलांना, कलाकारांना, विचारवंतांना एकत्र आणतात. या सर्वांना एका मंचावर आणून वेगवेगळ्या देशांमध्ये विविध विचारांनी निर्माण



होणाऱ्या कलाविष्काराना एका वेळीच बघण्याची संधि निर्माण करतात. त्याचबरोबर आपल्या विचार धारणा बदलण्यासाठीचा अवकाश निर्माण करतात. याचा प्रभाव अनेक देशांवर, अनेक राज्यांवर, शहरांवर होत राहतो आणि कोची बिनाले, पुणे बिनाले अशा अनेक प्रदर्शनांना चालना देतात. पर्यायाने सर्व कलाकारांना, वास्तुविशारद यांना एकत्र येण्याची, वैचारिक मंथनाची, संधि देतात हे निश्चितच.

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मंदिर स्थापत्यातील द्वि व त्रिमितीय कलाविष्कारांचा अनुभव

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गोषवारा :

युगयुगांतरी माणसाची जिज्ञासा हीच सार्या कला व सौंदर्यनिर्मितीचे करण आहे. रिक्त जागेमध्ये आपल्या कलाकृतीने प्राण ओतण्याचे सामर्थ्य माणसांत आहे. द्विमितीय कलेचे त्रिमितीय स्वरूप म्हणजेच वास्तुकला. क्षितिजाला समांतर असलेल्या कलाप्रकारांना उंची दिल्यास त्याचे रूपांतर त्रिमितीय वापरण्या योग्य जागेत होते. आपल्या भारतामध्ये मंदिर स्थापत्यशास्त्र अशा प्रकारच्या द्वि आणि त्रिमितीय कलाविष्कारांवर आधारलेले आहे. ह्या प्रक्रियेतून निर्माण होणार्या स्थापत्य शास्त्रात माणसाच्या पंचेंद्रियेना सक्रीय करण्यासाठी केले गेलेले भौमितिक रेखांकन व प्रमाण आणि त्यांचा परस्परांशी असलेला संबंध भावपूर्ण आहे. मंदिराच्या मांडणी आणि रचनेवर मानवी वर्तनाचाही प्रभाव पडतो. मंदिरातील सभामंडप हे सामाजिक परस्परसंवाद आणि सहयोगाला प्रोत्साहन देतात, तर गाभाऱ्यातील रचनेची मांडणी गोपनीयता आणि एकाग्रतेला प्रोत्साहन देते. ह्या संशोधनाचा उद्देश द्वि व त्रिमितीय कलाविष्कारांमुळे अनुभवता येणार्या प्रभावांचा मानवी अंगाशी अभ्यास करणे आहे. ह्या कलाविष्कारांमध्ये शिल्पे, चित्रे, नक्षीकाम, प्रकाश कवडसे, जाळ्या तसेच इतर कलाप्रकारांचा अभ्यास केला आहे. ह्या संशोधनासाठी प्रयोगात्मक उदाहरण म्हणून पुणे येथील काही मंदिरांचा अंतर्बाह्य संवाद, सौंदर्य, भावप्रसुती आणि आध्यात्मिक एकाग्रता ह्या घटकांतर्गत अभ्यास केला आहे. तशेच ह्या संशोधनासाठी पूरक असे छाया चित्रणही केलेले आहे. ह्या मंदिरात आलेल्या काही लोकांच्या मुलाखती वरील नमूद केलेल्या घटकांतर्गत घेतलेल्या आहेत. संशोधनाच्या अंती असे आढळून आले की, कलाविष्कारात मंदिराच्या सौंदर्यात भर घालत नाही तर एक सुसंवादी अनुभव विदीत करतात.

महत्वाचे शब्द : द्विमितीय, त्रिमितीय, अनुभव, मंदिर, स्थापत्यशास्त्र.

१. परिचय

भारतीय पारंपारीक स्थापत्य प्रणाली, वास्तुशास्त्रानुसार, मंदीरे नेहमीच ब्रह्मांड किंवा विश्वाचे सूक्ष्म आणि प्रतिकात्मक प्रतिनिधीत्व म्हणून पाहिली जातात. भारतीय उपखंडातील मंदीरे आणि त्यांच्या स्थापत्यशास्त्राचे अद्भुत संस्कृती, आध्यात्मिक आणि ऐतिहासिक महत्त्व आहे. मंदीराचे महत्त्व पूजास्थळांच्या पलीकडे आहे; ते लोकांसाठी जीवनाच्या विविध पैलूंमध्ये योगदान देणाऱ्या संस्था म्हणून काम करतात. मंदीरे वास्तुकला वैविध्यपूर्ण आहे, जे या प्रदेशातील समृद्ध संस्कृती प्रतिबिंबित करते. द्रविड, नागर आणि वेसारा यांसारख्या विविध शैली, गुंतागुंतीच्या कोरीव काम, उंच शिखरे आणि तपशीलवार शिल्पे दर्शवतात जी केवळ सौंदर्याचा उद्देशच नाहीत तर भव्यतेचा अनुभव देतात. भारतीय मंदिरांमधील भौमितिक रचना ही द्विमितीय आणि त्रिमितीय जागेला मूर्त स्वरूप देते आणि त्यामधील गणितीय अचूकता ही कलात्मक पूर्णतेचे दर्शन घडवते. मंदिराच्या स्थापत्यशास्त्रात प्रचलित असलेल्या मंडलाचे आकृतिबंध, वैश्विक शक्तींच्या सुसंवादी मिलनाचे प्रतीक असलेल्या वर्तुळाकार आणि चौकोनी घटकांना अखंडपणे एकत्रित करतात. आकृती १ व २ मध्ये दाखवल्याप्रमाणे मंदिराच्या दर्शनी भागावर अनेकदा जटिल भौमितिक कोरीवकाम केलेले असते, ज्यामुळे सपाट पृष्ठभागांचे रूपांतर मंत्रमुग्ध करणाऱ्या त्रिमितीय आकारात होते. (छायाचित्र क्रमांक १, २)

भारतीय मंदिर स्थापत्यकलेच्या विविध परंपरांमध्ये, वैयक्तिक मंदिर रचनांच्या औपचारिक रचनेत, उदय आणि वाढीचा एक गतिमान क्रम व्यक्त करणाऱ्या आणि अशा परंपरेच्या संपूर्ण काळात मंदिराचे स्वरूप ज्या प्रकारे विकसित होते, अशा दोन्ही प्रकारांमध्ये एक भावनात्मक योजना दिसून येते. आर्किटेक्चर (वास्तुशास्त्र) वरील कॅनॉनिकल संस्कृत ग्रंथ (वास्तुशास्त्रे) ही विचारसरणी सामायिक करतात, विविध प्रकारचे मंदिर प्रकार सादर करतात ज्यामध्ये डिझाईन्स साध्या ते जटिलतेपर्यंत विकसित होतात, अनुक्रमे एकमेकांपासून उदयास येतात. हे



मजकूर डिझाईनसाठी एक संरचित पद्धत प्रदान करतात ज्यात व्याख्या आणि सुधारणेची आवश्यकता असते, आणि

परिणामांकडे नेतृत्व जे केवळ वैयक्तिक आर्किटेक्टद्वारे निश्चित केले जातात. (हार्डी डम, २०१६)



आकृती १ व २ : दक्षिणात्य स्थापत्याती
(स्रोत : साउथ

मंदिराच्या दर्शनी भागावरील कोरीवकाम
डिया, २०२१)

२. संदर्भ आणि पार्श्वभूमी

मंदिरे ही केवळ प्रार्थनास्थळे नसून सांस्कृतिक आणि सामाजिक उपक्रमांचे केंद्र आहेत. विधी, सण आणि धार्मिक समारंभ हे मंदिर जीवनाचा अविभाज्य भाग बनतात, ज्यामुळे भक्तांमध्ये समुदायाची भावना निर्माण होते. मंदिरे शैक्षणिक केंद्रे म्हणून काम करतात जिथे धर्मग्रंथ शिकवले जातात आणि धार्मिक प्रवचने होतात, ज्ञान आणि नैतिक मूल्यांच्या प्रसारास हातभार लावतात. मंदिराच्या भिंतींवर सुशोभित केलेले गुंतागुंतीचे कोरीवकाम आणि शिल्पे पौराणिक कथांचे चित्रण

करतात, सांस्कृतिक आणि धार्मिक वारशाचे दृश्य वर्णन देतात. उत्सवादरम्यान संगीत आणि नृत्य सादरीकरणे भक्तांसाठी सांस्कृतिक अनुभव अधिक समृद्ध करतात. मंदिरे विविध कला प्रकारांचे संरक्षक म्हणून काम करतात, साहित्य, शिल्पकला आणि कलांच्या भरभराटीस हातभार लावतात.

हे स्थापत्य अभ्यासाच्या परंपरेच्या उलगडत जाणाऱ्या संभाव्यतेने प्रबळपणे स्थापित केलेल्या भावनेला हातभार लावते, की नवीन मंदिराची रचना स्वयंभू (स्वतः प्रकट होणारी) आहे जी एका सुप्रा-मानवी स्त्रोताकडून वैश्विक प्रक्रियेतून प्रकट होते. (हार्डी डम, २०१६)



आकृती ३ व ४ : द्विमितीय आणि त्रिमितीय रचना
(स्रोत : साउथ इंडिया, २०२१)

याव्यतिरिक्त, उंच शिखरे चौरस पायापासून टोकदार शिखरापर्यंत अखंड संक्रमणाचे उदाहरण देतात, ज्यामुळे परिमाणांमधील गतिशील परस्परसंवाद निर्माण होतो. हे भौमितिक नमुने केवळ प्राचीन वास्तुविशारदांचे प्रभुत्व दाखवत नाहीत, तर आध्यात्मिक आणि भौतिक जगाच्या

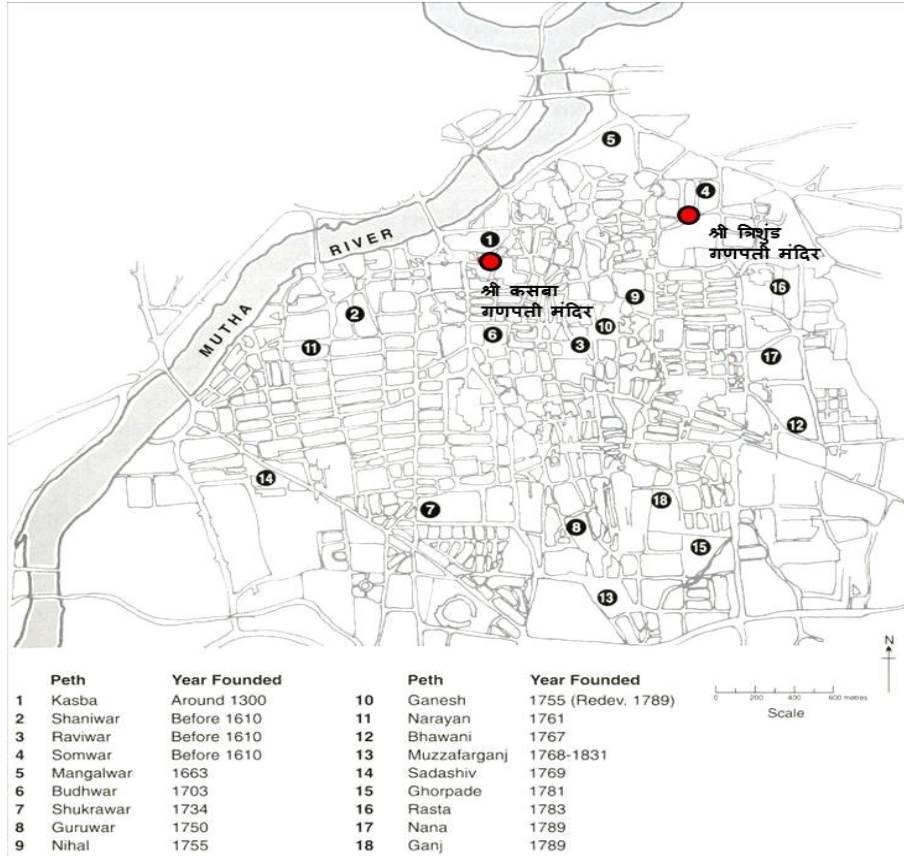
परस्परसंबंधांना मूर्त स्वरूप देणाऱ्या गहन तात्त्विक संकल्पना देखील दर्शवतात. भारतीय मंदिराच्या डिझाइनमध्ये द्विमितीय आणि त्रिमितीय घटकांचे संलयन एक दृश्य सिम्फनीमध्ये योगदान देते जे भौतिक जागेच्या पलीकडे जाते. हे घटक चिंतन आणि आध्यात्मिक उत्कर्षाचा भाव जागा करतात.



ही मंदिरे द्विमितीय भौमितीय रेखाचित्रांमधून काढलेल्या स्वरूपाने बांधली गेली होती. मंदिराचा पाया आणि जोतं स्थापित झाल्यावर वरील बांधकाम उच्च आणि पवित्र अनुभवात्मक जागा तयार करण्यासाठी बांधले गेले. आकृती ३ आणि ४ मध्ये दर्शवल्याप्रमाणे मंदिरातील प्रवेश द्वार, मंडप, शिखरे, शिल्पे, गर्भगृह, ह्या सर्व घटकांच्या द्विमितीय रचनेतून त्रिमितीय रचनेकडे झालेला दिसतो. भारतामधल्या विविध पुरातन कलाकृती ह्या आजच्या भव्य वास्तुशिल्पांचे मूळ आहे.

३. संशोधन आणि कार्यप्रणाली

या अभ्यासासाठी, श्री कसबा गणपती मंदिर, कसबा पेठ, पुणे आणि त्रिशुंड गणपती मंदिर, सोमवार पेठ, पुणे या शहरांची निवड करण्यात आली कारण ते शहराच्या मध्यभागी आहेत आणि त्यांना उच्च ऐतिहासिक मूल्य आहे. या अभ्यासादरम्यान ज्या लोकांची मुलाखत घेण्यात आली, त्यामध्ये पुजारी, अभ्यागत आणि शेजारील रहिवासी यांचा समावेश होता. हा अभ्यास या मंदिरांना भेट देणाऱ्या लोकांच्या मानसिक अनुभवावर आधारित आहे. आकृती ५ मध्ये पुणे शहराचा नकाशा, पेठ भागांचे चित्रण संदर्भाकरता दर्शवण्यात आलेले आहे.



आकृती ५ : पुणे शहराचा नकाशा, पेठ भागांचे चित्रण
(स्रोत : रिसर्चगेट .कॉम)

३.१ श्री कसबा गणपती मंदिर, पुणे :

आकृती ६ मध्ये दर्शवलेल्या पुण्यातील श्री कसबा गणपती मंदिराचा १७ व्या शतकातील समृद्ध इतिहास आहे. मराठा योद्धा छत्रपती शिवाजी महाराज यांनी इ.स.१६३९ मध्ये स्थापन केलेल्या या मंदिराला पुण्याच्या सांस्कृतिक आणि धार्मिक परिदृश्यात खूप महत्त्व आहे. अशी आख्यायिका आहे की शिवाजीच्या आई जिजाबाई यांनी आपल्या मुलाच्या लष्करी प्रयत्नांमध्ये यश मिळावे

यासाठी गणेशाचे आशीर्वाद मागितले. शतकानुशतके, मंदिराचे अनेक नूतनीकरण आणि विस्तार झाले आहेत, एक प्रमुख धार्मिक केंद्र बनले आहे. क्लिष्ट वास्तुकला आणि निर्मळ परिसर भाविक आणि पर्यटकांना सारखेच आकर्षित करतात. श्री कसबा गणपती मंदिर हे पुण्याच्या ऐतिहासिक आणि अध्यात्मिक वारशाचा पुरावा आहे, जे भगवान गणेशाच्या भक्तीचे आणि मराठा शासकांच्या चिरस्थायी वारशाचे प्रतीक आहे.



