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CONTENTS

1. Geometric Harmony: A Symmetry Analysis of Motifs in Rabha Traditional Textiles
Amardeep Rabha & Dr. Udaya Kumar Dharmalingam **1-16**
doi.org/10.62030/2026Julypaper1

2. "Reimagining Hospice as Home: A Study in Kerala Context "
Elsa Selin Daniel & Hudha Abdul Salam **17-39**
doi.org/10.62030/2026Julypaper2

3. Architectural Historiography of the Airavatesvara Temple: Revisiting Chola Heritage through Epigraphic and Cultural Narratives
K.Selva Kumar & Dr. S. Thangaraju **40-57**
doi.org/10.62030/2026Julypaper3

4. The Embodied Experience of Vernacular Architecture: A Case Study on the Material and Art Aspects of Kathkuni Style in Kinnaur, Himachal Pradesh
Maya Negi & Karanjot Kaur Brar **58-76**
doi.org/10.62030/2026Julypaper4

5. Branding and Advertainment: Examining the Role of Entertainment Media in Marketing Communication
Dr. Sugandha Gumber **77-85**
doi.org/10.62030/2026Julypaper5

6. Social Design as a Critical Lens: A Comparative Approach to Interpreting Community Practices
Dr. Marco Bevolo, Ilaria Rapaccini Bellini & Elena Fabris **86-101**
doi.org/10.62030/2026Julypaper6

7. The Designer's Dilemma: Evaluating Hekkert's ViP and Brown's Design Thinking Through the Lens of Generative AI
Rahat Varma **102-116**
doi.org/10.62030/2026Julypaper7

8. Ted Nelson's "10-Minute Rule" and Its Relevance to Contemporary Usability Design: A Positional Paper
Yohan Engineer **117-126**
doi.org/10.62030/2026Julypaper8

Editorial Note

It is with great pleasure and enthusiasm that we welcome you to the Volume 4 Number 2 issue of the International Journal of Arts, Architecture and Design (JAARD). We are honored to be a part of this scholarly endeavor and guide you through the world of artistic exploration, architectural innovation, and creative design thinking.

JAARD aspires to be a hub of intellectual discourse and creative expression in the realm of arts, architecture, and design. We are committed to providing a platform where original research, critical analysis, and innovative practices thrive. This journal is not only a repository of knowledge, but also a dynamic space for dialogue and collaboration among scholars, practitioners, and enthusiasts in the creative field.

Our editorial board comprises distinguished members who bring a wealth of experience and expertise to ensure the quality and rigor of the content published here. We encourage diverse perspectives and cross-disciplinary exchange, embracing a wide spectrum of topics from music to user experience design. We are honoured to share that our editorial board is enhanced with the addition of two distinguished members.

We invite you to explore the articles, essays, reviews, and commentaries presented in this volume. Your engagement and contributions will be vital in shaping the future of JAARD. We look forward to your scholarly pursuits and creative endeavors as we collectively explore the fascinating world of arts, architecture, and design.

JAARD is now indexed with Directory of Open Access Journals (DOAJ), DELNET and J Gate. This allows the authors work to reach a wider and appropriate audience.

Thank you for being a part of this exciting journey, and we eagerly anticipate the scholarly discoveries and innovations that will emerge through JAARD.

The Editors

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Geometric Harmony: A Symmetry Analysis of Motifs in Rabha Traditional Textiles

ABSTRACT

This research offers a design-focused analysis of symmetry in the traditional textile motifs of the Rabha community in Assam, India. It investigates the function of symmetry—as both an aesthetic and structural principle within Rabha weaving traditions, emphasizing motifs, visual forms, and spatial arrangements through symmetry analysis. Employing a qualitative, visual-analytical approach grounded in ethnographic fieldwork and mathematical symmetry theory, the research identifies and classifies motifs according to their visual attributes, symmetry operations, and compositional principles. The findings show that the main types of symmetry observed in Rabha textiles are reflection and translation symmetry. Floral and ritual motifs commonly exhibit rotational symmetry. These symmetrical designs reflect the Rabha people's understanding of the universe as balanced and harmonious. They also demonstrate the close relationship between cultural beliefs and visual organization. The study highlights that indigenous craft traditions, such as Rabha traditional textile motifs, are not only decorative but also reflect complex mathematical thinking and aesthetic principles. This research enhances the domain of indigenous design studies by offering a framework for comprehending traditional textile design systems through the amalgamation of mathematical logic, visual forms, and their compositional structure.

Keywords: Rabha textiles, symmetry analysis, indigenous motifs, social design, visual ethnography.

1. Introduction

The Rabha are one of the oldest indigenous communities of Assam. They are also known as *Bhumi Putra*, meaning "Son of the Land." The Rabhas are a well-known indigenous community in Assam. They are an ethnic group with a long and rich cultural history (Sarma H. , 2008). People have always migrated from one place to another in search of better opportunities and improved living conditions. Assam, known for its natural beauty, has attracted people from different parts of the world over time. Various ethnic groups have arrived in Assam through different historical processes, and each group has contributed its own culture, traditions, and identity to the region. They found the place extremely beautiful and chose to settle there permanently, which led to lasting changes in the local culture. A. Playfair, a British colonial administrator and ethnographer, believed Rabhas migrated from that Tibet region to Garo Hill and later spread out to different parts of Assam plain regions (Bordoloi, Thankur, & Saikia, 1987). The region is characterized by linguistic and cultural diversity, as people living in both hill and plain areas speak different languages and follow varied cultural practices. This diversity enhances the uniqueness of the region. The Rabha

community inhabits both the hill and plain regions of Assam, reflecting this cultural and geographical diversity. They have a long and interesting history of social and cultural life, with their own language, literature, culture, and customs. Their culture comprises oral literature, traditional clothing (figure 1), jewellery, weapons, religion, ceremonies and rituals, performances, festivals, musical instruments, and more (Sarma H. , 2008). Assam is in the centre of northeast India and is home to people from many different ethnic groups. According to the 2011 census and a report from the Government of Assam, there are 296,189 Rabha people. Rabha society is governed by customs, traditions, and religious beliefs. *Pati* Rabha, who are assimilated in mainland Assamese culture and worship Hindu gods and goddesses. *Rongdani* and *Moitori* Rabha celebrate *Baikho or Khoksi* puja festival to propitiate *Baikho,* the Goddess of wealth (G.C.Kakoti, 2007). The Rabha women are very skilled weavers. They produce garments for family members using traditional looms. (Sarma L , 2021).



Fig. 1. Rabha costume. Photograph by the author from *Dudhnoi* (Assam) (2023).

A motif refers to a repeated visual element, while a pattern is the organized repetition of such elements (Musa, 2019). Textile designs and motifs hold deep symbolic significance, representing the heritage, beliefs, and cultural expressions of a community (Bori & Neog, 2017). In everyday conversation, the terms “motifs” and “design” are often used interchangeably, sometimes referring both to a single element and to the overall composition. However, these terms have more specific meanings in academic contexts. In textile studies, “design” generally refers to the organized arrangement of motifs and patterns in a structured and systematic manner. The placement and arrangement of motifs play an important role in increasing the value and appeal of textiles. Many people prefer traditional fabrics with decorative designs rather than plain ones. Therefore, motifs are essential in traditional textiles, as they enhance their visual attractiveness while also contributing to their cultural significance and commercial value. More so in the Rabha community, as these designs(figure 2) are significant in material culture and have a deep meaning among the community and its people. Motifs also represent the community’s visual identity to the world.

The study of indigenous textile traditions serves both as an exploration of material culture and as a way to understand the lived experiences, values, and identities of the communities that produce them.



Fig. 2. Motif and pattern of Rabha textile. Photograph by the author from *Amguri* (Assam) (2023).

Symmetry is one of the fundamental principles of design and can be observed in nature, art, and human-made objects. The Rabha community of Assam has developed a distinctive textile language rooted in the traditional weaving practices of Northeast India. A key characteristic of this textile tradition is the use of symmetrical patterns. Rabha weavers create their designs by drawing inspiration from their everyday experiences, surrounding environment, and cultural symbols. They generally use geometric shapes like triangles, diamonds, chevrons, and zigzags in their visual language, and they regularly arrange them in symmetrical patterns.

The Rabha motifs, produced using traditional backstrap and throw-shuttle looms, demonstrate a strong understanding of geometry and visual balance. This suggests that the artisans possessed advanced practical knowledge and aesthetic skills, even without formal training in mathematics or design.