आकृती ६ श्री कसबा गणपती मंदिर, पुणे
(स्रोत : लेखक)

३.२ त्रिशुंडा गणपती मंदिर, पुणे

आकृती ७ मध्ये दर्शवल्याप्रमाणे पुण्यातील त्रिशुंड गणपती मंदिरात १८ व्या शतकातील समृद्ध ऐतिहासिक वारसा आहे. मराठा साम्राज्यातील प्रमुख लष्करी सेनापती महादजी शिंदे यांनी स्थापन केलेले हे मंदिर पूजनीय देवता गणेशाला समर्पित आहे. त्रिशुंड हे नाव हिंदू धर्मातील तीन मुख्य देवतांचे प्रतिनिधित्व करणाऱ्या तीन खोडांना सूचित करते: ब्रह्मा, विष्णू आणि

महेश (शिव). मंदिराच्या वास्तूमध्ये मराठा आणि मुघल शैलींचे मिश्रण दिसून येते, जे या प्रदेशातील सांस्कृतिक विविधता प्रतिबिंबित करते. गेल्या काही वर्षांमध्ये, मंदिरामध्ये अनेक नवीन बदल केले गेले, व मंदिराचा विस्तारही झाला, जे पुण्यातील एक महत्त्वपूर्ण धार्मिक आणि सांस्कृतिक खुणा म्हणून विकसित झाले आहेत. हे मंदिर पुण्याच्या ऐतिहासिक आणि अध्यात्मिक वारशाचा पुरावा म्हणून उभे आहे, जे देशभरातील अभ्यागतांना आकर्षित करते.







आकृती ७ त्रिशुंडा गणपती मंदिर, पुणे (स्रोत : लेखक)







४. विश्लेषणात्मक अभ्यास :

या अभ्यासात श्री कसबा गणपती मंदिर आणि त्रिशुंडा गणपती मंदिर यांचे बांधकाम तंत्र, सौंदर्यशास्त्र, मंदिरातील विविध जागांचे नियोजन आणि स्फुरणाच्या भावना यांचा अंतर्भाव





केलेला आहे. ह्या मंदिरातील घटकांच्या अर्थ विवेचनासाठी तेथील भक्त जनाशी संवाद आणि ऐतिहासिक साहित्याचा आधार घेण्यात आला आहे.



घटक	निरीक्षण श्री कसबा गणपती मंदिर, पुणे	निरीक्षण त्रिशुंडा गणपती मंदिर, पुणे	आकलन
प्रवेश द्वार	<p>मंदिराचा बाह्य दर्शनी भाग विटांमध्ये आहे. लाकडी खिडक्या आणि दरवाजे असलेली ही तीन मजली इमारत आहे. मुख्य प्रवेशद्वारावर फुलापानांचे लाकडी कोरीव काम दिसून येते.</p>   <p>आकृती ८ दर्शनी भाग, श्री कसबा गणपती मंदिर (स्रोत : लेखक)</p>	<p>समोरचा दर्शनी भाग दगडाचा आहे. मुख्य प्रवेशद्वार लाकडात कोरलेला आहे. कोरीव कामात भौमितिक रेखांकन आहे. मुख्य दरवाजावर कोरीव कामाचे अनेक स्थर आहे.</p>   <p>आकृती ९ दर्शनी भाग, त्रिशुंड गणपती (स्रोत : लेखक)</p>	<p>पूर्वी मंदीरे ही मंदिर प्रासाद प्रकारात बांधली जायची त्यामुळे युद्धजन्य परिस्थितीत जनतेला आसऱ्याची जागा म्हणून मंदिराचा उपयोग व्हायचा. कोरीव नक्षीकामांमुळे परिसराचे पारंपरिक मूल्य समाजपरियंत नेण्यास मदत होते.</p>

<p>शिल्पे</p>	<p>मंदिरातल्या प्रदक्षिणा पथावर पौराणिक कथेमधील, व इतिहासातील गोष्टी कोरल्या गेल्या आहेत. ह्या मध्ये, श्री गणेशाच्या कथा व मंदिराच्या स्थापनेच्या कथा देखील आढळतात.</p>    <p>आकृती १० स्थापत्य वैशिष्ट्ये, श्री कसबा गणपती मंदिर (स्रोत : लेखक)</p>	<p>मंदिराचा मुख्य दर्शनी भाग अत्यंत बारकाईने दगडात कोरलेला आहे. कोरीव कामात मानव, देव, पौराणिक कथा, काल्पनिक प्राणी आणि द्वाररक्षक यांचा समावेश आहे</p>    <p>आकृती ११ स्थापत्य वैशिष्ट्ये, श्री त्रिशुंड गणपती मंदिर (स्रोत : लेखक)</p>	<p>सामाजिक आणि राजकीय घटना यांचे प्रतिबिंब मंदिराच्या शिल्पांवर दिसून येते. तसेच पौराणिक कथांचा प्रसार हा एका पिढीकडून पुढच्या पिढीकडे होण्यास मदत होते.</p>
<p>मंडप</p>	<p>मंदिरात प्रवेश करताच उजवी व डावीकडे अरुंद कॉरिडॉर आहेत, व त्याला लागून प्रदक्षिणा पथ आहे. मुख्य मंडप मंदिराच्या</p>	<p>मंदिराचे दोन्ही मंडप दोन भागात विभाजलेले आहेत, प्रवेश करताच मुख्य मंडप व गाभान्यात प्रवेशकरण्यापूर्वी दुसरा मंडप. मुख्य</p>	<p>मंडपाची रचना लोक एकत्र येण्यासाठी आणि सार्वजनिक कथा श्रवण, काव्य</p>







	<p>मधोमध आहे. मुख्य मंडप दोन माजली आहे. वरच्या मजल्यावरील बाल्कनीतून खालच्या मंडपात डोकावता येते.</p>   <p>आकृती १२ सभामंडप, श्री कसबा गणपती मंदिर (स्रोत : लेखक)</p>	<p>मंडपाचा घुमट उंच आहे. व दुसऱ्या मंडपाचे छप्पर सपाट आहे.</p>   <p>आकृती १३ सभामंडप, त्रिशुंड गणपती मंदिर (स्रोत : लेखक)</p>	<p>श्रावण प्रबोधन ह्यासाठी वापरली जायची. दोन्ही मंदिरांमध्ये भिन्न रचना असली तरी त्यामागचा उद्देश सारखाच भासतो.</p>
गर्भगृह	<p>श्री कसबा गणपती मंदिराच्या गर्भगृह २ भागांमध्ये विभाजलरला आहे. मंडपातून मूर्तीकडे प्रवेश करताच अंतराळ व त्यापुढे मुख्य गर्भगृह आहे. गर्भगृहाची उंची व रुंदी कमी असल्यामुळे एकाग्रता व गोपनीयता मूर्तीवर केंद्रित होते.</p>	<p>श्री त्रिशुंड गणपती मंदिराच्या गर्भगृहही २ भागांमध्ये विभाजलरला आहे. अंतराळातून मंदिराच्या बाहेर पडण्यास मार्ग आहे. अंतराळात प्रवेश करताच मंदिरात प्रकाशाला अडथळे आसल्यामुळे लक्ष गर्भगृहातील मधोमध स्थापित असलेल्या मूर्तीवर केंद्रित होते.</p>	<p>दोन्ही गर्भगृहातील रचना एकाग्रता व गोपनीयता वाढवण्यास मदत करते. अंतराळात प्रतिध्वनी निर्माण होते व कानावर पडणारे मंत्रोचार लक्ष केंद्रित करतात.</p>





आकृती १४ गर्भगृह, श्री
कसबा गणपती मंदिर
(स्रोत : लेखक)

आकृती १५ गर्भगृह, त्रिशुंड गणपती
(स्रोत : लेखक)



<p>गवाक्ष</p>	<p>मांदिराला अनेक खिडक्या व दरवाजे आहेत. मुख्य मंडपातील वरच्या बाल्कनी मधल्या प्रवेशासाठी असणाऱ्या जिन्याला लाकडी जाळीचे काम आहे.</p>   <p>आकृती १६ गवाक्ष आणि दारे, श्री कसबा गणपती मंदिर (स्रोत : लेखक)</p>	<p>मांदिराला किमान दोन खिडक्या व दरवाजे आहेत. मधल्या मंडपात, दोन खिडक्या उंचीवर आहेत. ह्या खिडक्यांमध्ये जाळ्यांचे नक्षीदार काम आहे.</p>   <p>आकृती १७ गवाक्ष आणि दारे, श्री त्रिशुंड गणपती मंदिर (स्रोत : लेखक)</p>	<p>मांदिरात प्रकाश प्रवेश खूपच कमी आहे. त्यामुळे आपली एकाग्रता केंद्रीत करण्यात आणि मूर्तीवर लक्ष केंद्रित करण्यात मदत होते.</p>
<p>बांधकाम</p>	<p>मांदिराचे बांधकाम पुस्तकी विटा व लाकडाचे आहे. लाकडी खाणी व अरुंद भिंती मांदिराला आधार देतात. बाहेरील आवर, मंडप, व प्रवेशद्वार लाकडी व विटांचे आले तरी मुख्य मंडपाचे बांधकाम दगडी आहे.</p>	<p>मांदिराचे पूर्ण बांधकाम दगडी आहे. शिल्पांचे कोरीव काम दगडात केलेले आहे, व दरवाजे आणि खिडक्या ह्या लाकडी आहेत. मुख्य मंडपावर दगडी घुमट आहे.</p>	<p>विविध बांधकाम साहित्य एकत्र आले तरी ते एकमेकांमध्ये विलीन होतात. इमारतीच्या मजबूती आणि स्थिरतेसाठी, संमिश्र रचना तयार करण्यासाठी विविध साहित्य वापरले गेले.</p>



	 <p>आकृती १८ बांधकाम आणि स्थापत्य, श्री कसबा गणपती मंदिर (स्रोत : लेखक)</p>	 <p>आकृती १९ बांधकाम आणि स्थापत्य, श्री त्रिशुंड गणपती मंदिर (स्रोत : लेखक)</p>	
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५. निष्कर्ष :

द्विमितीय कलाप्रकारांपासून निर्माण झालेले त्रिमितीय स्वरूप संवेदना-समृद्ध अनुभव तयार करतात. ह्या जागेंमधून निर्माण होणारी उत्तेजना विस्मय, निर्गुण, व निराकार असते. ह्या जागा ध्यानात्मक गुणवत्ता आणि आत्मनिरीक्षणाला प्रोत्साहन देतात. मोकळ्या जागेची त्रिमितीय रचना सांस्कृतिक मूल्ये आणि प्रतीकात्मकता प्रतिबिंबित करते.

कलाकृतीमध्ये पवित्र चिन्हे आणि पौराणिक कथांचा वापर आध्यात्मिक वातावरण तयार करण्यास मदत करते, ज्यामुळे व्यक्तींच्या मानसिक स्थितीवर प्रभाव पडतो. पुनरावृत्ती होणारे आकृतिबंध आणि नमुने, अनेकदा हिंदू कलेमध्ये पाहिले

जातात, एक ध्यानात्मक गुण आहे जो शांतता आणि आत्मनिरीक्षणाची भावना निर्माण करू शकतो. शिवाय, त्रिमितीय वास्तुकला, द्विमितीय कलेने प्रेरित होऊन, मानवी मनाला मार्गदर्शन करण्याची भूमिका बजावते. . स्थानिक रचना, क्लिष्ट कोरीवकाम आणि मंदिरांमध्ये वापरण्यात आलेली पवित्र भूमिती ही स्वतःहून अधिक मोठ्या गोष्टींशी उत्तीर्णतेची आणि जोडणीची भावना वाढवू शकते. थोडक्यात, हिंदू स्थापत्यशास्त्रातील द्वि-आयामी आणि त्रि-आयामी कलेचे एकत्रीकरण एक आकार देण्यास हातभार लावते. या पवित्र स्थानांमध्ये गुंतलेल्यांसाठी आध्यात्मिक अनुभव, भावनिक व्यस्तता आणि सांस्कृतिक ओळखीची भावना वाढवणारे मनोवैज्ञानिक वातावरण निर्माण होते.

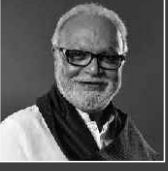


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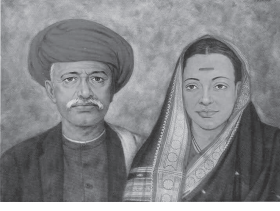
आरक्षणाचा प्रश्न आणि राजकारण

१ ते १५ नोव्हेंबर २०२३ । किंमत २५ रु.

एकूण पृष्ठे ५२

परिवर्तनाचा
वाटसरु

चारित्र्याचे
व्यापारी



ठाण्यात 'सत्यशोधक दिंडी'तून समता, एकमय समाजाच्या मूल्यांचा जागर मुंबई, नवी मुंबईतील सत्यशोधक दिंडीत मोठ्या संख्येने सहभागी

ठाणे - महात्मा जोतिराव फुले यांनी स्थापन केलेल्या सत्यशोधक समाजाला दीडशे वर्ष पूर्ण झाल्याच्या प्रीत्यर्थ ठाण्यात सत्यशोधक दिंडीचे आयोजन करण्यात आले होते. या दिंडीत खा. सुप्रिया सुळे, मा. खा. हरिभाऊ राठोड, डॉ. आनंद तेलतुंबडे, उर्मिला पवार, अर्जुन डांगळे, महेश केळुसकर, सुधाकर यादव, एम. ए. पाटील, जितेंद्र इंदिसे, ऋता आव्हाड, केदार दिघे, अतुल गोरे यांच्यासह अनेक मान्यवर सहभागी झाले होते.

सत्यशोधक समाजाच्या स्थापनेस २०२३मध्ये १५० वर्षेपूर्ण झाली. २८ नोव्हेंबर या महात्मा जोतिबा फुले यांच्या स्मृती दिनाच्या पूर्वसंध्येला सत्यशोधक दिंडी काढण्यात आली. ठाणे शहर व जिल्ह्यात तसेच मुंबई आणि नवी मुंबईतील विविध क्षेत्रात कार्यरत असणाऱ्या अनेक सामाजिक संस्था, महिला व कामगार संघटनांच्या वतीने डॉ. प्रज्ञा दया पवार, जगदीश खैरालिया, वंदना शिंदे, मुक्ता श्रीवास्तव, निर्मला पवार, संजय भालेराव, जयंत कुलकर्णी आदींनी पुढाकार घेऊन 'सत्यशोधक विचार संवर्धन समिती, ठाणे स्थापन करण्यात आली होती. दिंडीत सहभागी सत्यशोधकांनी हातामध्ये सामाजिक लढ्यातील कर्मवीर भाऊराव पाटील, पंजाबराव देशमुख, प्रबोधनकार ठाकरे, सावित्रीबाई फुले, फातिमा शेख आदी अग्रणींची छायाचित्रे, तसेच त्यांचे विचार दर्शवणारे फलक हाती घेतले होते. महात्मा फुले यांच्या निवडक अखंडांचे फलकही हातात घेतले होते.

या दिंडीचा समारोप कॉ. गोदूताई परुळेकर उद्यानात करण्यात आला. सुरुवातीला अनुबंध, भारतीय महिला फेडरेशन, समता विचार प्रसारक संस्था, विद्रोही सांस्कृतिक चळवळ, परिसर सखी मंडळ आदी संस्थांनी गीते, पथनाट्य आदी सांस्कृतिक कार्यक्रम सादर केले. तर समारोप समारंभाच्या अध्यक्षस्थानी ज्येष्ठ कामगार नेत्या कॉ. मुक्ता मनोहर होत्या आणि सत्यशोधक समाजाचे अध्यक्ष के. इ. हरिदास हे प्रमुख पाहुणे होते. हरिदास यांनी कॉ. मुक्ता मनोहर आणि अब्दुल कादर मुकादम यांचा फुले पगडी देऊन सत्कार केला. या कार्यक्रमाचे सूत्रसंचालन दत्ता बाळसराफ आणि वृषाली विनायक यांनी केले तर आभार प्रदर्शन समितीच्या वतीने जगदीश खैरालिया यांनी केले.

हा कार्यक्रम यशस्वी करण्यासाठी अभय कांता, सुब्रतो भट्टाचार्य, ओसामा रावळगावकर, निर्मला पवार, अजय भोसले आदी अनेक कार्यकर्त्यांनी प्रयत्न केले. कार्यक्रमाची सांगता राष्ट्रगीताने आणि 'सत्य की जय हो' या घोषणेने झाली.



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परिवर्तनाचा वाटसरू । १ ते १५ डिसेंबर २०२३ ३

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अंकात व्यक्त झालेल्या मतांशी संपादक, संपादक मंडळ सहमत असेलच असे नाही.

मलाच नेस्तनाबूत करत राहतात
बेचिराख वास्तूंचे उद्ध्वस्त अवशेष
सगळेच सहिष्णुतेच्या मारताहेत गप्पा
मी घुसमटून भरून काढतोय अनुशेष!

साहिल कबीर

अयोध्या ते अयोध्या

वैदेही
लावंड

१९९२मध्ये पूर्व नियोजित पद्धतीनं बाबरी मस्जिद पाडली गेली. यामुळे प्रचंड दंगे, वाद, जाळपोळ, दंगलीमध्ये असंख्य बळी हे सगळे घडले. काय आहे वास्तूमध्ये इतकं? का या वास्तूंच्या नेस्तनाबूत करण्याने कोणाची अस्मिता उंचावते अथवा दुखावते किंवा कुठल्या एका शाहीचे महत्त्व वास्तूमधून कसं काय प्रकट होऊ शकतं? काय सांगतो इतिहास आणि महत्त्वाचं म्हणजे वास्तुकलेचा इतिहास. अशा उद्ध्वस्त करण्याने किंवा नवनिर्मितीतून इतिहास पुन्हा लिहिण्याचा, तयार करण्याचा प्रयत्न होतो का?

बाबरी मस्जिद मुघलांचा पहिला राजा बाबर याने सोळाव्या शतकात मीर बाकी यांच्याकडून बांधून घेतली. मुघल राज्यकर्त्यांच्या काळातील वास्तुकलेचा इतिहास हा भारतामध्ये इंडो इस्लामिक या नावाने ओळखला जातो. ही शैली भारतामध्ये विकसित झाली, ज्याच्या तोडीचं काम जगात इतरत्र कुठेही बघायला मिळत नाही. अनेक प्रयोग, प्रयत्न करत कुठलीही वास्तुकला विकसित होत असते. कोणतीही इमारत कुठल्याही देशात, गावात बांधली जाते तेव्हा, जरी ती कुठल्याही बादशहाने बांधलेली असेल अथवा पेशव्यांच्या सरदारांनी, त्यावर काम करणारे कारागीर त्या भागातलेच असतात. काही वैशिष्ट्यपूर्ण कामांसाठी बाहेरून कारागीर बोलावले जातात. हे कारागीर, कामगार आपल्या अनुभवांचे संचित घेऊन येतात आणि या प्रकल्पांवर काम करतात. त्या अर्थानी जरी इमारतीची रचना, कल्पना मुघल बादशहाची असली तरीही ती जमिनीवर उतरवणारे हात आणि विचार करणारे मेंदू हे केवळ मुस्लिम अथवा हिंदूच होते असं म्हणता येत नाही. त्या अर्थानेही या काळातील वास्तुकला इंडो इस्लामिक म्हणूनच ओळखली जाते. याचे आविष्कार आपल्याला त्या वास्तूच्या बांधण्याची शैली, कलाकुसर व भिंतीचित्र यातूनही आढळून येते.

नदी आणि पिण्यासाठी पाणी ह्या जगण्यासाठी अत्यावश्यक अशा गोष्टी आहेत. नद्यांच्या, तलावांच्या किनाऱ्यांवरती अनेक समूह वसले,

लेखिका एसएमइएफच्या ब्रिक स्कूल ऑफ
आर्किटेक्चरमध्ये प्राध्यापिका आहेत. त्या कॉन्झर्वेशन
आर्किटेक्ट असून वास्तुकलेचा इतिहास या
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नष्ट झाले, पुन्हा पुन्हा वसवले गेले. आपल्या प्रत्येक शहराच्या, गावाच्या, घरांच्या खाली अनेक शतकांचा इतिहास दबलेला आहे. पूर्वीचं हे असं होतं म्हणून मी आत्ताचं सगळं नष्ट करून अथवा काढून टाकून त्याचे पुनरूत्थान करतो असं होऊ शकत नाही. तसं म्हणलं तर आता उभ्या केलेल्या शहरातल्या इमारती, गावातली घरं, हे सर्वच मोडीत काढावं लागेल. तसंच बाबरी मस्जिद ही पाचशे वर्ष जुनी वास्तू ही त्या काळाच्या इतिहासाची साक्ष देणारी इमारत होती. ती पाडून अस्मितेच्या राजकारणात, गाडला गेलेला इतिहास बाहेर काढण्याचा प्रयत्न करणे हे आपल्या ऐतिहासिक वारशाचा आदर करणारे निश्चितच नाही. इतिहासाला शास्त्रीय पद्धतीने बघून, आपण आहे तसं आपलं म्हणू शकण्याची शक्यता इथे कुठेही दिसत नाही. भारतातली लोकशाही येण्याआधी आपल्या इथं अनेक शाहींचे, पंथांचे इतिहास असेच जाणून बुजून पुसले गेले. शैव, वैष्णव, बौद्ध, जैन अशा अनेक स्थापत्य कला जन्माला आल्या. आधीच्या वास्तूंना नामशेष करणे किंवा त्यालाच घेऊन पुढे वेगळ्या पद्धतीने बांधणे हे आपण पाहत आलो. पण १९४७नंतर पारतंत्र्यातून स्वातंत्र्यात आल्यावर आपण लोकशाहीच्या अनेक मूल्यांचा, संविधानाचा आणि महत्वाचा म्हणजे सर्वधर्मसमभावाचा अंगीकार केला.

शंभर वर्षांपूर्वीची वास्तू ही आपल्याकडे ऐतिहासिक वास्तुकलेचा वारसा म्हणून ओळखली जाते, आदराने बघितली जाते ज्याला संरक्षण देणे हे कुठल्याही देशाचे, शहराचे, राज्याचे, गावाचे कर्तव्य आहे आणि शिवाय हा एक महत्वाचा ऐतिहासिक ठेवा म्हणून सांभाळणेही तितकेच गरजेचे असते. १९९२नंतर एकूणच भारतीय लोकशाहीची मूल्ये धाब्यावर बसवून एकाधिकारशाहीच्या राजकारणाचे पडसाद महत्वाच्या प्रकल्पांच्या निर्मितीमध्ये दिसू लागतात.

याचे अत्यंत महत्वाचे आणि देशाला अतिशय महागात पडलेलं उदाहरण म्हणजे दिल्लीतील सेंट्रल

विस्ता प्रोजेक्ट. १९९१मध्ये राजधानी दिल्लीला आणण्याचा निर्णय ब्रिटिश राजवटीने घेतला. तिथली अतिशय महत्वाची पब्लिक स्पेस म्हणजेच लोकांची असलेली सामुदायिक जागा अशी ह्या सेंट्रल विस्ताची पूर्वीपासूनची ओळख आहे. ल्युटीन या ब्रिटिश वास्तुविशारदाने नवीन दिल्लीच्या नगर रचनेमध्ये केलेल्या या योगदानाला भारतीय नगर रचनेच्या इतिहासात खूप महत्वाचे स्थान आहे. एडविन ल्युटीन्स आणि हर्बर्ट बेकर हे ब्रिटिश वास्तुकल्पी हे या नगर रचनेचे आणि तिथल्या प्रशासकीय इमारतींचे जनक समजले जातात. या दोघांनी अनेक दिवस, अनेक महिने विचार मंथन करून हा परिसर आणि इथल्या इमारती कशा दिसाव्यात याच्यावर खूप मेहनत घेतली. या मंथनातून व्हाईसरॉय हाऊस म्हणजे आत्ताचं राष्ट्रपती भवन, त्यासमोरचा प्रशस्त रस्ता, इंडिया गेटची, केविन लिंच या अभ्यासकाच्या शब्दांमध्ये म्हणायचं झालं तर लँडमार्कची निर्मिती झाली.

राष्ट्रपती भवन म्हणजे पारिचमत्य पद्धतीचा घुमट आणि मुगल वास्तुकला, बौद्ध वास्तुशैलीचा मेळ आहे. इंडोसारसेनिक वास्तुकलेचं हे एक महत्वाचं उदाहरण समजलं जातं. इंडिया गेट आणि राष्ट्रपती भवन याला जोडणारा रस्ता राजपथ हा ब्रिटिशांनी भारतात आणलेल्या नगर रचनेचा महत्वाचा भाग आहे. जिथून राष्ट्रपती भवन पूर्ण दिसते आणि डोळ्यांना त्याचे दृश्य स्वरूप अनुभवता येते. हे एक लिव्हिंग अथवा जिवंत म्युझियम आहे. भारत पारतंत्र्यातून स्वातंत्र्याकडे जातानाचा महत्वाचा प्रवास या परिसराने अनुभवला. दरवर्षी दिमाखात स्वातंत्र्याचा, प्रजासत्ताकाचा उत्सव इथं पार पडतो. नॅशनल आर्ट म्युझियम, इंदिरा गांधी नॅशनल सेंटर फॉर आर्ट्स या काही अजून महत्वाच्या इमारती या परिसरात आहेत ज्या भारताच्या सांस्कृतिक ऐतिहासिक वारशाच्या साक्षीदार आहेत.

हा भाग वास्तू संवर्धन आणि आधुनिक भारताचा ऐतिहासिक वारसा म्हणून १९६२मध्ये संरक्षित घोषित

करण्यात आला होता. या नियमांनुसार या भागामध्ये कोणतीही नवीन इमारत बांधण्यासाठी परवानगी नसते आणि कुठल्याही प्रकारच्या विकासासाठी परवानगी घेणे आवश्यक असते. तरीही जवळजवळ ४.५ लाख स्केअर मीटर बांधकाम तोडण्याची परवानगी घेतली गेली आणि ती लगेचच मिळाली सुद्धा. नवीन संसद ६५,००० स्केअर मीटर इतकी बांधण्यात आली तर नवीन १० इमारती ज्यांना प्रत्येकी सात मजले आहेत यांची उंची इंडिया गेटपेक्षा थोडी कमी असली तरीही या बांधकामाने या परिसराचे दृश्य स्वरूप बदलून टाकले जाणार आहे हे निश्चितच.

या सर्व नियमांचे पालन न करता अहमदाबाद येथील वास्तु विशारद बिमल पटेल यांना सहजच हा १३,४५० करोडचा प्रचंड खर्चिक प्रकल्प मिळतो आणि सर्व

पर्यावरणीय परवानग्या (environmental clearance) मिळून याच्या बांधकामाला कोव्हिड-१९च्या काळात सुरुवात होऊन २०२४च्या आधी साधूंच्या उपस्थितीत येथील पहिल्या इमारतीचे उद्घाटन होते ह्या वेगाला खरोखरच तोड नाही. नवीन संसद भवनाचे उद्घाटन सर्व धर्मगुरूंनी येऊन करणे हेही खूप सूचक आहे. लोकशाही धर्माच्या वर्चस्वाने चालवली जाईल आणि सर्वधर्मसमभाव, विविधतेतून एकता ही सर्व लोकशाहीची तत्त्वे गुंडाळून ठेवली जात आहेत याचेच हे एक प्रतीक आहे. राजपथचे नाव बदलून कर्तव्यपथ करणे हाही त्याचाच एक भाग. सध्या आपल्याकडे गावांची नावे बदलणे, रस्त्यांची नावे बदलणे अशी अनेक हिंदुत्ववादी रूपकं दिसून येतात त्याचेच अजून एक उदाहरण.

याच प्रकारे प्रगती मैदान दिल्ली येथील हॉल ऑफ

नवीन कर्तव्य पथ आराखडा त्रिमितीय दृश्य

Ref: <https://centralvista.gov.in/>



नेशनचे उदाहरणही हेच दर्शवते की, सोयीस्कररीत्या इतिहासाचे काही स्तर नामशेष केले जात आहेत. हा एक इतिहास बदलण्याचाही प्रयत्न म्हणता येईल. आधुनिक भारताचे स्वप्न आपल्या देशाचे पहिले पंतप्रधान पंडित जवाहरलाल नेहरूंनी वास्तुशिल्प रूपात भारताच्या अनेक भागात उतरवले. चंदिगड ही पंजाब व हरयाणाची राजधानी, जिची रचना फ्रेंच वास्तुतज्ञ ले कबोर्सीअर यांनी केली, ज्यांनी भारतातील वास्तुविशारदांची एक मोठी पिढी घडवली आणि अजूनही पुढे घडत आहेत. तसेच महत्त्वाचे नाव म्हणजे अमेरिकेचे वास्तुकल्पी लुईस कान ज्यांना कबोर्सीअर बरोबरच आधुनिक वास्तुकलेचा जनक समजले जाते. या दोघांच्याही कामाचा प्रभाव वास्तुविशारद राज रेवाल यांच्यावर दिसतो. जुनी प्रगती मैदान येथील हॉल ऑफ नेशनची वास्तू जी आधुनिक भारताचे प्रतीक समजली जात होती ज्याची रचना राज रेवाल या अतिशय नावाजलेल्या भारतीय वास्तुविशारदाने केलेली होती. अनेक अभ्यासकांनी आपल्या लिखाणात आवर्जून या घटनेचा उल्लेख केला आहे की, ही वास्तू भारताची

आधुनिकतेच्या दिशेने वाटचाल म्हणून बघितली जात असे. तिचे नामशेष होणे अनेक विरोधाना न जुमानता हे सामूहिक ओळख, सार्वजनिक अवकाश त्याच्याशी जोडलेल्या आठवणी संपवून टाकण्याशी जोडले जाते. खरे तर हे मोठ्या प्रमाणात घडवूनही आणले जाते असे ऐतिहासिक घटनांमधून दिसते. पण लोकशाहीमध्ये लोकांच्या मतांना न जुमानता हे सध्या सर्रास दिसून येते ही दुर्दैवी बाब आहे. नवीन तयार करण्यात आलेली वास्तू, वास्तुकलेच्या प्रमाणांनुसार दृश्यस्वरूपात कोणतीही खोली तयार करण्यामध्ये, वास्तुकलेचा आस्वाद घेण्यामध्ये, अथवा या इमारतीला भेट देणाऱ्या व्यक्तीला गुंतवून ठेवण्यामध्ये असफल ठरते.

भारतातील महत्त्वाची सार्वजनिक ठिकाणे जी आधुनिक वास्तुकलेच्या इतिहासातील वैशिष्ट्ये म्हणून ओळखली जातात ती बदलण्याची अनेक उदाहरणे दिसून येतात. त्याचबरोबरीने पर्यावरणाचे नियम अनेक ठिकाणी धाब्यावर बसवलेले दिसतात. त्याचीही अनेक उदाहरणे आपल्याकडे पहायला मिळतातच पण नदी सुशोभीकरण या नावाखाली प्रचंड काँक्रीटीकरण आढळून

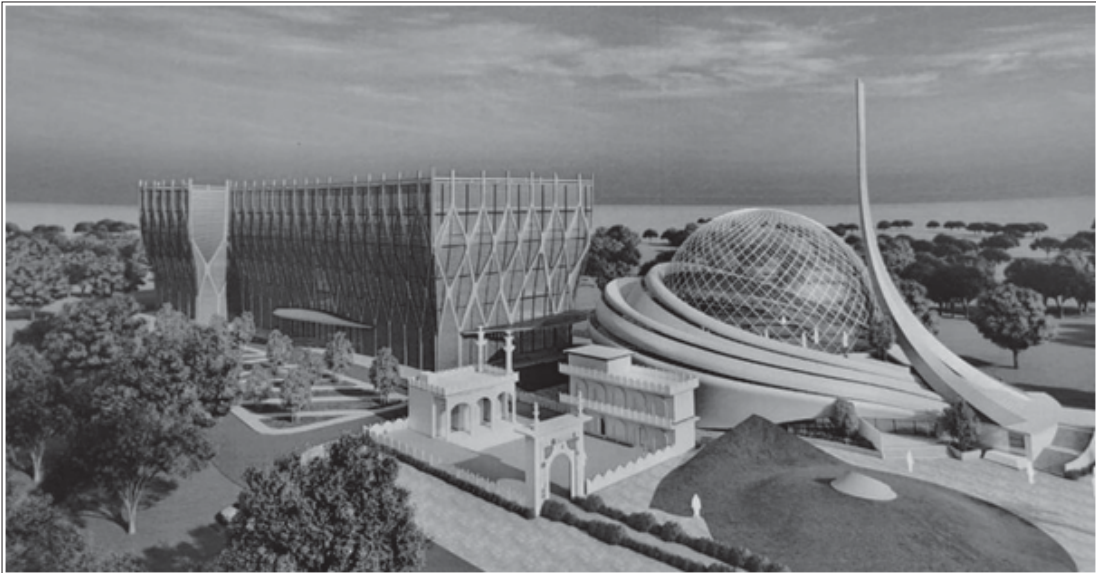


येते. याचे उत्तम उदाहरण म्हणजे साबरमती नदी सुशोभीकरण प्रकल्प, ज्यात मोठ्या प्रमाणात सिमेंटचा वापर केलेला दिसतो. अहमदाबाद सारख्या अतिशय उच्च तापमान असलेल्या शहरात हे सुशोभीकरण तितके फायद्याचे आणि वापराचे दिसून येत नाही.