This research examines these designs through a comprehensive framework of symmetry analysis developed by M. A. Hann (Hann M. A., 2003). This study undertakes a detailed symmetry analysis of Rabha textile motifs, analysing the impact of reflection, rotation, translation, and glide reflection transformations on their visual organization and cultural significance. This study categorizes motifs into symmetry types: Dihedral (Dn), cyclic (Cn), and asymmetric (As), and examines their distribution among motifs categories—geometric, floral, zoomorphic, and abstract. It employs a visual-analytical and interpretative framework grounded in ethnographic observation to demonstrate that symmetry in Rabha textiles transcends mere aesthetic embellishment. It is a collection of symbols that represent the community's beliefs in social balance, peace, and continuity.

This study aims to clarify the relationship between symmetrical organization in Rabha motifs and indigenous expressions of order, balance, and continuity, which form the basis of geometric order and motifs typology in Rabha textile patterns through the utilization of mathematical classifications on documented motifs.

2. Literature Review

In textile studies, symmetry analysis has been widely used as a systematic tool to understand the underlying visual order, structural logic, and cultural meaning embedded in motifs and patterns. Research in visual insight and decorative design demonstrates how symmetry operations such as translation, reflection, rotation, and glide symmetry structure frieze patterns and influence aesthetic judgement by making pattern organization perceptually legible (Friedenberg, Martin, Uy, & Kvapil, 2022). Computational and image-based studies further extend this approach by using symmetry group theory to decode mosaics and Islamic geometric patterns, extracting lattices, object classes, and wallpaper groups to understand pattern construction and repetition (F.Albert, 2014). Within textile-specific contexts, symmetry has been applied to analyse historical silk fabrics and reconstruct damaged motifs through axial symmetry, demonstrating its value for conservation and design interpretation (Mar Gaitán, 2020). Design theory research emphasizes symmetry as a transferable analytical language across cultures, capable of explaining how motifs are generated from geometric rules rather than surface appearance alone (Hann & Thomas, 2007). Ethnographic and textile studies similarly use plane symmetry and repetition to interpret carpets, indigenous weavings, and traditional textiles as structured systems governed by mathematical order rather than decorative intuition (Bier, 1992): (Chudasri & Sukantamala, 2022): (Liang, 2025). Collectively, these studies confirm that symmetry analysis enables a deeper understanding of motifs arrangement, repeat structures, and cultural pattern logic, thereby supporting the adoption of M. A. Hann's symmetry classification method as a rigorous and culturally sensitive framework for the systematic study of textile motifs and pattern structures (Hann M. A., 2003).

3. Methodology

3.1 Research Design

This study uses a qualitative, visual-analytical research design that incorporates ethnographic fieldwork, design analysis, and mathematical symmetry classification. The methods combine documentation of indigenous textile motifs with analytical tools drawn from geometry and pattern theory proposed by M. A. Hann, enabling a systematic understanding of structurally embedded symmetry in Rabha textiles. The approach allows for the structured examination of motifs as both geometric structures and cultural artefacts.

3.2 Study Area and Sampling Strategy

Fieldwork was conducted in five Rabha-inhabited villages in Assam-*Dudhnoi, Amguri, Nadiya Para, Boko,* and *Chaygaon*, where traditional throw-shuttle loom practices continue in everyday weaving traditions. Another reason for selecting these locations was the presence of expert weavers who possess intergenerational knowledge of motifs. In these areas, both ritual and everyday textiles continue to incorporate traditional motifs and patterns. This combination ensured access to authentic motifs traditions.

3.3 Data Collection Methods

During fieldwork, high-resolution photographs of textiles, border designs, and various motifs and patterns were collected as the main method of primary documentation. To ensure accuracy, all images were taken from fully constructed garments that were either worn or preserved by Rabha households, allowing the motifs to be observed in their original functional context. The study identified a total of 91 traditional Rabha textile motifs.

3.4 Digitization of Motifs

All 91 documented motifs from the field visits were vectorized using Adobe Illustrator software. Digitization enabled the extraction of precise linear structures, the removal of distortions caused by folded or aged fabrics, the standardization of motifs dimensions, and the preparation of motifs for geometric and symmetry analysis.

3.5 Motifs Classification and Categorization

The process of categorizing motifs is essential for a structured and systematic study of these elements. According to cognitive categorization theories (Athavankar, 1989), human perception naturally groups objects based on similarities. Categorizing motifs helps scholars and designers quickly recognize patterns and understand their meanings. Formal categorization was a critical step in the analytical process, enabling efficient organization of collected motifs into coherent groups based on visual characteristics and thematic relevance (Deori, 2022) ; (Das, De, & Singha, 2020). Each extracted motifs was classified into one of the four primary visual categories based on design elements and theme.

Geometric motifs

These motifs are usually repeating, very structured, and generally used as border elements or framing techniques in the textile layout(figure 3). Regular polygons, symmetrical patterns, and angular shapes, including diamonds, chevrons, and zigzags, are used to define them (Jones, 1856); (Gillow & Sentance, 1999); (Hutton, 1921).



Fig. 3. Geometric Rabha Motifs. Photograph by the author from *Boko* (Assam) (2024).

Floral Motifs

These motifs are inspired by plants, including leaves, flowers, and creepers (figure 4). They stand for fertility, growth, and natural beauty. They are usually curvy and can be placed in the middle or in symmetrical patterns (Goswami, 1993); (Dhamija, 1979); (Harris, 2010).



Fig. 4. Floral Rabha Motifs. Photograph by the author from Guwahati University anthropology museum (2024).

Zoomorphic motifs

These motifs are inspired by animals, birds, and insects(figure 5). They are relatively simple in their visual representation but have a very distinct style (Elwin, 1959); (Hutton, 1921); (Dhamija, 2004).



Fig. 5. Zoomorphic Rabha motifs. Photograph by the author from Guwahati University anthropology museum (2024).

Abstract motifs

These motifs are not meant to represent anything, but they are based on cultural customs, ceremonial symbols, and intuitive artistic interpretations(figure 6). They often have an experimental form and have spiritual or mythical meanings. These Motifs have lots of strong significance in the community (Gombrich, 1979); (Arnheim, 1974).



Fig. 6. Abstract Rabha Motifs. Photograph by the author from *Nadiya Para* (Assam) (2024).

This classification offers a systematic framework for recognizing the visual forms and patterns of traditional Rabha textile motifs. It will be further analysed to understand its relationship with symmetrical patterns, with the aim of improving our understanding of the visual features of Rabha textile motifs and designs.

After categorizing the 91 motifs that were documented for study, the following numbers were found in each category.

Table 1. Motifs in each category

Geometric motifs	44
Floral motifs	22
Zoomorphic motifs	18
Abstract motifs	7
Motifs Category	Total

3.6 Symmetry Analysis Framework

Symmetry theory offers a structured way to understand patterns in indigenous motifs. Following M. A. Hann, a design scholar from the University of Leeds known for his work on pattern and symmetry (2003), symmetry is seen not just as a visual feature, but as a way communities express cultural order, spatial thinking, and ritual meaning through design.

M. A. Hann's symmetry analysis

Symmetry, an important feature of textile design, was analysed to better understand the structure of the compositions. By examining patterns and motifs, viewers can see how the designs are organized and constructed. To analyse the symmetry of traditional Rabha textile motifs and patterns through categorization methods focused on their symmetrical characteristics, as described by M. A. Hann, is employed in *Conceptual Developments in the Analysis of Patterns*. This method allows motifs and patterns to be studied in an organized way by breaking them into simple geometric pieces and variations in symmetry operations. Hann was among the earliest scholars to analyse patterns within a scientific and mathematical framework. Woods showed people how designs may be symmetrical, especially in fabrics. He authored a lot of papers for the *Journal of the Textile Institute* (1935, 1936) that helped people understand how to make designs using geometry. Talked about symmetry in flat patterns, such as counter change symmetry, and how to put items in a logical order. Later, Washburn and Crowe (1988, 1989) created a book called "*Symmetries of Culture: Theory and Practice of Plane Pattern Analysis*." This book delved into further detail on how symmetry may be employed in cultural settings. M. A. Hann was the most essential person who helped come up with the idea. It looks at how symmetry-based pattern analysis has changed over time and how it could be used in textiles.

These researchers jointly advanced the systematic exploration of motifs and patterns, introducing methodologies that have become crucial in the examination of motifs and designs in both historical and present contexts. This analytical approach facilitates a comprehensive and impartial analysis of the structural attributes of motifs in traditional Rabha textiles.

Motifs analysis

Motifs can be classified into two main types: symmetrical and asymmetrical. Symmetrical motifs can be further divided into two groups, Cn and Dn, based on the types of symmetry operations they exhibit, such as rotation and reflection.

Cn motifs exhibit *n*-fold rotational symmetry, meaning the motifs rotates around a central point *n* time within a full turn. For example, see Figure 7.



Fig. 7. Cn motifs symmetry

Dn Motifs, which are motifs that combine rotation with one or more reflection axes.

Put together n-fold rotational symmetry and n reflection axes. For example, Figure 8.



Fig. 8. Dn motifs symmetry

Asymmetrical motifs do not have symmetry operations.

4. Result

4.1 Symmetry analysis of Motifs

Organizing Rabha textile motifs symmetrically inside the M. A. Hann framework reveals distinctive aesthetic and structural tendencies that reflect the community's design sense. The research identifies three primary categories of symmetry: Dihedral (Dn), Cyclic (Cn), and Asymmetric (As). The number of motifs in each category, along with the corresponding characteristics of each category, are presented in the table below.

Table 2. Categories of symmetry

Symmetry Type	Code	Number of Motifs	Design Traits
Dihedral	Dn	72	Balanced, mirror and rotational symmetry
Cyclic	Cn	7	Radial/rotational symmetry only
Asymmetric	As	12	No symmetry; organic or narrative

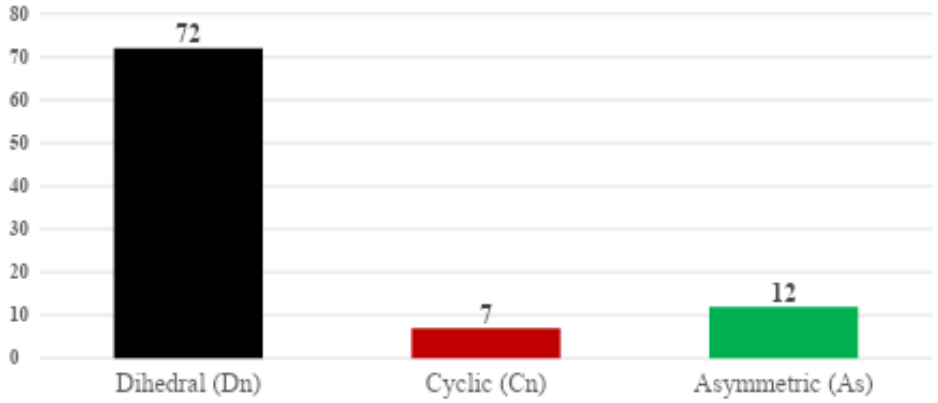


Fig. 9. Symmetry Analysis of Rabha Motifs

Interpretation

The fact that Rabha textile patterns often incorporate Dihedral (Dn) suggests that balance, order, and harmony are vital to their culture. This is seen in structured, repetitive, and reflective designs that create rhythmic patterns, evoking a sense of stability and continuity. In contrast, asymmetric designs intentionally disrupt regular patterns. This allows them to stand out within largely symmetrical compositions and makes them visually more engaging. Rabha textiles are mostly based on balance, visual rhythm, and symbols.

They create both aesthetic appeal and cultural expression through the use of repeating geometric shapes, interlocking structures, and symmetrical modules. These visual features suggest the use of traditional looms, which naturally favour symmetrical designs due to the counted warp and weft structure. They also show a design system that is both mathematical and highly symbolic, where cultural meaning and geometric perfection come together.

The motifs[1] combine elements from nature, ceremonial life, and identity, reflecting the distinctive characteristics of Rabha weaving traditions. These traditions integrate skilled craftsmanship with spiritual meaning, demonstrating both technical expertise and cultural expression.

Among the 91 motifs, 72 (79.1%) exhibit dihedral symmetry (Dn), 7 (7.7%) cyclic (Cn), and 12 (13.2%) asymmetries (As). This distribution indicates a strong structural preference for bilateral and rotational balance, aligning with the technical constraints of shuttle hand–loom weaving, which naturally favours mirrored patterning.

4.2 Symmetry Analysis of Rabha Motifs Based on Motif Types

Table 3. Symmetry Classification by Motifs Type

Motifs Type	Dn (Dihedral)	Cn (Cyclic)	As (Asymmetric)	Total
Geometric	41	2	1	44
Floral	13	4	5	22
Zoomorphic	12	1	5	18
Abstract	6	0	1	7

[1] Some of the significant motifs from Rabha community are listed the annexure.

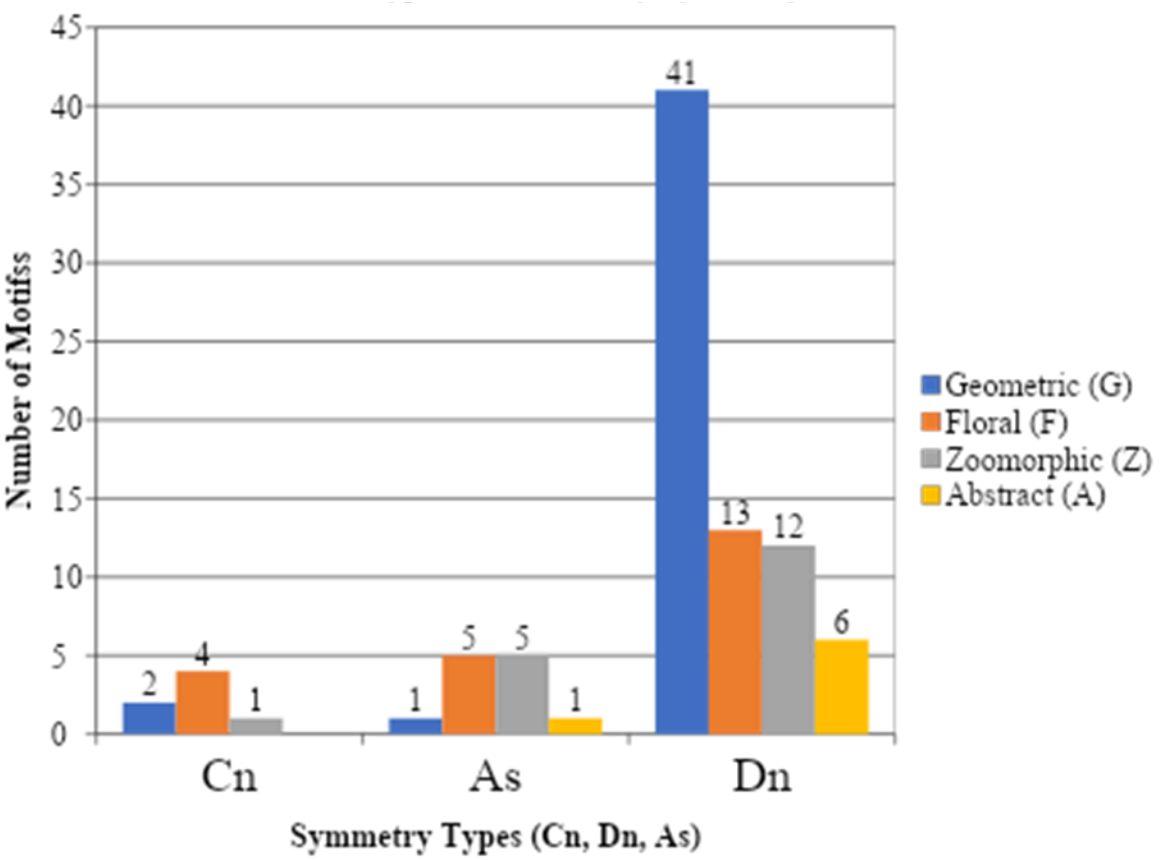


Fig. 10. Motifs Type Distribution by Symmetry Class

Here is a bar graph that shows how different types of motifs (Geometric, Floral, Zoomorphic, Abstract) fit into their symmetry categories (Dn, Cn, As).