बनारसमधील विश्वनाथ धाम पुनरुत्थान प्रकल्प हा एक राजकीय विधान म्हणून बघता येऊ शकेल. विकासाचा आणि त्याचा संबंध नाही. बनारसचे एक स्वतःचे अस्तित्व आहे जे त्याच्या नगर रचनेतून, वास्तूमधून, गेले अनेक शतकांचे त्या शहराचे तिथे असणे दिसून येते. त्याच्या धार्मिक स्थळ असण्याबरोबर त्याच्या लहान मोठ्या वास्तु, चिंचोळ्या गल्ल्या हे त्याचे वैशिष्ट्य आहे. हे वैशिष्ट्य बऱ्याच अंशी नष्ट करत सपाटीकरणाची भूमिका घेत हा पुनरुत्थानाचा प्रकल्प जोमाने कोणत्याही विरोधाशिवाय अस्तित्वात येत आहे. पुण्यातील मुळा मुठा नदी सुशोभीकरणाचा प्रकल्पही भयंकर सिमेंट आणि सुशोभीकरणाच्या अतिशय असंवेदनशील कल्पना घेऊन येण्याचा प्रयत्न करत आहे. हे सर्व महत्वाचे राजकीय विधान म्हणून बघता येतील असे प्रकल्प अहमदाबादचे वास्तु विशारद

बिमल पटेल हेच डिझाइन करतात हा पण निव्वळ योगायोग म्हणावा का?

नव भारत उद्यान नावाचा प्रकल्प यमुना नदीच्या काठाजवळ येत आहे जो सेंट्रल विस्टा प्रोजेक्टचा अक्ष नदीजवळ संपतो तिथे हा लवकरच सुरू होईल. या प्रकल्पाची माहिती फारशी उपलब्ध नाही तरीही याचा व्हिडिओ खूपच असंवेदनशील रचनेचे द्योतक आहे. खरं तर हे सर्व प्रकल्प लोकांच्या निधीतून होत असतात आणि लोकांना याची सुतराम कल्पना दिली जात नाही हे सगळ्यात जास्त भयंकर वास्तव आहे. या विकास प्रकल्पामध्ये लोकांचा सहभाग असणे अत्यंत आवश्यक असायला हवे आहे पण यात लोकमताचा, लोकशाही तत्त्वाने हे प्रकल्प पुढे जाण्याचा लवलेशही दिसून येत नाही. इटलीमध्ये दुसऱ्या महायुद्धाच्या काळातला इतिहासाचा एक महत्त्वाचा भाग आहे जेव्हा खूप प्रमाणात नवीन इमारती बांधल्या गेल्या. या मुसोलिनीनं निर्माण केल्या. त्या मुसोलिनीचं आर्किटेक्चर म्हणून ओळखल्या जातात. तसेच जर्मनीमध्ये हिटलरची वास्तुकला अजूनही छळ छांवणी स्वरूपात किंवा त्याने बांधलेल्या प्रशासकीय इमारतींमध्ये दिसून येते.



काहीसं तसच आपल्याकडेही येऊ बघतंय का असा प्रश्न पडतो.

इतिहासकार विल्यम कर्टीस यांनी म्हटल्याप्रमाणे सर्व कालखंडातील आणि सर्व धार्मिक संप्रदायांची प्रमुख आणि काही वेळा सामान्य अथवा काळाची प्रमुख निदर्शक असणारी उदाहरणे अनुभवणे आणि त्यांची जतन, देखभाल करणे हा धर्मनिरपेक्ष प्रजासत्ताकाचा महत्त्वाचा भाग आहे. तसेच भारतीय राज्यघटनेने प्रत्येक नागरिकाचे मूलभूत कर्तव्य त्याचा वारसा जतन करणे आणि त्यांची काळजी घेणे अनिवार्य केले आहे. ७३व्या आणि ७४व्या घटना दुरुस्तीने देशाच्या विकासात नागरिकांचा सहभाग अनिवार्य केला आहे. असं असूनही देशातील अतिशय महत्त्वाच्या असलेल्या वास्तू ज्या इतिहासाच्या साक्षीदार आहेत आणि ऐतिहासिक वारसा आहेत त्या नामशेष करताना कोणाही भारतीयाच्या मताला या लोकशाही देशात फारसे विचारात घेतले जात नाही हे इतिहासाविषयी आदर आणि काळजी या दोन्ही विषयीची उदासीनता दाखवते.

या विवेचनाचा शेवट एका उदाहरणाने करावा वाटतो तो म्हणजे अयोध्येची बाबरी मस्जिद पाडल्यावर इथल्या सुन्नी वक्फ बोर्डला वेगळी जागा दिली गेली नवीन मस्जिद बांधण्यासाठी. जिथं मस्जिद आणि नवीन रुग्णालय तयार करण्यात यावं असा प्रस्ताव देण्यात आला. याचे वास्तुविशारद आहेत जामिया मिलियाचे प्रोफेसर एस. एम. अख्तर. अशा पद्धतींनी फक्त धार्मिक बाजू अथवा धार्मिक संवेदनेची भलामण न करता नवीन स्वरूपातील मस्जिदी बरोबरच लोकोपयोगी रुग्णालय, संशोधन केंद्र व सामुदायिक स्वयंपाकघर इथे बांधले जावे ही कल्पना खूपच संवेदनशील आहे. या कल्पनेचं सगळीकडून खूप कौतुक झालं आणि होतंय अर्थात हा प्रकल्प वास्तवात येणं इतकं सोपं नाही. याला पुरेसा निधी उपलब्ध नसल्याने हा प्रकल्प प्रत्यक्षात यायला बराच वेळ लागेल असंही दिसतंय. असे प्रकल्प

जगातील सर्वात मोठी लोकशाही असलेल्या आपल्या देशात यायला इतका उशीर लागतो आणि राम मंदिर बांधून पुढच्या वर्षी तयार होणार हे भीषण वास्तव आहे.

सर्व जागतिक, देशीय, राज्य स्तरावरच्या सांस्कृतिक वारसा समजल्या जाणाऱ्या सिद्धांतांना, इतिहासाच्या सर्व वेगवेगळ्या स्तरांना, सर्वसमावेशक म्हणवून घेण्याला, सर्वधर्म समभाव इत्यादी वरवरच्या बोलण्याला उद्ध्वस्त करायचं राजकारण आजूबाजूला बटबटीतपणे दिसतं आहे. वास्तुकला ही शाश्वत बराच काळ दृश्य स्वरूपात अनुभवता येणारी कला असल्याने यातून ही प्रतीकं, रूपकं अधिक प्रकर्षांनी उभी केली जात आहेत. शेवटी काय म्हणावं उरल्यासुरल्या अवशेषांना गाडून टाका...कधी न जन्मलेल्या...पृथ्वीवर कधीही न बघितलेल्या व्यक्तीच्या असण्याच्या भ्रमात धर्माचं राजकारण करा....सोयीचाच इतिहास रेढून पुढं न्या. सोयीची प्रतीक निर्माण करत राहा....

पण आपणही या लोकशाही प्रक्रियेत सहभागी असायची शक्यता आपणच निर्माण केली पाहिजे. निदान प्रश्न तर विचारलेच पाहिजेत नाही का?

परिवर्तनाचा
वाटसरू

पीपल्स बुक हाऊस

मेहेर हाऊस,

१५, कावसजी पटेल स्ट्रीट, फोर्ट

मुंबई ४११००१

दू. ०२२ २२८७३७६८

७

माणगावकर एजन्सी

५३८ अ, शनिवार पेठ, किबे लक्ष्मी थिएटरसमोर,

अप्पा बळवंत चौक,

पुणे ४११०३०

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Understanding role of Local and Royal Engineers in 19th Century India through Literature sources

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Abstract :

Colonial rule had influenced 19th-century eclectic architecture as a form of imperial expression in India. European concepts of architecture reached the Asian subcontinent through visuals, literature such as treatises and Manuals published by Royal engineers, paintings, and pattern books. Royal engineers worked in collaboration with local engineers, contractors, and masons giving identity to many historic towns in their way. Several instances from this Neoclassical, Neo-Gothic and Indo-Saracenic phases are evident in India.

Local dialects, culture, people, accessibility, security, Material variations construction techniques, and traditional knowledge of local contractors and artisans sometimes alleviated and occasionally made the newly developed architectural edifices vulnerable too. This research paper tries to compile literary resources available to understand different approaches adopted in the process of organizing and implementing architectural projects in India during the 19th century. Research is conducted with the help of manuscripts, archival resources and secondary resources.

Key words : Eclectic Architecture, Royal Engineers, Local Contractors, Eclectic Architecture, Treatise and Manuals

Introduction :

While understanding the context of 19th century architecture in India it is not just enough to analyze architecture in isolation from society and

administrative forces those affected in the creation of 19th century eclectic style in Indian soil. Changes in Administration had a very significant impact on overall social systems existing in India. Starting from British East India Company to the monopoly of Victorian reign India had gone through several changes. British governors-general headquarter was located in Calcutta. After the mutiny of 1857 East India Company handed over the governance to Queen-Empress in London whose representational power in the form of Viceroy settled in Calcutta.

Systemic changes influencing education, social hierarchy, top to bottom approach and cultural changes we could observe during this period. Figure 1 Macro and micro level changes could be observed in terms of Macro level changes such as Town planning Technology such as Railway, power loom, in architecture Construction techniques and Materials. Whereas at Micro Level Typological variations, adaptation of western Architectural models, Details, Style and at the end formation of Cultural Symbols could be seen significantly. Vocabulary of existing medieval towns changed to module of Grid Iron pattern.

In terms of architectural language, it was probably simpler theoretically for the engineers and officers to construct the built form in their known language rather immediate adaptation of Indian traditional form.

The focus of research paper is upon how literary sources primarily such as Archival sources, treatise, manuals, pattern books, professional papers (Brandreth, 1879) in Indian engineering and many

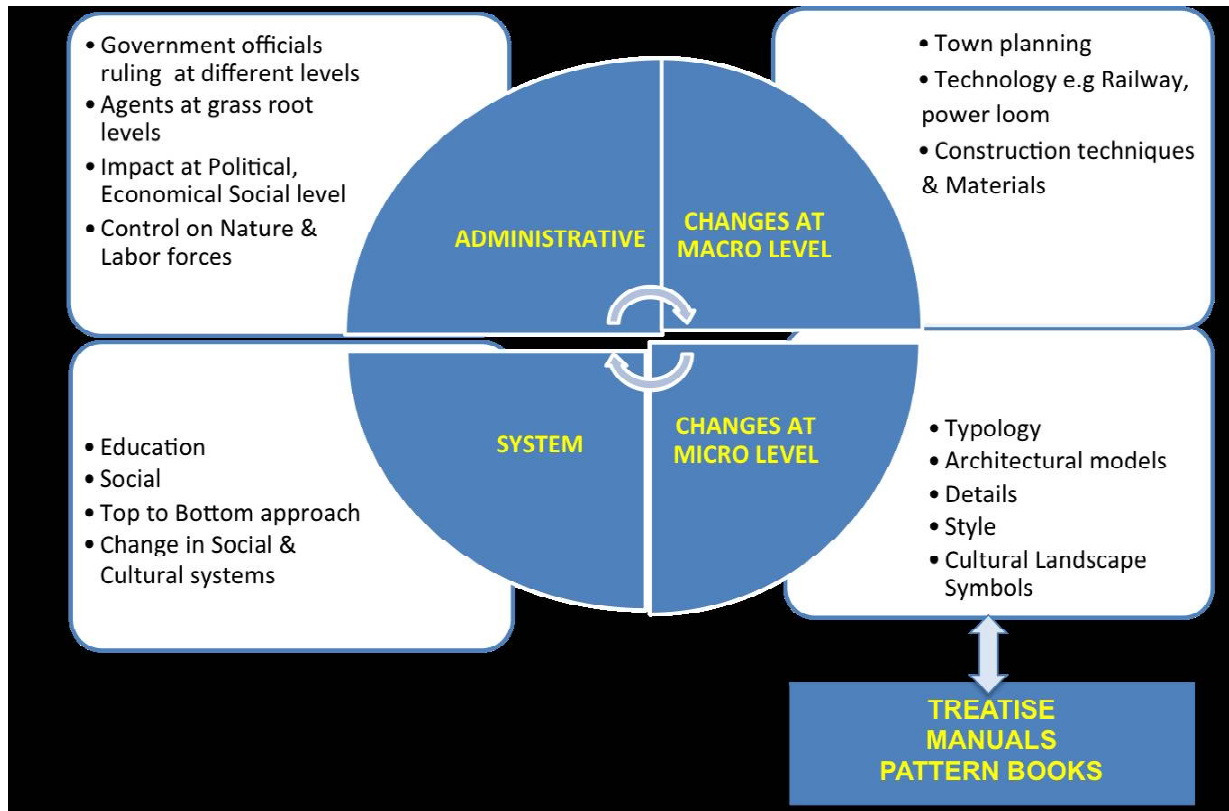


Figure 1 Organization of Colonial Reign in India, Source: Author

secondary works helps us in contextualizing studies upon eclectic architecture evolved in India as collaborative efforts by Royal Engineers and Local Engineers. Discourse is arranged year wise publication of literature upon royal and local engineers worked in Indian context. These are the important resources to understand the process behind actual product where we go in to the depths of studies upon creators of this architectural vocabulary in Indian subcontinent.

Image above Figure 2 explain how these primary resources reached India with the help of several institutional supports. Certainly there are two ways one was top to bottom approach, which supported the colonial officials seating in Britain to reach out to various part of India. Their well-trained Royal Engineers well acquainted with the local culture and dialect could get connected with local communities and existing local artisans, contractors and masons. With the help of treatise and manuals they started their construction activity in Indian soils. On the other hand, local engineers also wrote many papers in

professional papers mentioning how they dealt with the local material and climate constraints while implementing western models in eastern context.

Standardization in the colonial educational patterns tried to inculcate in various ways in local engineers. They followed western patterns in larger context in all parts of India supported colonial construction activities. Numerous articles published in Professional Papers on Indian Engineering by Indian local contractors such as Teekaram who worked majorly in Lucknow, Babu Shumbhoo Dass works could be seen in Bahwalpur Pakistan, Rai Bahadur Kunhya Lal's and Sir Ganga Ram's legendary projects in Lahore Pakistan, Muncherjee Beyzunjee at Hyderabad under Nizam reign are great resources indicating their contribution in architectural vocabulary in this period. These are few of the important names to be mentioned as an effort towards Bottom to Top Approach, which had a major impact on regional variations in architectural language developed in several part of Indian subcontinent. (Lavand, 2017)

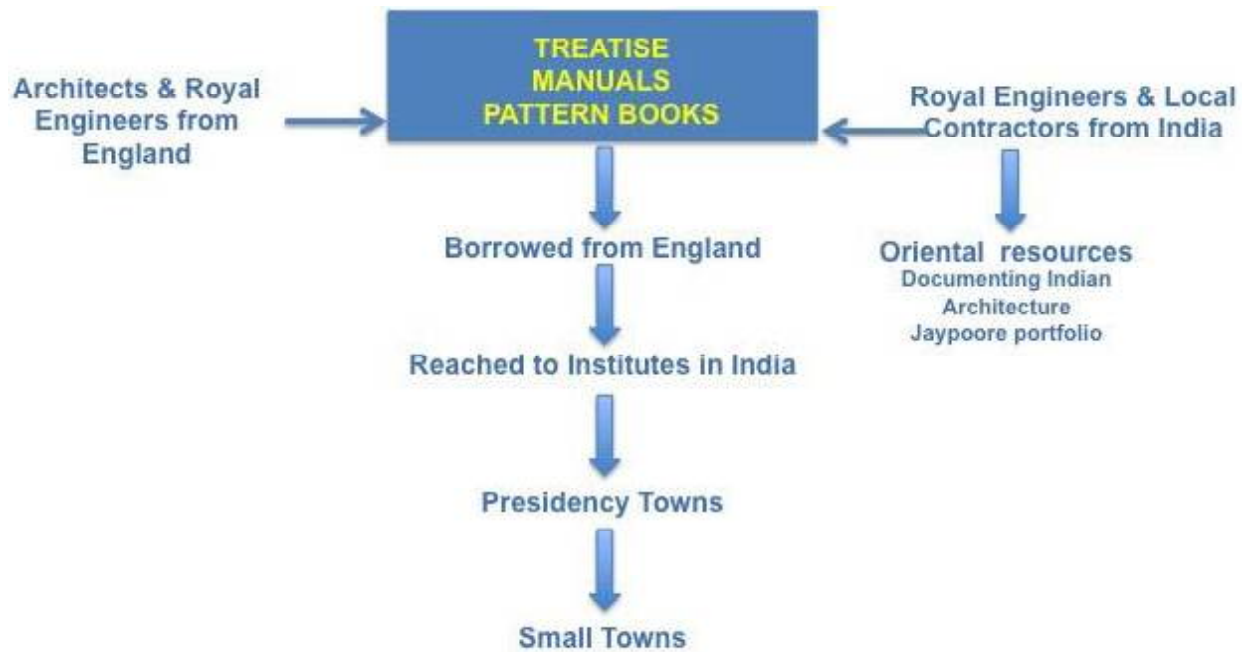


Figure 2 Image showing transmission of primary sources in small towns as reference to trigger construction activity, Top to Bottom approach. Source: Author

Discussions :

Taking forward the point of resources primary, secondary paper tries to contextualize studies on colonial architecture in India. To know genealogical and brief biographies of the ruling princes, chiefs, nobles, and other personages, titled or decorated of the Indian Empire during British period book, *The Golden Book of India* by Roper Lethbridge published in 1893, is very resourceful document. It also includes various abbreviations used for local engineers contractors and other important personalities in Indian context.