4.2.1 Dominance of Dihedral Symmetry (Dn)- Highly Symmetrical Structures

Table 4. Dihedral Symmetry (Dn)- motif types

Motif Types	Number of Motifs
Geometric	41
Floral	13
Zoomorphic	6
Abstract	12
Total Motifs	72

Interpretation

The most prominent type of symmetry in the corpus is dihedral symmetry (Dn), which encompasses both reflection and rotation. This high frequency is in line with the geometric accuracy that is

common in Rabha border and body designs. The use of Geometric motifs in textile design shows a typical drive toward balance, order, and clarity. Floral motifs in this group still have a mirrored balance, and they are commonly utilized in patterns that go all the way across the fabric. Structural constraints of the throw shuttle hand loom, which naturally favour mirrored repeats.

4.2.2 Cyclic Symmetry (Cn) - Radial and Central Balance

Table 5. Cyclic Symmetry (Cn)- motif types

Motif Types	Number of Motifs
Geometric	2
Floral	4
Zoomorphic	1
Abstract	0
Total Motifs	7

Interpretation

Cyclic symmetry is most observed in floral or radiating patterns. This is why it is the most common type of symmetry for flower designs (4 out of 7). Most of the time, these designs are found in the middle of the cloth or in the most important parts, such as the shoulder or *pallu*. Using Cn symmetry is a design choice that makes objects look complete and centred.

4.2.3 Asymmetric Motifs (As)- Expressive and Figurative Forms

Table 6. Asymmetric (As)- motif types

Motif Types	Number of Motifs
Geometric	1
Floral	5
Zoomorphic	5
Abstract	1
Total Motifs	12

Interpretation

In Rabha textile design, asymmetrical motifs are used selectively when required. It usually has zoomorphic or narrative elements or shapes that narrate stories. The deliberate absence of symmetry disrupts visual rhythm and makes the motifs stand out. Asymmetric motifs are often used to make a

point rather than to repeat a pattern. They can be seen in panels or certain locations. Asymmetry motifs are only employed when required to create a contrast to the symmetric mirrored motifs and geometric rigidity of border patterns.

5. Conclusion

This study contributes to design studies by offering a structured way to analyze traditional motifs through geometric principles. It focuses on examining their shapes and spatial organization. It also suggests that symmetry is not only used for aesthetic purposes, but also serves as a form of visual communication that expresses the cultural values and perspectives of a community. The fact that most motifs have dihedral symmetry (Dn) reveals that people respect equilibrium in society. This fits with the Rabha style of thinking on how to link nature, society, and spirituality. These patterns exhibit mirror symmetry and are evenly spaced apart. They exhibit technical competence and the structural correctness that comes with traditional handlooms. On the other hand, using cyclic (Cn) and asymmetric (As) compositions meticulously in floral, zoomorphic, and abstract patterns makes the textile design more varied and appealing. Cyclic symmetry makes floral patterns look full and centred, while less common asymmetry makes the patterns look deeper, especially when they are used to tell stories or have ritual meanings. Rabha textile symmetry is a mix of artistic discipline, technical knowledge, and symbolic communication. It displays how traditional weaving can put thoughts about harmony, rhythm, and identity into visuals. This indicates that Rabha textiles are both beautiful works of art and a way to learn about the culture. They use a unique design approach from their own culture that links geometry and meaning.

This study contributes to design scholarship by presenting a replicable methodology for analysing indigenous textile motifs through symmetry theory. It highlights the need to preserve and document such systems as part of India's cultural and design heritage. Future research could enhance comparative evaluations of tribal textiles from Northeast India by employing digital pattern-recognition tools to computationally represent indigenous geometry. These kinds of methodologies would highlight how advanced historical weaving systems are and help them enter modern design curricula.

6. Limitation of The Study

The study faced several constraints that may have influenced its outcomes. First, access to older or archival garments was limited, restricting the ability to conduct a comprehensive historical comparison of motifs evolution. Additionally, some degree of bias may be present due to contemporary adaptations incorporated by weavers, which could differ from traditional practices. The analytical scope was also confined primarily to surface-level examination of symmetry and structural arrangement**,** without extending into related factors such as color theory, variations in weaving tension, or material-specific constraints. These omissions narrow the depth of technical analysis and point to areas that future research could address more fully.

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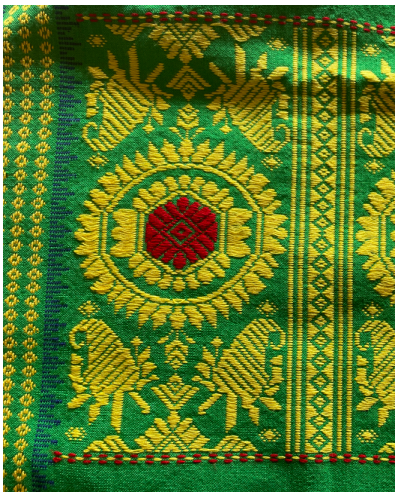
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Annexure-Some of the significant motifs of Rabha community[2].



Garai phong khap



Bai Paar



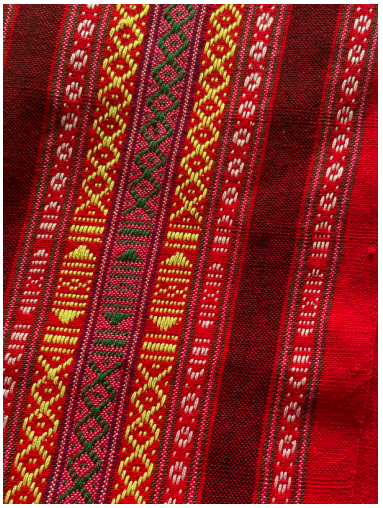
katshi pha



Zignata



Khodobung Paar



Toh Paar

[2] All images were photographed by the author in Assam and Meghalaya during 2023–2024.



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Boa Paar



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Reimagining Hospice as Home: A Study in Kerala Context

ABSTRACT

Hospice care provides a critical environment for patients facing terminal illnesses. This study aims to explore how residential architectural elements can foster the home-like environment of hospice focusing on the cultural, climatic, and caregiving context of Kerala. While Kerala has established a successful model of home-based palliative care, the system remains insufficient for many end-of-life situations, it has very few dedicated hospices. The rate of population ageing is extremely rapid in Kerala. Current literature offers limited guidance on how the region's distinctive residential architectural traditions can be translated into the design of hospice settings. Following a qualitative research design, this study analyses case studies of existing hospices, palliative care centres, and residential models within the Kerala context. Through spatial mapping and environmental quality assessments, the research identifies specific design factors and principles that support a home-like atmosphere. Findings reveal that spatial planning, indoor environmental quality, use of courtyards, and social interaction and cultural aspects are vital for establishing a sense of home, familiarity and belonging for residents. Introducing hospices that are rooted in residential architectural elements provides a culturally relevant solution with a dignified environment which helps in extending Kerala's existing care model into physical, purpose-built typologies. This study initiates an architectural rethinking of hospice design in Kerala by proposing a framework and design recommendations that inform future architectural practices for a more humane, context-specific, home-like care environment.

Keywords – Hospice, Palliative care, Kerala Residential Architecture, Spatial planning, Home-like environment.

1. Introduction

Hospice care is mostly a community-based program that gives patients with terminal illness (i.e., expected survival less than six months) and their families multidimensional care from different professionals. Volunteers help provide services like symptom management and bereavement care(Hui et al., 2013; Montoya, 2017)**.** Based on the 2011 Census, India was home to approximately 104 million senior citizens. Individuals aged 60 years and older made up 8.6% of the total population in India, while in Kerala, this figure was 12.6%(Anandh et al., 2021). The pace of ageing in India is moderate amongst South Asian countries with the elderly population expected to reach 10.1% by 2021, 13.1% by 2031, and 15% by 2036. In contrast, Kerala demonstrates a much faster demographic transition, where the proportion of elderly is projected to grow from 16.5% in 2021 to 20.9% in 2031, and further to 22.8% by 2036. In 2036, 8.4 million is the projected growth of elderly aged 60 and above of total population in Kerala (*Economic Review 2024*, n.d.). Rapidly ageing population, rising chronic

and terminal illnesses, shifting family structures, increases the need for hospice care in Kerala. There are so many global research on hospice architecture which emphasizes the importance of the built environment in shaping the emotional and spiritual experience of terminally ill patients (Adams, 2016; Sagha Zadeh et al., 2018; Verderber, 2014; Worpole, 2023). These studies highlight that domesticity, natural light, indoor environment, nature integration and spatial dignity contribute significantly to healing even when cure is not possible. Existing studies also focuses on the need of "home-like environment" in hospice settings(Swenson, 2009; Verderber, 2014; Sagha Zadeh et al., 2018), most studies are done to present generalised strategies which overlooks sufficient attention to how these approaches must adapt to specific geographical and cultural contexts (Sagha Zadeh et al., 2018). This creates a gap in knowledge based on how architectural and environmental design can respond to localised definitions of "home." The scope of the dissertation includes the strategies for creating home-like environments in hospice design in the Kerala context, by the adaptation of residential and traditional architectural elements. This is done by understanding the spatial requirements of hospice care settings by studying the architectural language of Kerala's vernacular and residential spaces and analysing built form implications of Kerala's community-based palliative care system and existing hospices to propose a design solution that incorporates residential architectural concepts into hospice design. The study emphasizes on the factors that ensure the quality of life within hospice care, specifically spatial needs and planning, indoor environmental quality, opportunities for social interaction and cultural aspects, the broader perception of a home-like environment. The study examines these factors at multiple levels of spatial, experiential, cultural, and environmental, focusing on architectural dimension rather than on medical or policy aspects.