In *India and Indian Engineering* three lectures delivered at the Royal Engineering Institute, Chatham by Medley (Medley, 1873) (Medley, 1872) he mainly focused on lives of royal engineers who worked in India in adverse conditions and various works carried out by them. These lectures were delivered to students of engineering fraternity who are aspiring to work in India. In first part along with introduction on Indian climate, topography and lingual, cultural variations he explains the other end of the world for British engineers. In further discourse he describes the framework of Indian government established

under colonial rule and PWD, the Thomason College and duties of engineers. In the preceding segments he discusses in depth about building materials suitable for the context, climatic modifications in several layouts of Anglo-Indian structures, irrigation works, railways, Indian survey department.

Kaye J.W., *Lives of Indian Officers* in 1904 written biographies out of which in Vol I, biographies of Lord Cornwallis (1730-1805), Sir John Malcolm (1769-1833), Mountstuart Elphinston (1779-1859), Henry Martin (1781-1812), Sir Charles Metcalfe (1785-1846) are covered with their early lives, inspirations and services in India with iconic decisions which helped in establishment of British powers in India. Where as in Vol. II, lives of Sir Alexander Burnes (1805- 1841), Captain Arthur Conolly (1807-1842), Major Eldred Pottinnger (1811-1843), Major D'Arcy Todd (1808-1845), Sir Henry Lawrence (1806-1857), General Neill (1810-1857), General John Nicholson (1821-1857) discussed with their extraordinary achievements and capabilities. (Kaye, 1904) Professional papers and treatise published by Thomason College Roorkee are considered as



primary resources in understanding role of royal and local engineers in the evolution of eclectic style in India. The Roorkee Treatise was originally compiled by Lieutenant Colonel J. G. Medley, R.E. in 1866 and issued in two volumes. Treatise grew out of the various college manuals, dealing for most part with subjects which required special treatment to suit the climate and methods used in India, has been constantly revised and rewritten. In a short history of the Thomason College Roorkee started in 1851 note by J Thomason mentions need for establishment of the College for systematic training of Civil engineers in India. (Medley, 1872) Professional papers were published from 1864 onwards and closed after 1887. This was significant resource that documented works of Royal Engineers in India. It has put useful information before officers engaged on public works in India.

Engineering College at Cooper's Hill founded in England, eleven years after closing of Addiscombe. Similar fashion they structured their syllabus to train young British engineers to work as officers in India. Notes from memorandum 'the Civil Engineering College for India' mention about the selection of students of age in between seventeen to twenty and other criteria. Except from the engineering subjects they had to learn general subjects such as English, History, Mathematics, classics, French, German, Chemistry, Physics, Geology and Drawings as well. The next stage of learning was intense theoretical and practical training to prepare for any kind of civil, accounts and works so on. Average yearly income to work in India was approximately 1000 pounds were quite a lot during the period. (Anonymous, 1870)

Hodson V.C.P., in his *List of the officers of the Bengal Army* published in 1927 gives alphabetically arranged and annotated information with biographical notes about officers in India from 1758-1834. (Hodson, 1927) Preface, List of Abbreviations, and Bibliography is an important part of book to mention. Officers in the Bengal Artillery and Engineers from the year 1760 to 1794

mentioned in the first part of book, and after that they are organized as per branches and services they were involved in. Cadets, education, furlough and leave, genealogical references, glossary, Lord Clive's Fund, Medals, Rank, Reorganization, Retirement regulations, select picket, Staff, Chronological list of campaigns are further stated in these parts with elaborate data.

Sandes E. W. C. Lieut. Colonel in 1933 documented contribution of Royal Engineers in all parts of India. Historic background of Military Engineers from its initial phase till the formation of PWD in India and events are documented mainly in volume I. Works of Royal corps, Military engineers, Colonels worked under three presidencies have been recorded briefly in this volume II. (Sandes, 1935)

In the lecture by Architectural historian Gavin Stamp in 1981 in London, he stresses upon role and contribution of Royal Engineers in Indian architectural activity during 19th century. (Stamp, 1981) He mentions comments of various important personalities like J.L. Kipling and Robert Fellows Chisholm 2 who had their major contribution in late nineteenth century art and architecture. He mentions number of Royal Engineers with reference to their architectural projects in important Presidency Towns like Calcutta, Bombay and Madras. This refers also to the various typologies of works they executed with their origin of models they tried to implement with the context.

In 1988-89 article published by Historian Samita Gupta *Some Indian Influences on Colonial architecture in Bombay* she mentions works of various Royal engineers specifically from Bombay and Poona in late 19th century. She mentions special architectural features like floral capitals, gargoyles and so on used in Poona and Bombay. Modifications in designs sent from London were made considering local climatic conditions, constructed in Basalt and polychromatic sandstones got its peculiar character during the phase. (Gupta, 1988-89)

Sylvie Raulet in the Book *Maharaja's Palaces: European Style Imperial India* published in 1996



with extensive photographic illustrations focuses on Palatial typology developed in 19th century India in different parts under princely states. Before commenting on architectural aspects she has discussed influential artists like Tilly Kettle, Zoffany, and William Hodges in the British period those travelled in India. Various Indian and European artistic elements such as sculpture, decorative elements, and woodwork are elaborately discussed as they were modified and used for the purpose of decoration of the palaces. Name of royal engineers, architects worked on layouts and execution of the project is given in the further discourse with their inspirational models in some cases. (Sylvie, 1996) Briefly she has mentioned layers of history for the emergence of palaces. Total nineteen examples are discussed. Examples such as New Palace Kolhapur and Laxmi Vilas Place are designed by R. E. Charles Mant are landmarks in both the princely states.

Architecture in Victorian and Edwardian India, edited by Christopher W. published in 1994 derives ideas associated with Indo-Saracenic style by various researchers discussed for 19th century cases in India. Book consist nine articles by eminent scholars on various examples of colonial buildings emerged in different parts of India and their significance. (Christopher, 1994) Partha Miller talks on *The Formative Period (Circa 1856-1900): Sir J.J. School of Art and the Raj*, Giles Tillotson argued about *Orientalizing The Raj: Indo-Saracenic Fantasies*, Christopher W London's article on *Edwardian architects of Bombay* deals with concepts of George Wittet and John Begg, Muthian S. in *Splendour of Indo-Saracenic* the styles of Madras are discoursed with various examples and aspects of Indo-Saracenic elements are examined. In *The Country Style: The remaking of Lucknow*, with various architectural examples, works of engineers and Rosie Lewellyn explores their influences. Zeo Yalland writes about *Little Details of the Long View: Victorian Cawnpore*, Andrew Robinson in *A poet's Vision: The house of Rabindranath Tagore* explored in detail and at

the end in *The myth of the Monuments: Public Commemorative Status* Mary Steggles turns our attention towards emergence of commemorative statues in British Hegemony.

Paradigms of Indian Architecture: Space and time in Representation and design edited by Tillotson in the year 1998 comprises important articles published by various authors discusses on colonial elements. In the first part *The Monuments Described*, article by Thomas Metcalf as *Past and Present: Toward an aesthetics of colonialism* discusses the manifestation of set of aesthetic values of Taj Mahal Lamp, Madras memorial designed by Henry Irwin and The Selangor Secretariat Kuala Lumpur, Malaya. Second article by Tapati Guha's *Tales of the Bharhut Stupa: archeology in the colonial and nationalist imaginations* raise several questions related to formation and existence of archeology of India as separate discipline. Alexander Cunningham's monograph of 1879 on *The Stupa of Bharhut* is been taken as examples by author for further analysis. (Tillotson G. , 1998) (Tillotson G. H., 2014)

Christopher W. in his book on *Bombay Gothic* published in 2002, chronologically mark the formation of public realm in Bombay context in late nineteenth century underlining various styles emerged under the Gothic revival. (Christopher, 1994) He mentions selected bibliography at the end of book and explained different terms related to styles of architecture developed in Bombay after 1850s. At the end of book, he has marked timeline of parallel events and works carried out completed by various Royal engineers and architects in Bombay.

In the book *Colonial Modernities* edited by Peter Scriver and Vikramaditya Prakash in the year 2007, is a collection of discourse on varied subjects covered by eminent researchers on colonial period in India. (Peter Scriver, 2007) Especially the second part 'Institutional Frameworks' deals with the Public Works Department of British India, analyzing formation and presence of this formal institution in India. Arindam Dutta does significant statements and



elaborate on Building activity by royal engineers as mass production considering its positive and negative aspects.

Preeti Chopra in her published PhD research book in 2011 titled *A Joint Enterprise: Indian Elites and the Making of British Bombay* touches various sociopolitical, economical aspects related to 19th century architectural typology developed in Bombay. (Chopra, 2011) With extensive references of primary and secondary sources she explain the context of architectural style developed in the colonial regime in Bombay in association with the local contractors. Important part of her research focuses on works of Local Engineer Murzban who worked in Bombay in late nineteenth century. Vocabulary of his own architectural projects, and his socio political connections with various classes are portrayed with numerous sources and he emerged as an important personality in the period of enlightenment.

Das Pradip Kumar reveals different layers of Indo-Saracenic movement in his book *Henry Irwin and the Indo-Saracenic movement* published in 2014. Book is divided in 10 chapters commencing with architecture and the colonial state, Eclecticism or Eccentricity, An Irish Engineer in search of a style, Panchmarhi: A church in the Mountains, The Lodge on Observatory Hill, Exuberance Imitation and Compromise, A palace like no other, The Impact of Engineering, Cultural Commitment or misplaced priorities and ends with Epilogue. (Kumar, 2014) Author has traced architectural biography of Henry Irwin as significant designer of British government.

Conclusions :

There is data available from a broader point of view to understanding the context of colonial architecture in India but we could get very few glimpse of grassroots level works carried out in comparatively smaller towns. Emergence of various typologies in architectural development changed urban landscape during the phase.

It is being observed after unearthing data from archives, books, original drawings and online resources that though all the projects are scattered at so many places in India they have similar threads those goes back to European style. This western style reached India in a very systemic way through Military College at Adiscombe then to Thomason College Roorkee and other engineering institutes. Papers were published to reach out to smaller towns, which reflected in smaller experiments in various parts of India. Royal engineers and Local engineers added their flavors in original western models and this transition is evident in three important layers in India. Such as neoclassical phase, neo-gothic phase and Indo-Saracenic phase. The overall transition is interesting to demarcate and can be traced in several literary resources as well.

In earlier published works discussion is more upon designers those worked in execution of landmark projects of presidency towns in India. For example, professional papers publishing important projects such as Amritsar Railway Station, Ganga canal, Construction of Ambha Ghat and many more which marked their existence and helped in actually strongly putting foundations of colonial reign. Whereas later discourse by Tillotson, Rosie Llewellyn-Jones, Catherin Asher, Zoe Yalland, Vikramaditya Prakash and Arindum Dutta covers some cases from smaller towns from various parts of India. This Anglo-Indian style in various forms is experiential in smaller towns of Deccan region too, which has not given much attention. While talking about royal engineers and their collaborative works in smaller towns of Deccan, other than Bombay there are very less discourses available to refer apart from studies done by Preeti Chopra and and Vikramaditya Prakash. Towns like Poona, Kolhapur, Satara, Ahmedabad, Sholapur, Ahmadnagar and so on are not elaborately discussed anywhere. Some references except like New Palace Kolhapur and important educational and religious typology buildings from Poona mentioned in some writings. These small historic towns left their mark



on this eclectic phase in the form of intricate craftsmanship and traditionally used decorative elements in very unique way. Several local engineers, designers from smaller towns are unknown and not discussed much due to lack of availability of resources. They are equally important for their incredible role in the process of eclectic movement as executor of landmark structures they built. Emergence of varied typology of buildings like domestic, religious, public and semipublic in smaller towns leads in the development of architectural style amalgamating eastern and western traditions. This study indeed would be helpful to researchers who are looking at colonial architecture in India from bottom up approach.

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A Study of Water Management for Built Environment in Rural Part of Western Maharashtra

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Abstract:

The water resource planning of the transitional villages is always the focus area of planners. The purpose of planning is to optimize the use of resources sustainably. Sustainable Development Goal (SDG) 3 Good health and well-being, SDG 6 Clean Water and Sanitation, SDG 9 Industry, innovation and infrastructure, SDG 11 Sustainable Cities and communities, SDG 13 Climate action all have a direct connection with water resource management in the built environment. Several departments of the government of India and policies are active on this front. This paper focuses on SDG 6, to relate the existing policy framework and the present state of water management systems in the rural areas of Western Maharashtra. Various aspects of the built environment that help in sustainable water management are considered to establish this relation. The representative cases of the villages are taken from the state of Maharashtra. The visual surveys are conducted in five representative village typologies. The research observes the present status of water management practices and identifies the gaps where the policy framework can be designed/modified for ensuring clean water and sanitation.

Keywords: Water Resource Planning, Rural areas, Growing Urbanization, Public Participation

Introduction:

Water security and sanitation are fundamental global issues (The Global Goals, 2022) and play vital role in sustainable development (Travis Katz; Jennifer Sara, 2004). It is argued that the changes in population and economic growth will affect the supply-demand balance for water (Hurlimann & Wilson, 2018). Environmental quality and human well-being are interrelated. The quality and quantity of water that is readily accessible to populations are influenced by water-related ecosystems (Paul, 2022), and



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Title: Decoding Comprehensive Sustainability in the Design of Affordable Housing in the Urban Context

Authors: Alka Sunil Kote (Professor in Civil Engineering at Dr D Y Patil Institute of Technology, Pimpri, Pune);
Sudhir Ramesh Deshpande (Associate Professor, SMEF's Brick school of Architecture).

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Citation: Alka Sunil Kote and Sudhir Ramesh Deshpande (2021). "Decoding Comprehensive Sustainability in the Design of Affordable Housing in the Urban Context." *International Journal of Architecture, Engineering and Construction*, 10(2), 1-11.

Publisher: [International Association for Sustainable Development and Management \(IASDM\)](#)

Abstract: The developments in social, economic, political, health, and environmental aspects in the urban context have direct implications on the cost of a house. It leads to the requirement of a comfortable space where the physical, psychological, and social needs of the occupant are fulfilled at an affordable cost. Thus, the design of affordable housing needs an integrated sustainable approach. An urban city like Pune in India is an emerging metropolitan city facing similar challenges. This paper attempts to decode the concept of comprehensive sustainability through social, environmental, and techno-functional dimensions based on attributes derived from qualitative literature. Also, this study is supported by an occupant survey carried out in low economy wards of Pune, India. Based on the observations and inferences from the survey, this study proposes decisive measures like the style of planning, culture, communication space planning, density planning, orientation, energy efficiency, space optimization, and construction technology to ensure sustainability and affordability. The findings from the comprehensive sustainability matrix recommend long term affordability in design, construction, operational, and repair costs in housing.

Keywords: Affordability, sustainability, urban planning, occupant, housing design

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Decoding Comprehensive Sustainability in the Design of Affordable Housing in the Urban Context

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Abstract: The developments in social, economic, political, health, and environmental aspects in the urban context have direct implications on the cost of a house. It leads to the requirement of a comfortable space where the physical, psychological, and social needs of the occupant are fulfilled at an affordable cost. Thus, the design of affordable housing needs an integrated sustainable approach. An urban city like Pune in India is an emerging metropolitan city facing similar challenges. This paper attempts to decode the concept of comprehensive sustainability through social, environmental, and techno-functional dimensions based on attributes derived from qualitative literature. Also, this study is supported by an occupant survey carried out in low economy wards of Pune, India. Based on the observations and inferences from the survey, this study proposes decisive measures like the style of planning, culture, communication space planning, density planning, orientation, energy efficiency, space optimization, and construction technology to ensure sustainability and affordability. The findings from the comprehensive sustainability matrix recommend long term affordability in design, construction, operational, and repair costs in housing.

Keywords: Affordability, sustainability, urban planning, occupant, housing design

DOI: <http://dx.doi.org/10.7492/IJAEC.2021.010>

1 INTRODUCTION

House is a place that needs to be experienced personally and should be well connected with its surroundings. The developments in social, economic, political, health, and environmental aspects have direct implications on the cost of a house. It leads to the requirement of affordable housing. The design of affordable housing needs an integrated sustainable approach. There is a need to think of affordability in housing with sustainable measures beyond floor area adjustments and compressed space design. Sustainability is not only limited to green initiatives but also interrelated with allied aspects such as socio-economic, environmental, functional, etc. Comprehensive sustainability means sustaining the occupant socially, economically, and environmentally (Ibem and Aduwo 2015). The conventional policies like compressed areas and vertical settlements create possibilities for new under-rated developments. Therefore, efficient planning measures, innovative construction technology, and energy efficiency feature considerably reduce the operational and living costs without compromising qualitative aspects. The quality of the construction, neighborhood, and environment determines affordability (Mashal 2010). Various techno-functional, social, behavioral factors affect the quality of housing

(Soen 1979). The quality of housing requires an analysis of various parameters of the context. The parameters are individual and family needs, dwelling unit or space requirement, neighborhood, location, tenure, building regulations, structural norms, cultural bonding, and the occupants' psychology. There is a need to create awareness about people's lifestyles while designing affordable houses (Sidawi 2008). Therefore, context plays a vital role in qualitative, affordable housing.

The cities in India are also urbanizing at a rapid rate. Urban cities like Mumbai and Pune are the fastest growing cities in Asia. The case city Pune is a western IT capital hub and is getting recognized as a Mumbai twin city. The migration of people from surrounding towns to metropolitan cities is remarkable due to employment and business opportunities. Thus, there is a dearth of houses in Pune urban areas at an affordable cost.

As per the Development Control and Promotion Regulations (DCPR) of Pune Municipal Corporation (PMC), developers are required to construct 20% affordable housing of the built-up area for the approval of layout projects (PMC 2017). The PMC and several corporations offer amenity areas to plan affordable housing under a Govt of India Initiative Pradhanmantri Awas Yojana 2022.

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Therefore, it is the right time to incorporate comprehensive sustainability in affordable housing in Indian urban cities.

2 METHODOLOGY

This research specifically aims to interpret the “sustainability” concept fully to achieve affordability in housing. As shown in Figure 1, the investigation begins with exploring the correlation between affordability and sustainability in the urban context.

The evaluation of social, environmental, and techno-functional dimensions is done in two ways: i) questionnaire survey of occupants in the economy wards of Pune city by random sampling, and ii) informal discussions with architects, engineers, and study of peer-reviewed journal articles and research papers. The social, environmental, and techno-functional dimensions of comprehensive sustainability, thus derived from the two ways, are then discussed with reference photographs, analytical sketches. Observations and inferences are discussed to evaluate the comprehensive sustainability matrix from the results. The social, environmental, and techno-functional sustainability dimensions are discussed in greater detail in the next section.

3 DATA COLLECTION AND DISCUSSIONS

Sustainability is studied comprehensively, considering its social, environmental, and techno-functional dimensions concerning the urban context. The social dimensions include a regional connection in an urban context, density, and communication space planning. Environmental dimensions include orientation and arrangement of building considering climatic conditions. It also considers the use of renewable energy sources and effective waste management techniques for self-sufficient habitats. Techno-functional dimensions consist of space configuration, room profile, and style of planning. It focuses on the selection of innovative construction techniques and materials.

3.1 Social Dimensions of Sustainability

Every human being has a social need for interaction through visual and verbal connection with the neighborhood. The sustainability in the social habitat generates the quality of life in the lives of the occupants. Therefore, the importance of social health in the design positively affects its acceptance (Bordignon 1998; Salama

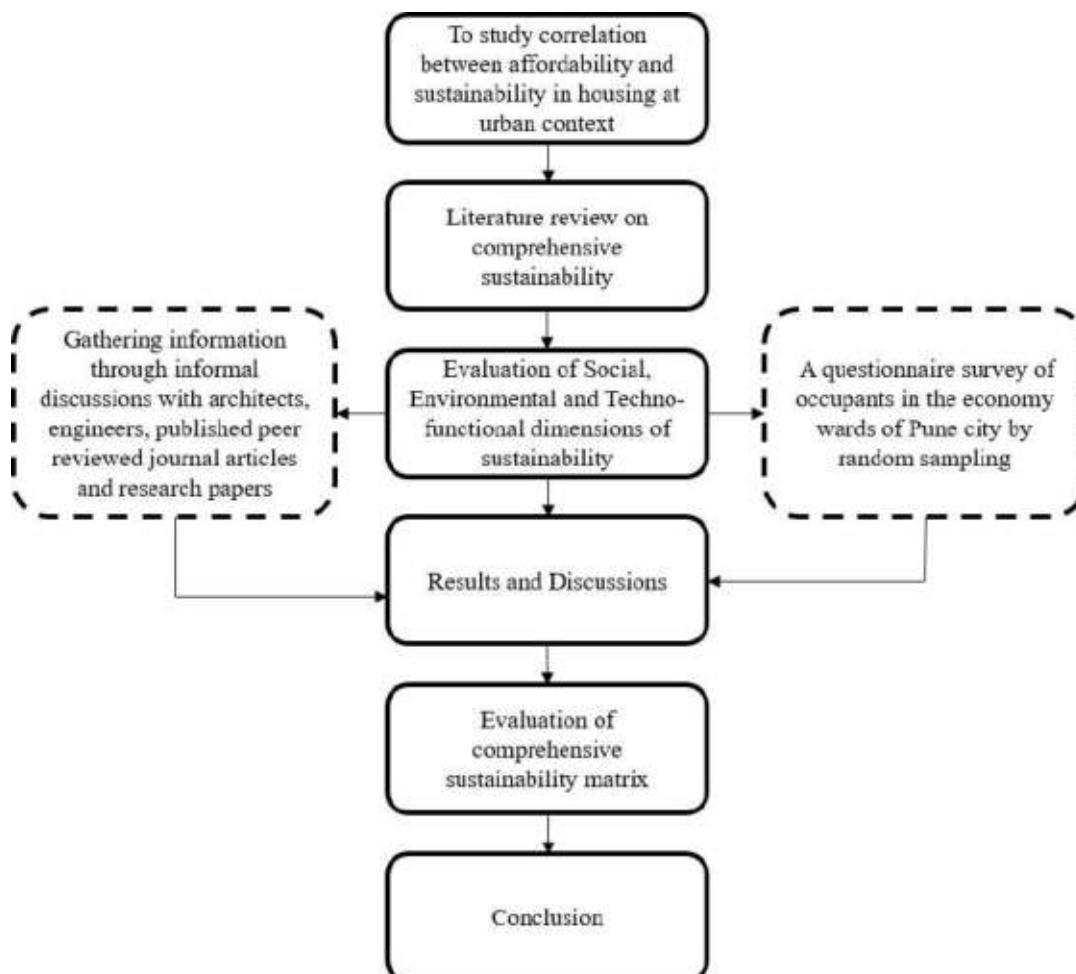


Figure 1. Methodological framework for decoding comprehensive sustainability

2006; Sidawi 2008). A socially sustainable house includes people's cultural needs and lifestyle in terms of the design of a space, function, and identity. It provides the elusive add-ons such as aesthetics in the social fabric, safety, security, sense of completeness, etc. (Friedman 2005). The quality interactive spaces create a sense of belonging and reduce the occupants' stress levels in an urban context. The design of quality spaces and built or unbuilt characteristics facilitate social interaction among the occupants. The functional space with spatial configuration and physical composition of profile and design elements are the building's major social components (Hillier and Hanson 1984). The social dimensions in sustainability range from habitat to the unit level. The inclusion of social dimensions in housing facilitates sustainable and affordable living for the occupants.

3.1.1 Regional connect

The design of the housing is an expression of native culture and architecture. People relate their houses with regional context. Thoughtful identity creates regional consciousness in a subjective manner. The regional connection establishes a link between habitat and the house. It can be reflected through its building character, i.e., style, form, facade elements, color combinations, and spatial qualities of regional architecture. The linkage between human psychology, appearance, anthropology, visual expression, and sociology is influenced by urban cities' design (Ettehad *et al.* 2014). Social sustainability can be achieved by functional design and respecting the regional context and culture (Karuppannan and Sivam 2011). The region sensitive approach offers intangible learnings to the next generation in understanding the history, culture, and lifestyle of the society. It will also help to avoid monotony in the physical environment of urban cities. Figure 2 shows the regional building character of Pune. Figure 3 shows the analysis of the spatial qualities of building character of Pune.



Figure 2. Regional building character of Pune

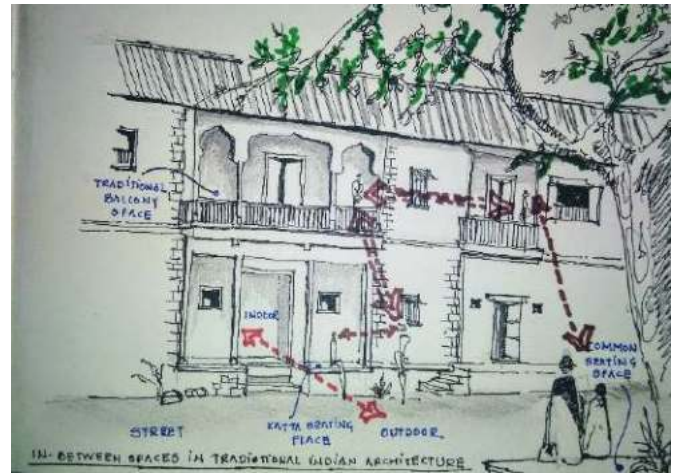


Figure 3. Spatial qualities of regional building character of Pune

The socio-cultural dimensions conserve an identity and add aesthetical value to a cityscape. The culture drives the quality and quantity of spaces and their utilization (Sharma 2018). The consideration of lifestyle, culture, and psychological associations of occupants with space is an inseparable part of the design process. Occupants should relate to their house as a home rather than just a living facility.

3.1.2 Density

The appropriate density of a house is also another social dimension of sustainability. The density is not only about the number of people. The correlation between the number of people with available space is important. High density in a compressed space is a concern. Thus, the quality of life in affordable housing is highly affected by density (Ismail *et al.* 2015). The number of people per tenement to be considered is five as per DCPR (PMC 2017). Therefore, the density calculation for the available area decides sustainable quality in unit space or open space. In Pune, the housing consists of different residences like Wada, chawls, apartments, gated communities, and townships. Any type of housing arrangement can cater to high density, but space optimization makes a difference. In this scenario, flexible and convertible housing spaces contribute to space optimization and affordability in an urban context.

3.1.3 Communication space

Housing habitat demands informal communication spaces at the apartment level and in between the built forms. The housing typologies in Pune like Wada, chawls, or courtyard-oriented apartments create a sense of community. The outdoor and indoor communication spaces generate transitional harmony between built and unbuilt. Residential open space plays a vital role in residential environment quality. It creates a cohesive relationship with the form, shape, plan, structure, and functions of the built

environment (Trancik 1986). Therefore, the elements like overlooking galleries, central atrium/courtyards, interim passages are significant in establishing communication among the occupants. The courtyard provides a common space for the occupants to access their apartment, whereas the transitional spaces are the connecting nodes between the built and the unbuilt space (Wood 2017). Figure 4 and Figure 5 show the transitional communication spaces between the apartments. It creates an interactive physical environment with horizontal and vertical communication. Figure 6 explains the association between communication space and built form to have better



Figure 4. Communication area



Figure 5. Transitional space

social sustainability.

The communication spaces cater to families' secondary functions like chatting, newspaper reading, web communication, secondary household works, and play activities. It adds value to the lives of the occupants without increasing expenses. Therefore, affordability in housing can be achieved by addressing social dimensions. These are the intangible aspects of living that contribute to affordability and quality of life. The sense of connectedness changes the perception of occupants and observers about affordable housing in an urban context.

3.2 Environmental Dimensions of Sustainability

Urban cities are overloaded and expanding every year. The cities face challenges regarding climatic conditions such as increasing temperature, change in rainfall patterns, etc. Some urban areas in the Indian cities are dependent on water tankers though having enough rainfall. It shows the disturbing supply and demand ratio of basic infrastructural facilities like water supply. Therefore, any new development should possess a self-sustaining mechanism to decrease the load on existing infrastructure. The environmentally sustainable infrastructure has many advantages like, enhancement in living standards with the help of design policies, minimization of operating costs, reduction in energy bills through the energy-efficient mechanism, and improvement in health and hygiene using eco-friendly material (Hayles 2006). Various inventions such as the application of energy-saving techniques such as solar heating, management of wastewater, usage of recycled material, and development of green spaces in the vicinity of urban housing help to operate the buildings effectively (Singh and Pandey 2012).

3.2.1 Orientation and arrangement

Pune has a moderately hot and dry climate. In such

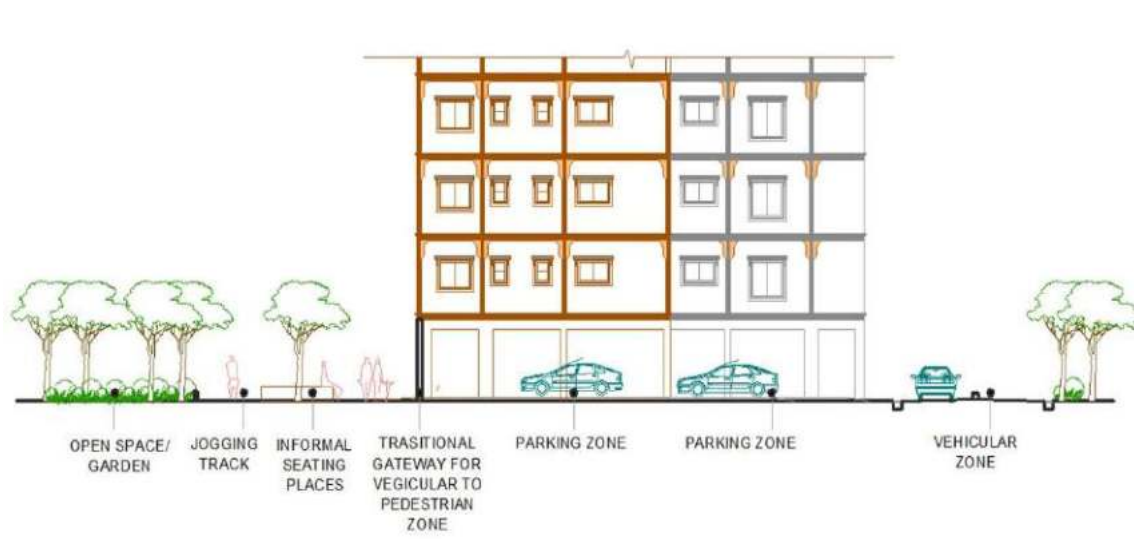


Figure 6. The associative connection between built space and communication space

circumstances, enhanced shading and ventilation can be achieved through the orientation and arrangement of the building (Golubchikov 2016). Minimum solar radiation with maximum diffused daylight is attained by facing a larger facade of buildings towards North-South. The arrangement of the building should have mutual shading during summer. To ensure reduced solar heat gains, the central open space should be located to receive shade during a summer evening. Also, the light shade colors to external facades can help to reduce solar heat gains. For enabling the cross ventilation, the building's orientation should allow summer winds from West and North West to flow within the cluster.

3.2.2 Use of renewable energy sources

Affordable housing equipped with green initiatives reduces energy requirements during functional activities, thereby relaxing the energy expenses (HUDCO 2014). More than 95% of the wind's strength is accumulated in five states in southern and western India (Chaurasiya et al. 2019). Renewable energy tools like wind-driven and solar-driven can lower the operating costs of the project. It reduces energy bills up to 30% and offers relaxation in living costs for the occupants (Hayles 2006). Pune is already heading towards the set-up of a natural gas supply framework across the city since 2006. The objective is to provide clean, environment-friendly green fuel as an alternative to conventional fuels like petrol and diesel. It ensures the safety and cost affordability for the occupants (MNGL 2018).

3.2.3 Effective waste management

The waste at the domestic level segregates into bio-degradable and non-biodegradable waste. Non-biodegradable waste can be partly treated at the municipal corporation level and partly on the premises themselves. Urban areas consist of various industries, medical facilities, commercial utilities, and increasing residential developments. Therefore, it is time to think about waste management techniques at the individual project level. Municipal corporation regulations have already made compulsory amendments for motivating vermicomposting in the housing projects. There is a scope and opportunity to build a good economy by treating the waste at the domestic level. Waste management techniques like bio-methanation, incineration, and landfill generate bi-products such as manure, fly ash, biogas. The wastewater can be treated and used for domestic activities other than drinking. Stormwater management techniques can reduce water demand for secondary functions. The waste treatment at the origin itself is an ecological technique (Agarwal et al. 2015). The environmental dimensions should be addressed to achieve self-sufficient habitat. In an urban context, the self-sufficient habitat creates an opportunity of reducing operational costs of living, resulting in affordability in housing.