2. Methodology

This section outlines the research methodology adopted to achieve the study objective, which develops a framework for future architectural practices for hospice design in Kerala. It follows a systematic progression from theoretical formulation to design synthesis, as illustrated in Fig.1, adopting a qualitative methodology structured into six phases that begins with defining the aim, objectives, scope, and limitations. The following stages involve a literature review and case study and analysis to identify global functional benchmarks for hospice care. Data collection focuses on documenting traditional and contemporary Kerala residences and existing palliative centre and hospice to evaluate their current functional, environmental, and socio-cultural implications. Documentation of traditional Kerala residence was done by analysing existing studies. Site visits and on-site field observations were used to gather primary data for the documentation of spatial configurations and environmental quality of contemporary Kerala residence, existing palliative centre and hospice. Unstructured interviews with users of residence, palliative care specialists and caregivers, which record lived experience and qualitative insights into patient requirements, were added to this. By giving expert narration and perceived comfort precedence over merely mechanical measurements, the study guarantees that the final framework is based on practical, real-world care dynamics These specific datasets were gathered to understand how local domesticity can be integrated into clinical environments, ensuring the study is grounded in the regional architecture. The data analysis stage involves a comparative study of residential typologies against existing hospice facilities. This analysis aims to bridge the gap between home and healthcare, examining various factors identified during the literature review. By synthesizing these environmental and socio-cultural findings, the study draws critical inferences that form the basis for the final design recommendations. This ensures that the resulting architectural interventions are not only functionally efficient but also culturally empathetic to the Kerala context.

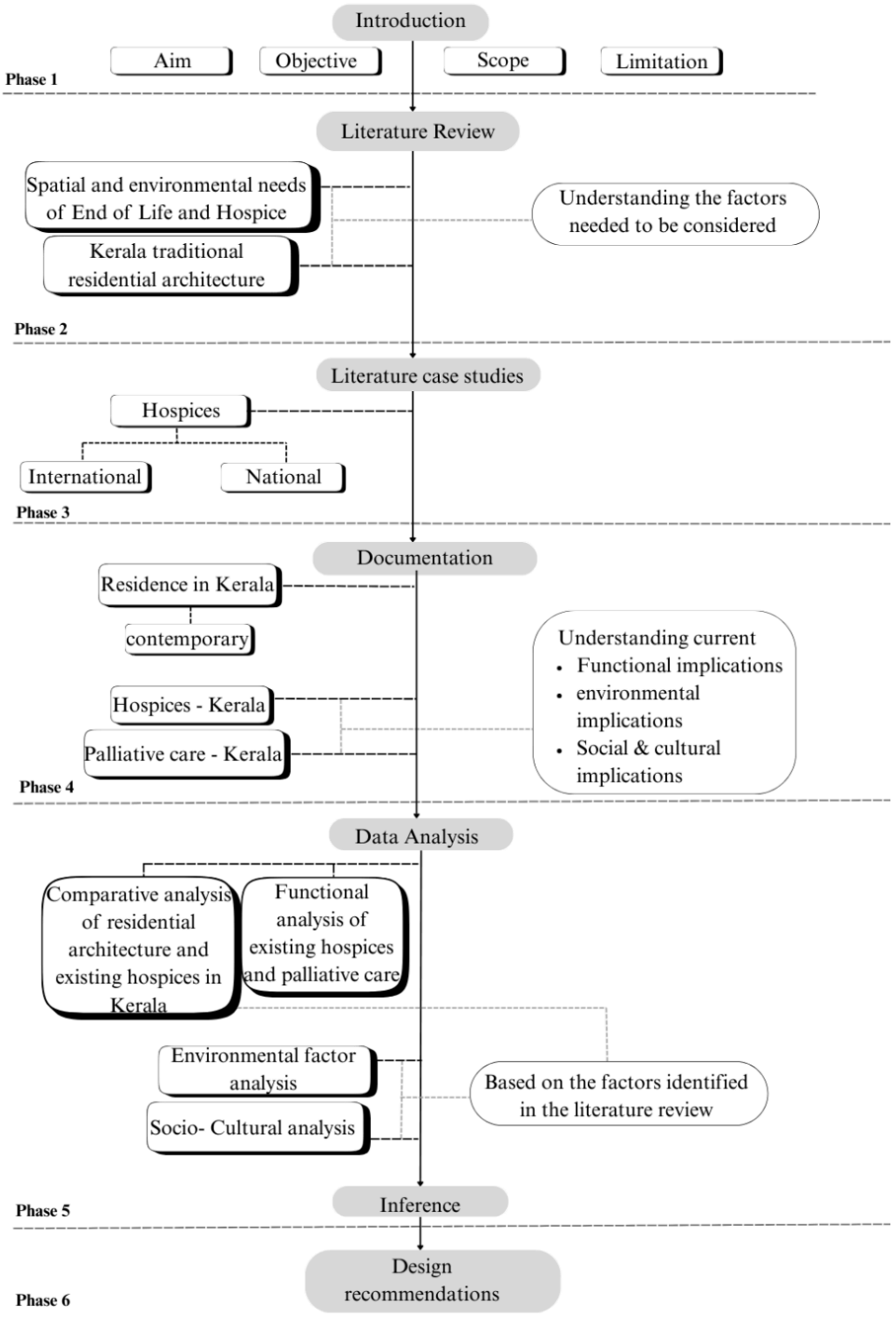


Fig. 1. Methodology chart depicting the steps involved for the formulation of research design

3. Literature Review

3.1 Theoretical foundation

A hospice is a facility for the treatment of patients with terminal illnesses. Hospice care, which involves helping ill patients and their families during the last period of life, is an integral part of palliative care(Matebekwane, 2009). The philosophy of hospice care focuses on the primary objective of delivering comfort, relief, and pain control during a period of significant emotional and physical strain. The majority of individuals receiving hospice care are given a prognosis of six months or fewer left to live(Verderber & Refuerzo, 2019). In the brief that motivated St. Patrick's Hospital in Cork, Ireland(Adams, 2016), a hospice is described as a setting where everyday individuals confront exceptional difficulties and, with the support of committed and skilled healthcare professionals, prevail despite ongoing physical decline and successive losses. Individuals exist until their passing, and it is the responsibility of hospice care to support and empower every patient to experience their life to the fullest extent. It serves as a space for contemplation and a space to seek meaning and purpose. In Modern Hospice Design, Ken Worpole's begins with a sharp criticism of hospital environments in general and especially as places to die (Adams, 2016). According to the French architect Nils Dégrémont, "In our civilization, a death outside the home can be likened to a death outside society—because, in a hospital environment and despite the existence of palliative care units, death is still something of which to be ashamed."(Adams, 2016). A strong preference to stay at home during end-of-life care is commonly observed(Parker et al., 2004; Rigby et al., 2010). A key feature of the "hospice movement" in institutional end-of-life environments was the establishment of smaller, home-like structures and surroundings(Sagha Zadeh et al., 2018). By dismissing hospital architecture, the movement favoured the tradition of residential design, acknowledging the idea that the ideal place to pass away is at home. Hospital historian Grace Goldin identifies the lasting impact of hospices-in-houses to what she refers to as a "protohospice," St. Luke's House in London, which functioned from 1893 to 1921. St. Luke's House moved from house to house(Adams, 2016), providing its terminally ill patients, protohospice which gives home like comfort achieved through spacious staircase, generous staircase, muslin window hanging, flowerboxes, sitting rooms, polished brass hardware(Adams, 2016). "Homes for the dying" are central to Clare Humphrey's research on the hospice movement's nineteenth-century beginnings, where she identifies in three quasi-therapeutic establishments in London: St. Luke's House, the Hostel of God, and St. Joseph's House(Adams, 2016). This historical belief that individuals prefer to die at home still influences the notion that distinct institutions for the dying benefit society and affect their design. "The hospice building must be sympathetic to, and supportive of, our best efforts(Adams, 2016)". Historically, hospices emerged from homes and family customs, highlighting dignity and comfort. Even though the initial modern hospice (St. Christopher's) couldn't completely avoid hospital-like structures(Adams, 2016), its concept influenced subsequent hospice designs: spaces of solace, support, and connection, rather than clinical sterility.

3.2 Environmental Design Factors

Previous studies have highlighted that the physical and built environment influences overall well-being and quality of life of individuals in end-of-life (EOL) care (Sagha Zadeh et al., 2018). Drawing from a range of interdisciplinary research, R. Sagha Zadeh summarized key evidence to guide future studies on this topic. The foundations of palliative care design stem from Cicely Saunders' philosophy of "*total pain"*, which recognizes interconnected physical, emotional, social, and spiritual aspects of human distress that must all be addressed in hospice settings (Sagha Zadeh et

al., 2018).Based on her review, Sagha Zadeh (Sagha Zadeh et al., 2018) identified five major environmental dimensions frequently emphasized in the literature: (1) opportunities for “social interaction”, (2) access to “positive distractions”, (3) “privacy” and user control, (4) “personalization and” homelike qualities, and (5) the “ambient environment”. Additional considerations include spiritual support, efficient spatial organization, and cleanliness. Well-designed care settings, she notes, enable meaningful relationships among patients, families, and caregivers—facilitating interactions not only within the care team but also between the facility and the broader community. Positive sensory experiences such as natural views, daylight, and art can serve as beneficial distractions, while single-occupancy rooms and clearly defined zones help promote privacy and control. Furthermore, the quality of light, temperature, and acoustics together shape the ambient atmosphere of care environments. “An optimized ambient environment may decrease disruptive and aggressive behaviour among patients, improve patient mood and satisfaction, and elevate staff functioning.”(Sagha Zadeh et al., 2018).

3.3 Kerala Palliative Care Model

The study (Kumar, 2007) outlines the social and operational framework necessary for a hospice design to actually function as a home in the Kerala context. The Kerala model of palliative care suggests that a hospice should feel more like a home than a hospital. By moving away from a rigid, doctor-led hierarchy and toward a community-driven "social ecology," the Neighbourhood Network in Palliative Care (NNPC) highlights that end-of-life care is deeply personal—a psychological and spiritual journey that feels most natural in a domestic setting (Kumar, 2007). Traditional hospital environments can often feel cold, alienating, and out of reach. To be truly effective, care needs to fit the local culture and way of life. This is where architecture plays a vital role by incorporating familiar features of traditional homes Kerala like the verandah or shared living spaces. This can move away hospice design from an institutional feel. These familiar spaces do more than just provide shelter. They act as design referents that help patients feel in control and keep them connected to their community. Ultimately, the hospice becomes a natural extension of the neighbourhood rather than an isolated clinic ensuring the building itself serves as a therapeutic means for dignified, person-centered care.

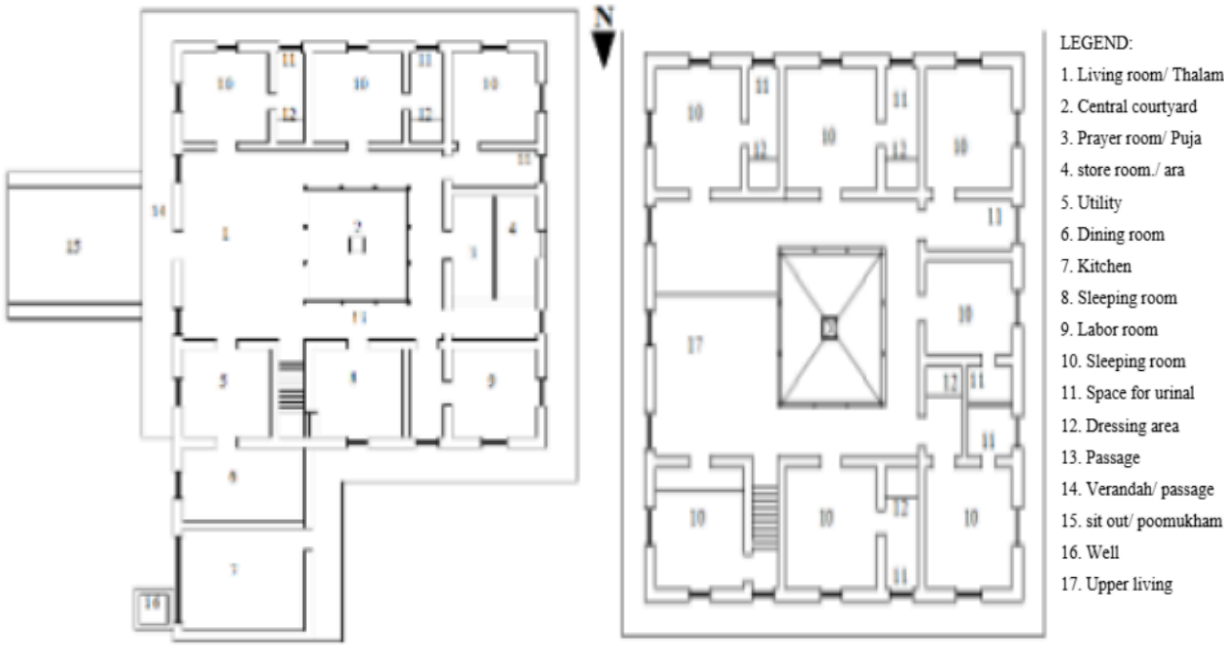
3.4 Kerala Residential Architecture

The vernacular architecture of each region evolves gradually in response to various determinants which are climate and cultural practices. Materials, construction systems, and technological progress act as modifying influences that shape this evolution. In Kerala, the regional housing typologies have developed under the combined impact of climate, locally sourced materials, indigenous building methods, and prevailing social customs and traditions. Understanding these social and cultural dynamics is crucial for analysing built form. Kerala’s traditional domestic architecture represents a highly rational and context-sensitive model that integrates environmental, technical, and cultural(Dr. Janmejoy Gupta (1), Naushaba Jameel (2) & PushpitaPadhy (3)., n.d.). Traditional house forms range from the *akasala* (single block) to *dwissala*, *thrissala*, *nalukettu* (four blocks), and *ettukettu* (eight blocks), with some extended forms such as the *pathinarukettu* incorporating sixteen blocks and four courtyards(Saaya Ann Jacob & Dr. Nischay N Gowda, 2024). As (Dr. Janmejoy Gupta (1), Naushaba Jameel (2) & PushpitaPadhy (3)., n.d.) emphasize architects can draw valuable insights from Kerala’s vernacular heritage by adapting its design logic and spatial principles such as the use of courtyards, climate-responsive orientation, appropriate roof forms, and fenestration into contemporary design to preserve both cultural character and functional performance.

Table 1. "Basic characteristics of traditional construction" (Prakash et al., 2023)

S. No.	Characteristics of architecture	Factors affecting characteristics	Features of characteristics
1	Design	"Demographic profile, Socio-cultural characteristics, Socio-economic characteristics"	Room structure: Size and numbers, shape, number of stories, Courtyard position.
2	Construction	Climate, topography	Massive construction and Lightweight Construction
3	Planning	Climate, socio-cultural factors	Compact layout

These are two traditional residences in Kerala. These are double storey residence with courtyards. Building entry is through sit-out which leads to living area. Spaces include kitchen, dining, storage, prayer area, Main courtyard is used for rituals, rear side courtyard is private space for women. Semi open verandahs act as gathering space whereas open space in first floor is for entertainment purpose. The built form is formed for natural consequence for functional requirements. The spaces area arranged around the central courtyard. Fenestrations ensure air movement. Built form is designed for climatic as well as social needs. Verandah reduces exposure to solar radiation. Courtyard brings interior spaces connecting to nature. Use of sloping roofs, raised plinth, attic spaces, central courtyards, low ceiling height, locally available materials enhance the climate responsiveness. These elements represent Kerala's spatial and cultural pattern. Factors that need to be considered for reimagining hospice as home is deriving from environmental design factors and from elements and principles of Kerala residential architecture is illustrated in Fig. 4.