3.3 Techno-functional Dimensions of Sustainability

Technical and functional dimensions bring affordability to the housing project. The newness in the technology allows different combinations to evolve affordable alternatives for construction. The occupants adapt houses by considering the planning of units, room sizes, profiles, functions, circulation, etc.

3.3.1 Room profile and space configuration

Room profile is a key element in the usability of a space. Rectangular or squarer room profile creates maximum usable space than any other shape. The orthogonal 90° adhering lines create efficient delineating space. The rectangular building consumes the least number of walls compared to other shapes. The design and planning should possess a high value of utilization factor. Every corner and passage are precious in terms of housing economics. In Pune, traditional building styles like Wada, chawl also shows horizontality with rectangular or squarer room profiles. It is possible to divide any rectangle with incremental quality (Steadman 2006). The sequential arrangement of rectangular areas in Wada planning is shown in Figure 7. It ensures the multi-functionality of the space with maximum utilization.

3.3.2 Style of planning

Affordable housing projects face limitations in the provision of space. Therefore, innovative design ideas in the style of planning facilitate space optimization without having larger usable areas. In planning, the rectangular profiles can create a flowing space when possible, open up doorways or walls, so adjacent rooms blend together. Flexible spaces also offer effective space optimization. In this scenario, the squarer dimensional profile benefits the space to have multiple activities in a defined area. Figure 8 shows how the utilization is reduced due to the length of the passage, and Figure 9 shows how that can be reduced by effective planning. Figure 9 also illustrates a combination of square and rectangular spaces with their interior elements. The planning style helps develop multi-functional complementary spaces in the same area without hampering the overall economics of salability.

3.3.3 Selection of technology

The selection of technology is a vital dimension of affordable housing. The mass scale of the affordable housing project creates opportunities for the implementation of these new technologies. The traditional construction systems have some limitations. These systems are generally slow-paced and consume much energy and natural resources producing a large carbon footprint. The conventional system relies more on manual labor than using automation techniques. Moreover, such systems suffer from

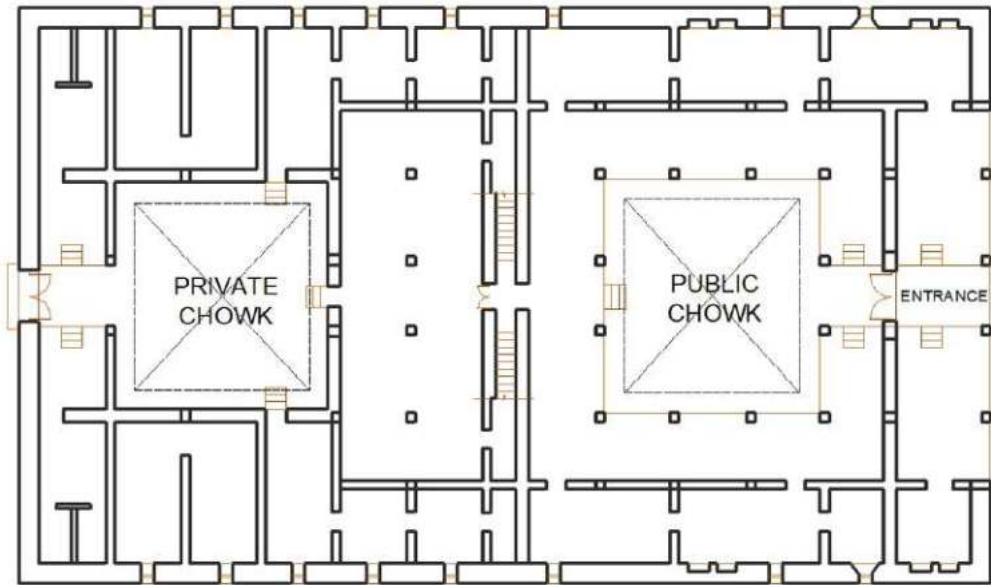


Figure 7. A typical plan of Wada



Figure 8. Floor plan showing less utilization of space



Figure 9. Floor plans showing more utilization of space

a quality, maintenance, and the environment (BMTPC 2018). Pune city also has a suitable market for having such innovative technologies in construction. There are few developers and government projects in Pune which have already adopted the precast structural system, paneling, tunnel form, mivan structural systems. The use of innovative construction techniques is to expedite the pace of construction. It reduces cost overruns considerably and helps to do parallel activities in construction. To obtain less operational, repair, and maintenance cost, novel technologies like precast construction, GFRC building systems, CFS housing systems, EPS panel construction, tunnel form, lightweight concrete constructions can be implemented (BMTPC 2018). To have innovations in

the domain of building construction, various novel and alternative building materials are included in the recently published National Building Code 2016 by the Bureau of Indian Standards. Techno-functional dimensions drive the design towards innovative methods of design and construction. It positively impacts the surrounding market to have materials, skilled laborers, and required machinery for on and off-site construction methods. It considerably reduces the cost of construction.

4 ANALYSIS OF RESULTS AND INFERENCES

The data of occupants was collected with the help of a

Table 1. Analysis of occupant survey

No.	Aspect addressed	Questions	Observation and inferences
1	Flexible and incremental design	The occupants were asked about their acceptability towards flexible and convertible elements and areas in unit design. They were also asked about the adoption of new technology that can offer a facility of incremental design with existing space.	The analysis shows that more than 90 percent of occupants reported a positive inclination towards flexible and incremental spaces. The higher density with efficient space optimization achieves affordability. It will help eliminate ideas like reduced floor areas, compressed spaces, and other aspects that affect social sustainability. Also, occupants can increment their houses as per their improved economic sustenance.
2	The physical configuration of space	Occupants were asked about their preference towards aspects of the physical configuration of space like room profile and an internal height of habitable areas in their houses. The purpose was to investigate occupants habitual pattern in utilizing the space in horizontal and vertical dimensions	The analysis shows that about 50% of occupants preferred any room profile, i.e., rectangular or square or any other with 2.75 m as internal height for their houses. About 20% of occupants preferred rectangular or square profile and 3.05 m as internal height. Therefore, it expresses the user's inclination towards the rectangular or squarer shape for room profile than any other shape.
3	Operational expenses	Occupants were asked about the affordability in paying rent, maintenance expenses for their houses. The purpose was to investigate the capabilities of occupants in paying living expenses comfortably.	The analysis shows that about 70% of occupants can comfortably afford 15% rental expense and 4% maintenance expense from their monthly income for their home. The affordability is directly related to affordable living. Therefore, the rental and maintenance expenses should be within the affordability limit as per occupants paying capacity.
4	Adoption of new technology	Occupants were asked about their acceptance towards adopting new technology for the construction of their houses rather than the conventional methods	The analysis shows that about 85% of occupants reported a new technology other than the conventional method. Therefore, it expresses the opportunities to experiment with newer construction technologies to achieve affordability in housing. It will also create good confidence in the developer's mind in adopting new technology to construct houses.

questionnaire survey in the low economy wards of Pune city as a case example of housing in an urban context. The questionnaire was primarily based on existing housing design analysis and expectations. The objective was to understand occupants' opinions about several parameters of sustainability in affordable housing in an urban context. The questions were framed to investigate the tendency, habitual pattern, and preference of occupants towards sustainable measures. The economy wards were selected as per the ready reckoner rates prescribed by the PMC. A random sample survey of 200 households was carried out. The data was processed and analyzed using SPSS software. The results, observations, and inferences are discussed in Table 1.

The study of sustainability dimensions and results ob-

tained from the questionnaire survey suggest a matrix of sustainability attributes, decisive measures, and their effect on affordability. The proposed framework of comprehensive sustainability matrix's can help in the design process of affordable housing by the systematic investigation. The synthesis is required to decide sustainable measures in achieving affordability in housing.

5 SYNTHESIS - EVALUATION OF COMPREHENSIVE SUSTAINABILITY MATRIX

The comprehensive sustainability matrix evaluation is decoded based on attributes of social, environmental, and techno-functional dimensions, as discussed in Table 2, Ta-

Table 2. Decoded social dimensions of sustainability in affordable housing

Attributes	Sub attributes	Decisive measures	Effect on affordability	Reference
Regional connect	Form, the shape of the building	Relative form and shape with the neighborhood, avoiding odd shapes in designing, complementary design to streets, outdoor spaces	Change in perception toward affordable housing projects	Aziz and Ahmad 2012; Bordignon 1998
	Region sensitive facades	Traditional elements in elevation, different style for openings, railings, weather shed, color combination, use of new materials like steel, aluminum but with traditional visual effect	Sense of connectedness of user with house reducing repairs, maintenance charges through disciplined living	Kenney 1994
	Physical space planning	Following activity pattern, rituals, scale, and proportion of surrounding mass	Reduce infrastructural costs due to availability of thoughtful physical space at the project level only	Hillier 2007
Density	Accommodation The ratio of available space to no. of users	Innovation planning techniques as flexible spaces, incremental quality free-flowing space combination in planning	Helps in space optimization affects affordability positively	Ismail et al. 2015
Communication space	Location	The provision at the site level, at apartment level, and also at a unit level	Creates a new space without increasing unit area. Sharing the spaces achieves affordability	Trancik 1986
	Functional value	Courtyard oriented, galleries, open staircases, passages cater to secondary functions	Design communication spaces reduce maintenance charges	Wood 2017
	Quality of life	Homemaking element such as informal seating, common exercise spaces, away from vehicular movement	It provides spaces for secondary activities with effective space optimization.	Aziz and Ahmad 2012; Soen 1979; Hillier and Hanson 1984; Karuppannan and Sivam 2011
	Contextual planning	Sequential planning of areas	Can increase the salability of projects	

ble 3, and Table 4. The attributes are derived from the qualitative literature. This matrix suggests decisive measures to fulfill the attributes. The decisive measures are suggested as per data collection, qualitative literature, and results obtained from the occupant survey. It further states the relative effect of decisive measures on affordability.

Table 2 decodes the social dimensions of sustainability with the attributes, namely, regional connect, communication space, density, and communication space in affordable housing. The stated decisive measures change the perception of the user towards affordable housing projects. Also, it develops a sense of cohesive living with effective space optimization. The shared spaces enable the user to efficiently carry out their secondary activities without reducing their owned unit areas. The inclusion of social dimensions in housing facilitates sustainable and

affordable living for the occupants.

Table 3 represents decoded environmental dimensions of sustainability with attributes, namely orientation and arrangement, renewable energy use, and effective waste management in affordable housing. The stated decisive measures help in reducing the operating expenses of the housing. These measures also suggest the self-sustainable features for lowering the load on existing infrastructure. It helps to generate the project level economy.

Table 4 depicts techno-functional dimensions of sustainability with the attributes of profile and space configuration, style of planning, and selection of technology in affordable housing. The stated design measures recommend multi-functional spaces that enable effective space optimization. Appropriate room profiles increase space utilization. Also, the newness in construction technology warrants faster construction leads to affordability.

Table 3. Decoded environmental dimensions of sustainability in affordable housing

Attributes	Sub attributes	Decisive measures	Effect on affordability	Reference
Orientation and arrangement	Alignment	Planning Larger façade facing North-south	Reduces mechanical and electrical load on the project	Golubchikov 2016
	Light and ventilation	Avoiding solar radiation and allowance for maximum diffused daylight Allowing summer winds from West and North West to flow within the cluster, which helps in cross ventilation	Motivates to adapt for energy-efficient devices	
	Solar heat gain	Mutual shading during summer to reduce heat gain through sun shading devices, proper arrangement of built and unbuilt	Reduces traveling due to the availability of comfortable space in the premises	
Use of renewable energy resources	Wind & solar	Provision of a domestic wind turbine at the windward side Provision of wind catchers, Planning of wind pockets in layout planning Provision of solar panels, solar lighting	Reduces mechanical and electrical load on the project	Singh and Pandey 2012; Chaurasiya et al. 2019
	Natural Gas	Underground natural gas supply framework and supportive infrastructure	Reducing monthly expenses as an alternative to LPG	
Effective waste management	Increase in waste creation per year	Need local decomposing techniques as vermicomposting, biometanation, incineration, etc.	Reduce landscape maintenance charges due to bi-products like manure	Agarwal et al. 2015
	Wastewater treatment bi-products	Provision of treatment tank set up Production of manure, fly ash at the local level	Reduced consumption of freshwater Generates project level economy	

Table 4. Decoded Techno-functional dimensions of sustainability in affordable housing

Attributes	Sub attributes	Decisive measures	Effect on affordability	Reference
Room profile and space configuration	Room profile	Provision of rectangular or squarer profile	It enables effective space optimization	Steadman 2006
	Utilization factor	Circulation area should be minimized, absence of non – utilized space	It creates an opportunity to increase inhabitable space areas	
	Multi-functional design	Provision of effective space combinations, efficient interior layouts	Can accommodate density in a comfortable way	Friedman 2005
Style of planning	Associative beliefs and sentiments	Consideration of activity pattern, perception about habitable spaces	Does not affect the credibility of affordable housing designs	Sidawi 2008 ; Sharma 2018
	Contextual planning	Sequential planning of areas	Offers segregation for private and public activities	
Selection of technology	Innovative technology	Need to decrease dependency on traditional materials and technology	Reduces operational costs, Assured quality reduces repair expenses	BMTPC 2018
	Economics	Use of Innovative technology to expedite the pace of construction	Simultaneous activities lower machinery cost	
	Acceptance	Less repair and maintenance charges and to accommodate the homemaking elements	Long term affordability with living expenses	BMTPC 2018

The matrix decodes sustainability in a comprehensive way and its effect on affordability in living in an urban context. The social dimensions are an inseparable part of occupants living. The attributes like form, shape, aesthetics, nature, spatial qualities and communication patterns add value to sustainability. The sense of connectedness in the urban context changes the perception of occupants and observers about affordable housing. It also helps in rising allied complementary market conditions for such projects. As mentioned earlier, Indian urban cities are overloaded due to people's remarkable migration due to job and business opportunities. Therefore, environmental dimensions in the matrix suggest efficient climatic considerations, renewable energy resources, and effective waste management measures. It will help in aligning the future construction towards self-sufficiency without additional load on the existing infrastructure of urban cities. It will considerably reduce the operational living expenses of occupants resulting in affordability. The matrix also stresses effective space optimization techniques in unit planning. The functional and habitual pattern of occupants should be reflected in the design. It further highlights the adoption of newer technologies to reduce construction time and flexibility in planning the spaces. Techno-functional dimensions drive the design towards innovative methods of design and construction. It will positively impact the construction industry concerning the availability of materials, skilled laborers, and required

machinery for onsite and offsite construction methods in urban cities. The decoded matrix of comprehensive sustainability provokes designers' thought process to design affordable housing with long term affordability and sustainability.

6 CONCLUSIONS

This paper thoroughly decodes the concept of comprehensive sustainability through social, environmental, and techno-functional dimensions. The study highlights the importance of adequate room sizes, profile, style of planning, space optimization, communication spaces, cultural significance, innovative materials and technology, energy efficiency at the housing project. The case of Pune city helps to understand the need and acceptability of occupants towards the affordable housing design in an urban context. The occupant survey observations indicate that the consideration of the occupant aspirations in each neighborhood can improve the social, economic, and environmental aspects of affordable housing. The paper contributes to the literature by evaluating the comprehensive sustainability matrix. This matrix recommends decisive sustainable measures to achieve long-term affordability, i.e., savings in design, construction, operational, and repair costs. This study provokes the thought process of the designer to design affordable housing beyond floor

area adjustments and compressed space design. It further recommends the use of region-sensitive facades, use of renewable energy, and faster construction technology to fulfill the physical, psychological, and social needs of the occupant at an affordable cost.