(a) (b)

Fig. 2. Floor Plans of traditional residence at Cheranellur: (a) Ground Floor Plan (b) First Floor Plan(Gini Gopinath, 2014)

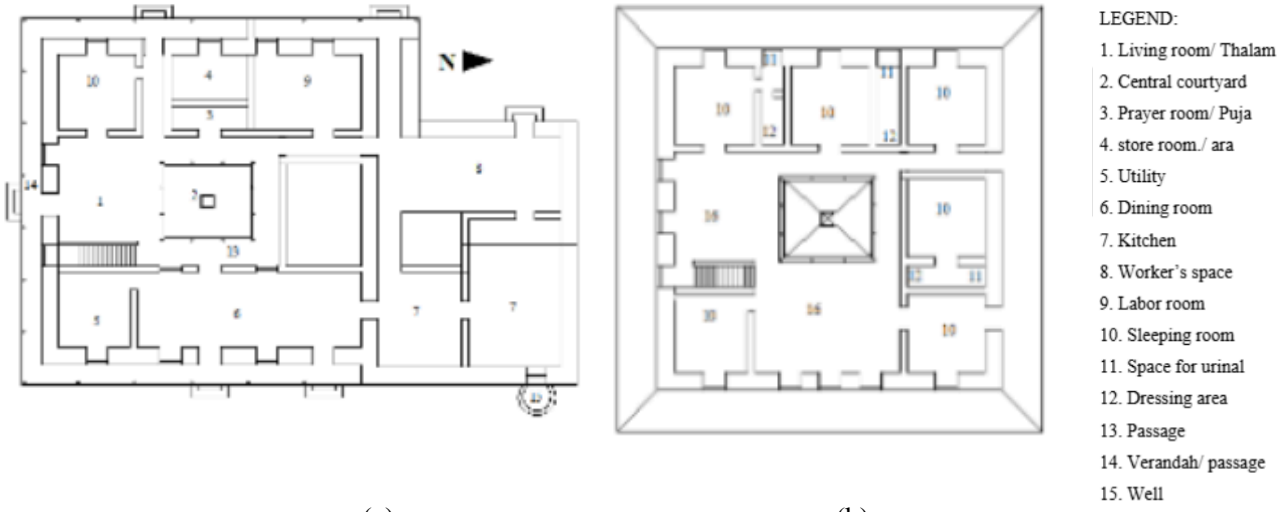


Fig. 3. Floor Plans of traditional residence at Varapuzha (a) Ground Floor Plan (b) First Floor Plan (Gini Gopinath, 2014)

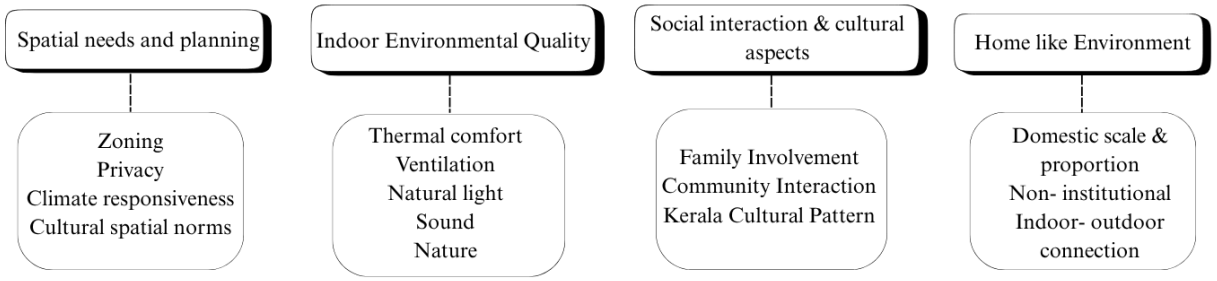


Fig. 4. Factors and subfactors considering for the design guidelines for hospice design in Kerala

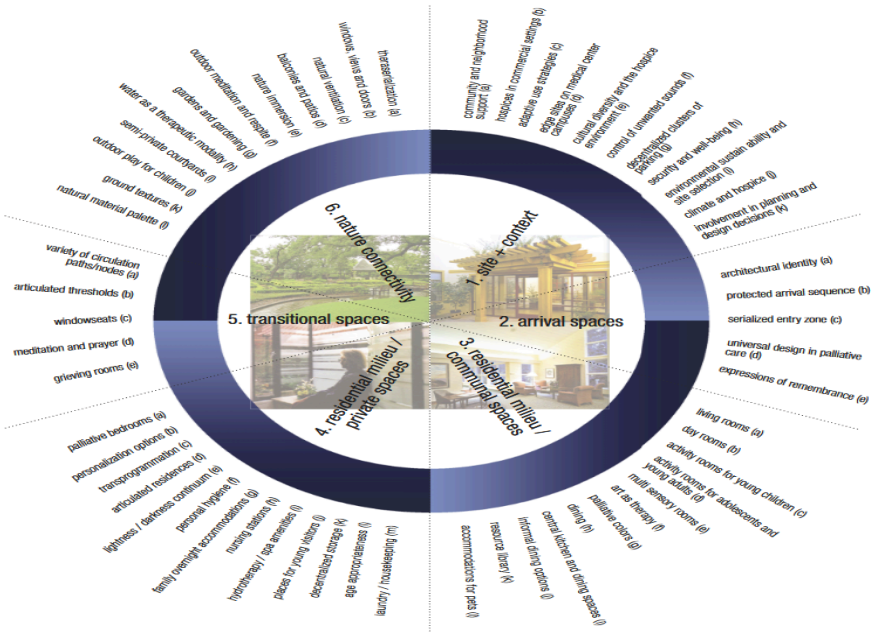


Fig. 5. "Architectural and Landscape Design Considerations in Residential Hospice Environments: Adapted from Residential Hospice Environments: Evidence-Based Architectural and Landscape Design Considerations.(Verderber, 2014)

4. Case Studies

4.1 Literature Studies

i) Our Lady's Hospice in Dublin, Ireland

Our Lady's Hospice in Dublin in Ireland, designed by Reddy Architects uses domestic in scale architectural form that creates a cohesive and compassionate environment which emphasizes comfort, familiarity, and dignity to the end-of-life patients and designed specifically for them and their families. The study is valuable for understanding how architecture responds to emotional, psychological and social needs, not only medical needs and exemplifies a purpose-built hospice facility where architectural and interior design strategies are directly derived from the philosophy of end-of-life care for human-centered design. New built extension with 36 single bed family bedrooms with its supporting facilities are provided. The design rejects institutional feeling by adopting a domestic scale, natural materials, soothing colours, and soft finishes which enhances a home-like and emotionally supportive environment for patients, families, and staffs. A central courtyard forms the heart of the building which acts as an inviting communal space for relaxation, interaction, and small events. The six-bedroom wings radiate from this core which is connected by glazed corridors. This frame views across the site and maintains visual continuity. Thoughtful circulation and wayfinding are enhanced by feature colours. This ensures clarity and ease of movement. Each bedroom balances privacy and connection with an opening onto a semi-private area leading to shared spaces. Interiors use neutral palettes, soft lighting, and discreet integration of clinical elements for comfort and flexibility. Family presence is encouraged through ample seating, fold-out beds, and reading lights which allows loved ones to remain close. The ensuite wet rooms mirror the bedroom's material quality, offering fully assisted, private care settings. The building and interiors create a warm, community-centered hospice that supports healing and togetherness at final stage of life (*IDI Design Awards*, n.d.)



Fig. 6. Images of Our Lady's Hospice, Dublin, Ireland (*IDI Design Awards*, n.d.)

ii) Karunashraya Hospice Trust, Bangalore

Karunashraya Hospice Trust, India's one of the purpose-built cancer hospice provides a locally relevant model which is deeply rooted in Indian cultural attitude towards death, family and caregiving. This also exemplifies residential scale hospice design in India. The main concept of the hospice is its strong relationship with green spaces and water by creating a balance between the size and form of the courtyards. There are several open courtyards that are thoughtfully designed to be accessible to patients. It offers places to sit, relax, and experience nature. There are variety of plants, trees, and shaded seating areas to provide visual and sensory comfort. The overall ambience is kept calm and simple.