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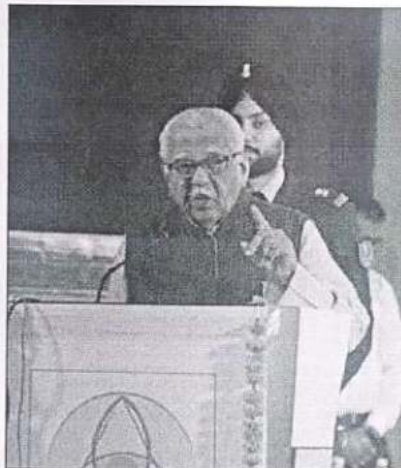
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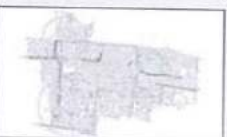
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Bringing flexibility in design of affordable house prototypes for Pune city

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ABSTRACT

The capability to adapt, to change or accommodate change is a basic and fundamental requisite for the future of city. The traditional design practice for housing is challenging in an uncertain changing context. Currently, Pune is growing city and demanding flexible affordable housing. It is due to rapid rise in population and migration of people from varied and distinct cultural backgrounds. In this paper the concept of flexibility is discussed and examined from the theoretical as well as practical point of view. This study also identifies the addressees of flexible design viz. architectural layout, structural systems, service spaces and flexible interior furnishing. This research suggests strategies like addition-deletion, neutralization and joining-segregation that ensure both the adaptability of the space in response to changing usage and affordability.

Key Words: Flexibility, affordability, space, neutralization, usage

1. Introduction

The capability to adapt, to change or accommodate change is a basic and fundamental requisite for the future of city. The traditional design practice for housing is challenging in an uncertain changing context. A process of area optimization is critical in a rigid design. Therefore, flexibility

concept is introduced all over the world. It is very important to introduce innovative concepts in design to create flexible physical environment (Blackman, 2003). Flexibility is the ability of a system to convert or modify built or open elements as per need of the user (Celluci, 2015). It provides an effective alternative to psychological perceptions of the user. (Klaufus, 2000). The study of sociological pattern helps

to assess need-based users in a community viz. i) Young families who benefit from the re-configuring of rooms to meet their changing spatial requirements over time. They can afford their first home as a flexible home. ii) Single adults who may want to use some spaces communally and other spaces independently. iii) The people who need some space for their commercial activity in the housing society itself by additional or convertible shops, office in their proposed prototype only. iv) Persons with disabilities may require flexible housing designed to be fully wheelchair-accessible, including wide corridors and special features for visually impaired and physically disabled (Graham, 2016).

The concept of flexibility is dependent upon some aspects of design viz. architectural layout, structural systems, services and furnishings as shown in Fig. 1. Architectural layout enables the quality of multifunctional use of a space. Flexible structural design system enables the architects to separate the interior from structure (Estaji, 2017). Construction technology & services are inseparable part in affordable flexible housing. The observed perception of the user about services is based on convenience and maintenance. Flexible service locations enable effective space planning inside the unit. The furnishing in interior will provide extra carved storage spaces in the unit without increasing the area. The interior should be flexible enough to adjust with changes as per convenience of the user (Inani, 2014).

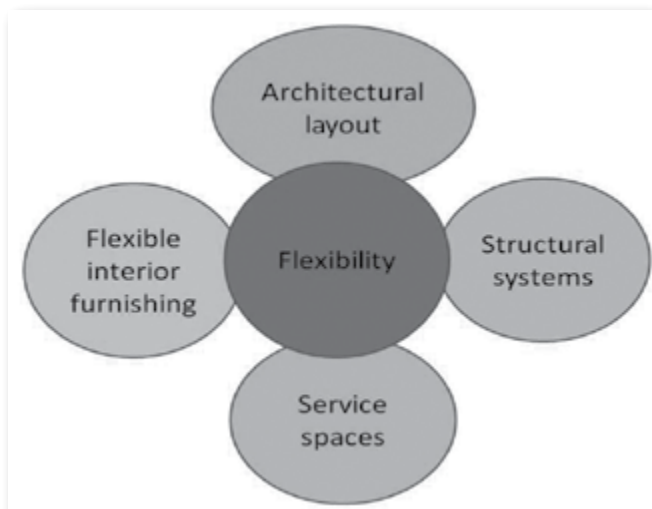


Fig. 1 Addressees of flexible design (Source: Author)

Flexibility should be practiced effectively in developing metro cities. Pune is one of the fastest urbanizing cities in India due to rapid rise in population and migration of people from varied and distinct cultural backgrounds. The challenge facing Pune Municipal Corporation is to supply homes at affordable cost in response to the increasing demand. This population includes job seekers, college students, small scale businessmen, etc.

It also includes the population from Wada's, Gaothan, dilapidated buildings or extremely cramped regular housing. It is due to lacking of alternatives which offer better space for housing (Mashal Project Team, 2010). Therefore, the flexibility concept can be implemented in different ways for Pune city. It is categorized under some attributes/parameters. Effective design of a space is one of the primary addressee in providing flexibility (Schneider, 2007). Application of complementary construction technology is also important for flexible designs. (Estaji 2017, Arroyo 2017, Yadav 2013). Effective Space and Technology should provide the flexible and adaptable physical design to the user (Inani, 2014, Narendran 2014).

2. Methodology

Literature from various contributing fields is considered comprehensively to define flexibility and flexible design. The selected literature is reviewed to identify the attributes of flexibility in an affordable housing. The studies selected are limited to those pertaining to the meaning of flexibility and needs & expectations of the user from a home. The probable users are defined in the study. The application of flexibility concept is explained in the context of space, construction technology & design. The design strategies are discussed to make the unit as flexible. The purpose of this analysis is to standardize and create a thought process for application of flexible design in an affordable housing.

3. Preliminary data, findings and discussions

In order to provide a new and flexible approach in design & construction for affordable housing in Pune city, a suitable prototype design is proposed. In the following section the strategies for affordable prototype design is studied under three primary domains namely (i) flexibility in space (ii) flexibility in construction technology (iii) flexibility in design.

3.1 Flexibility in Space:

Flexibility in space offers more functions to the prototype design (Danko, 2013). It also plays a part in three-dimensional volume of space. It gives flexibility to accommodate more



Fig.2 Multi Functional common space



Fig.3 Separation of areas with Furniture arrangement

(Source: Kalba Devi Chawl, Goregaon Chawl, Mumbai Chawls and People newsletter, Mumbai)

space in a vertical way and to have comfortable height inside the tenement. Many designs in apartment buildings possess a large non-utilization factor in the tenement. This factor could be reduced by means of flexible space planning.

There is a correlation between space and flexibility. The space should not be rigid in occupying secondary functions into it. The history and lifestyle of people in Pune was very much different in earlier period. Many functional activities like communication, sitting, playing, and allied activities of cooking took place in the social spaces. It improved space optimization in tenements. It can be easily observed from Fig.2 that the social space could be designed as multifunctional. The Fig.3 shows the use of furniture for the separation of areas. It saves space by accommodating furniture as storage and partition.

3.2 Flexibility in Construction Techniques:

There is also a relationship between construction techniques and flexibility. Flexibility requires reduction in rigidity by providing complementary construction technology. Certain logic of construction and provision of services allows flexibility of configuration, which in turn enables flexible use and occupation (Graham, 2016). The material and construction methodology should be flexible in terms of providing different building typologies such as high rise, midrise, low rise, single modular homes and quadruplex. The standardization of structural components is very much important in flexible construction. The components should possess less self-weight, minimum self-occupied space, favorable for different surface treatments as per choice and customized in terms of containing service rails on or inside the surface. This is possible with precast and prefabrication technology. Prefabricated housing is now growing all over the world and style of composite construction is suitable for flexible mass scale housing. The composite construction could include the precast concrete, structural steel, aluminum form-works in a very comprehensive way (Yadav,



Fig. 5: Surface Paneling system

(Source: Svetlana Brzev, British Columbia Institute of Technology, Canada, 2015)

2013). Fig. 4 shows precast paneling construction (in place of masonry) in the apartment scheme at Bangalore.

A complete precast paneling system in Canada is shown in Fig.5. It offers quick construction and hence saving in cost. Also, quality of construction gets enhanced due to casting in controlled environment.

3.3 Flexibility in Design

The flexible design plays an important role in providing flexible interiors inside the prototype. The design & placement of external staircases, internal staircases, lifts, entrances, service lobbies enables effective planning and space optimization inside the house. The Fig. 6(i) shows the design of low-level windows with extended sills that could be utilized as sitting in drawing room. It also could be a place for relaxation as shown in Fig. 6(ii). It could be worked out as a traditional way of planning like 'katta' seating which was found in traditional houses and in public places.

Some strategies in flexible design that could be implemented are namely i) Provision of undefined neutral space inside the house for multifunctional utilization. The design can adapt the functions without any physically change (Celluci, 2015).

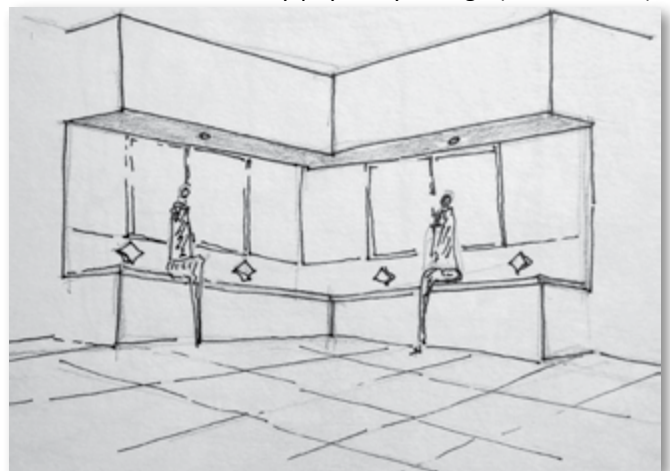


Fig 6 (i) and (ii) : Low level window design for formal and informal seating
(Source: Author)

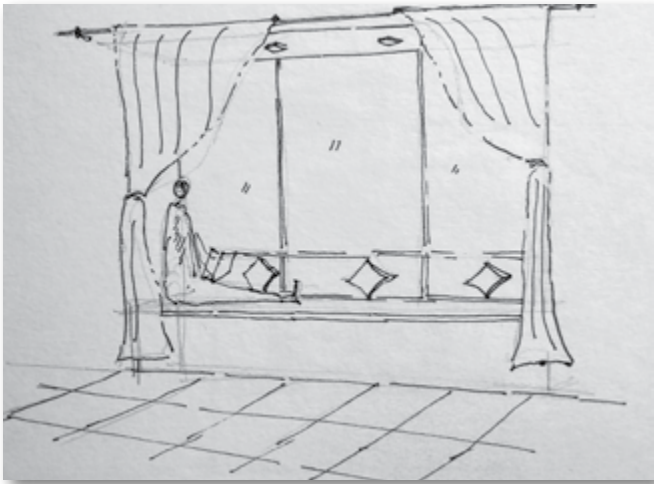


Fig 6 (i) and (ii) : Low level window design for formal and informal seating (Source: Author)

This is possible either by neutral sizing of the living units to accommodate any function and elimination of hierarchy between them (e.g bedroom can be converted into a study, etc.). It is shown in Fig. 7 (i) and (ii) that the wall between living room and bedroom could be adjusted during day and evening time. It could be a good interactive space and dining space for family users.

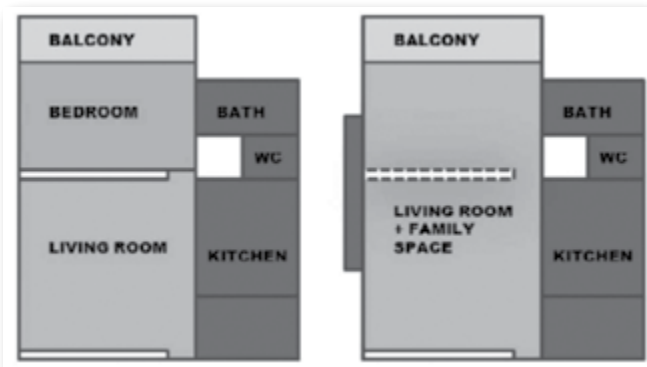


Fig. 7 (i) and (ii): Planning of Undefined Neutral Space (Source: Author)

ii) Use of balcony during the day time as a common family habitable space. iii) Provision of part mezzanine floor that can accommodate 1-2 people at night for sleeping or can provide storage space iv) Provision of lofts for storage. v) Smooth conversion of a building by providing regular grid for laying flexible structural system. vi) Use of materials that ensure maximum reversibility of the system in addition to the flexibility of the internal space viii) Assembling and disassembling of the structural component and the use of hollow or rectangular beams capable of integrating the installation system inside the structural form. The internal space should be designed as a completely flexible and should be complementing to its convertibility.

As seen in Fig. 8, the ability of space should be flexible towards addition or removal. This potential should be explored in the

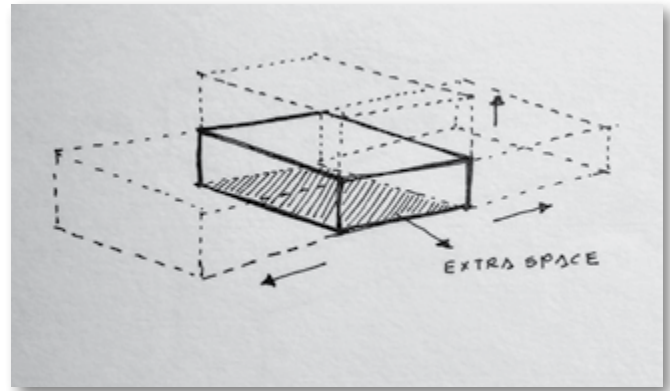


Fig.8 Addition or Deletion strategy (Source: Author)

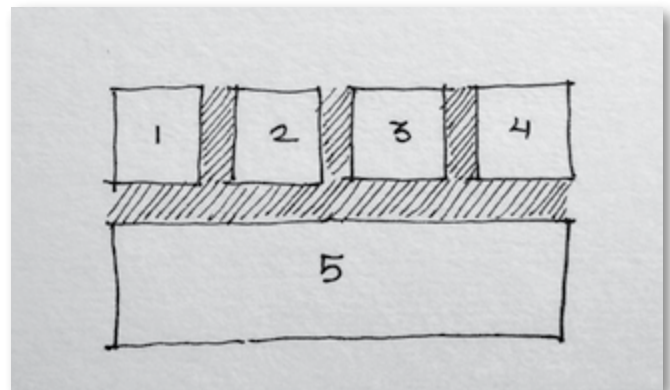


Fig.9 Neutralization of area (Source: Author)

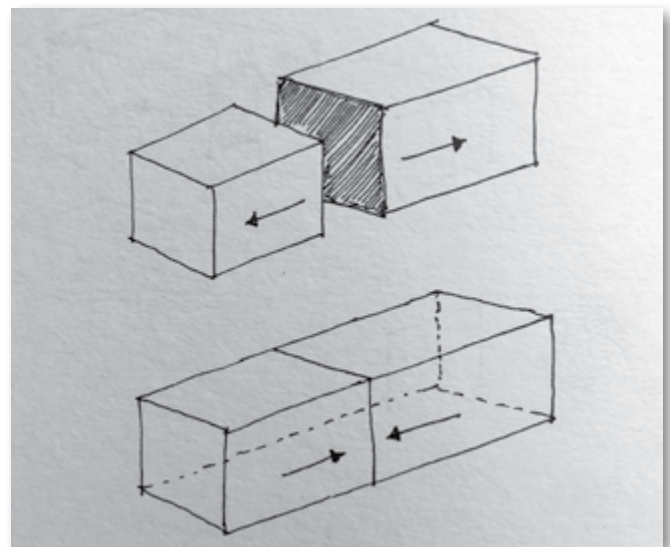


Fig 10 Joining or Segregation mechanism (Source: Author)

design phase itself rather than post-construction phase to allow for simple alterations to structural and service systems. This provides quality in flexibility as per the need of the end user.

The flexible design also should possess neutralization of area except service areas as shown in Fig. 9. It explains that there will be no clear intended use for any room. The end user can decide the internal planning as per the needs and

functional activities. It is a new idea and could be effective considering current trend and aspirations of the user. The elements like sliding doors and screens can greatly increase the spatial configurations of a house and allow spaces to be used for numerous different uses. The vertical walls could be adjustable in nature to have space dimension as per functional requirement.

The concept of joining and dividing space generally becomes critical for multifamily apartments. As shown in Fig. 10, joining and segregation mechanism allows increase or decrease in a volumetric space. It also enables 'change in ownership' in case of an adjacent tenement in an apartment building. This method need not be limited to horizontal plane and projects that are flexible in three dimensions typically offer the most options for adaptability.

4. Conclusion


The study shows that there is a need of 'change in perspective' towards the affordable prototype design in Pune city. This paper further identifies the addressees of flexible design viz. architectural layout, structural systems, service spaces and flexible interior furnishing. The proposed research has suggested flexibility strategies like addition-deletion, neutralization and joining-segregation which ensure the adaptability of the space in response to changing usage and affordability. These flexibility strategies can be applied effectively only with the combined efforts of Architect, Engineer and Developer.

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Fig.4: Mid rise precast paneled scheme at Bangalore (Source: NBM Media Publication, 2015)

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