Each courtyard serves a different purpose like some encourage social interaction, while others offer quiet retreat. Water bodies and open courts not only enhance ventilation and daylight but also act as spaces for interaction. The hospice consists of five wards each accommodating twelve beds with a shared washroom. Every bed is oriented to face the water body which ensures that patients have view of nature from their space (Abhishek Das, 2021). Clustered organisation of spaces and open spaces are merged with whole composition. Courtyard are used in design to aid the ventilation of the internal spaces, also create meeting places for interaction("Contemporist," 2017).

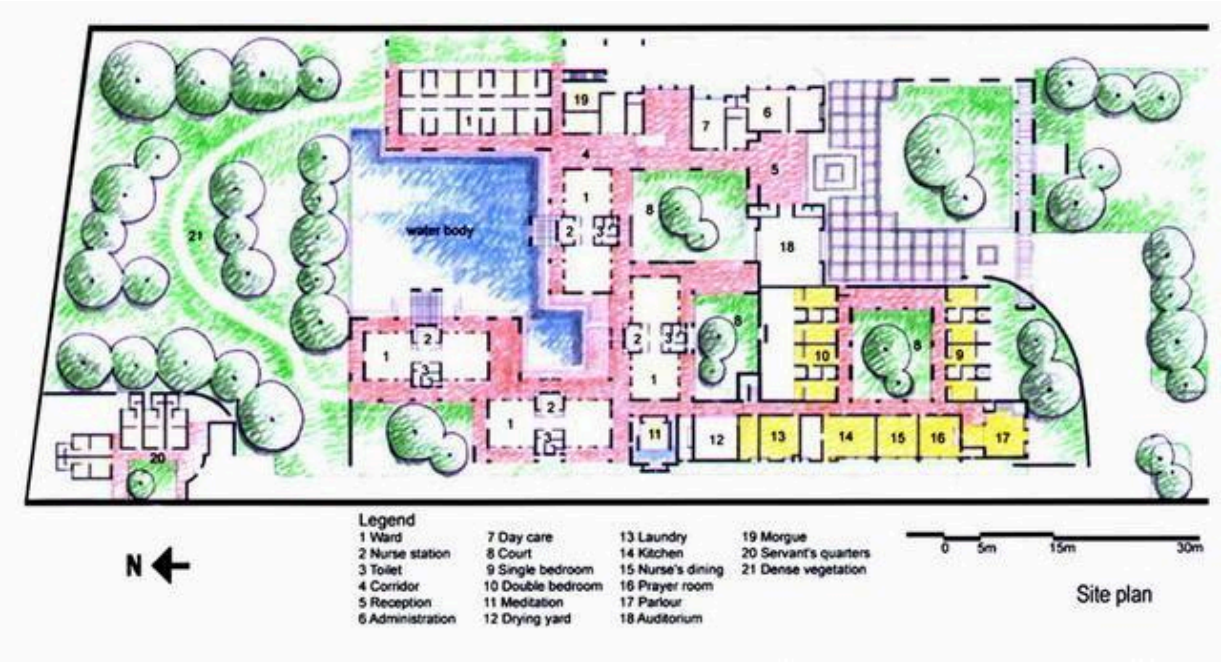


Fig. 7. Site Plan of Karunashraya Hospice("Contemporist," 2017)



Fig. 8. Karunashraya(*Karunashraya Hospice Centre*, n.d.)

4.2 Documentation

i) Contemporary residence in Kerala- Split level house

Split level house is a residence designed by Akhil Albin Architects in Kannur. It is a budget friendly house of area 1700 sq.ft situated at Sreekandapuram in Kannur in the state of Kerala, India. The site has sloping terrain, with highest point to the north and the lowest point to the south. access road is in the south direction. The project is located in a hilly area near a laterite quarry site. Laterite stones and hard rocks are abundantly available in this area. Due to the site's sloping terrain, the design emphasises various levels to prevent over cutting. Design provides much consideration to the existing site. A house that was designed to serve purpose. The spaces include living room, dining room, wash area, kitchen, workspace, prayer room, bedroom, utility room and terrace. For public areas, the client desired open planning. additionally, private spaces must have adequate seclusion.

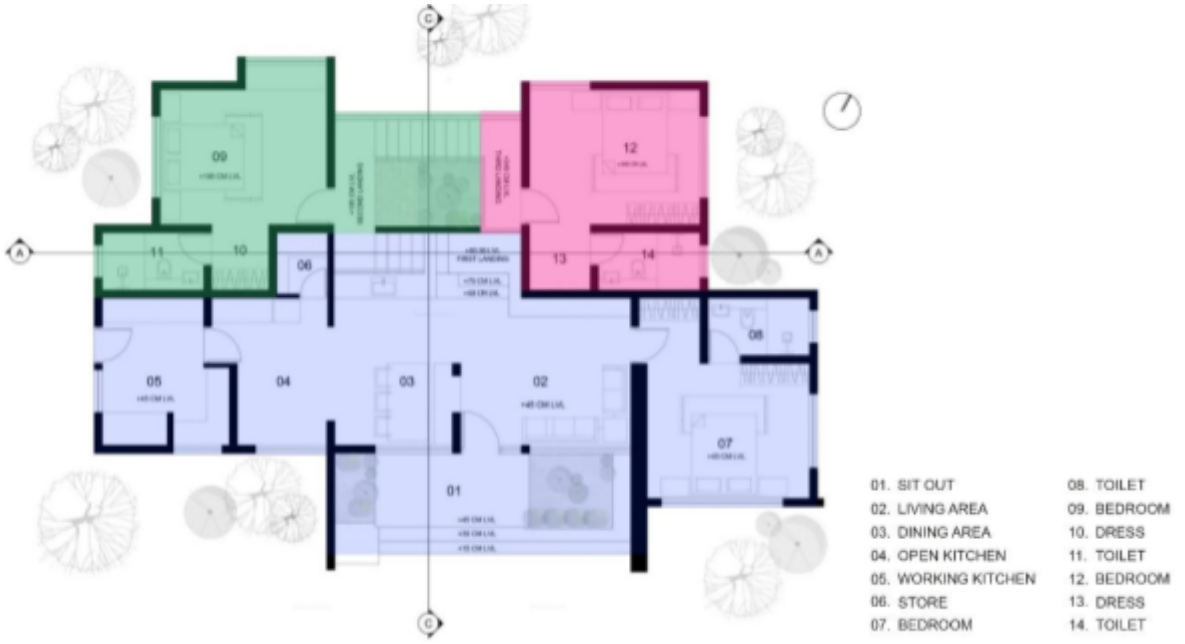


Fig. 9. Floor plan of Split-level residence (Each colour represents difference in floor height)(Akhil Albin Architects, n.d.)

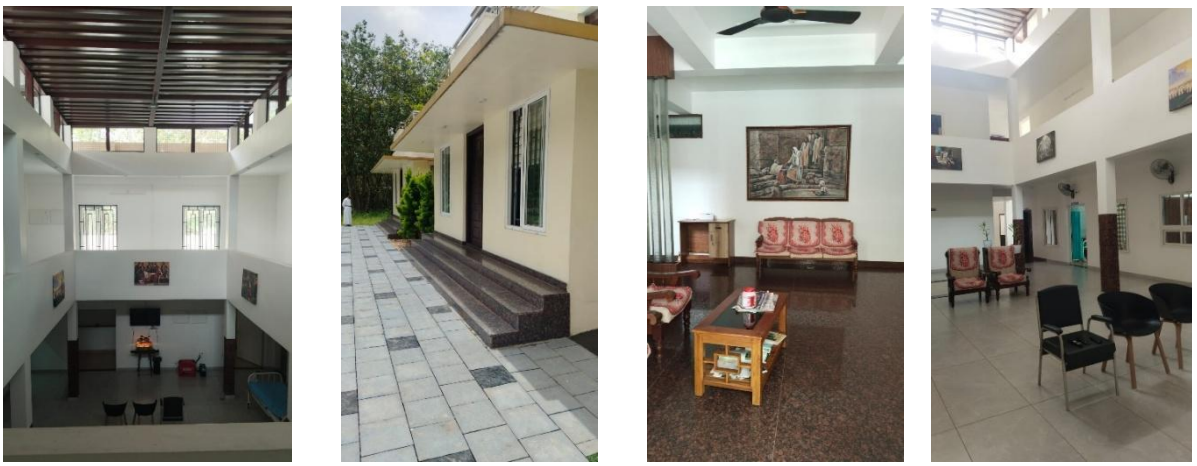


Fig. 10. (a) Section showing level differences (b) Exterior view (Akhil Albin Architects, n.d.)

(a) *(b)*

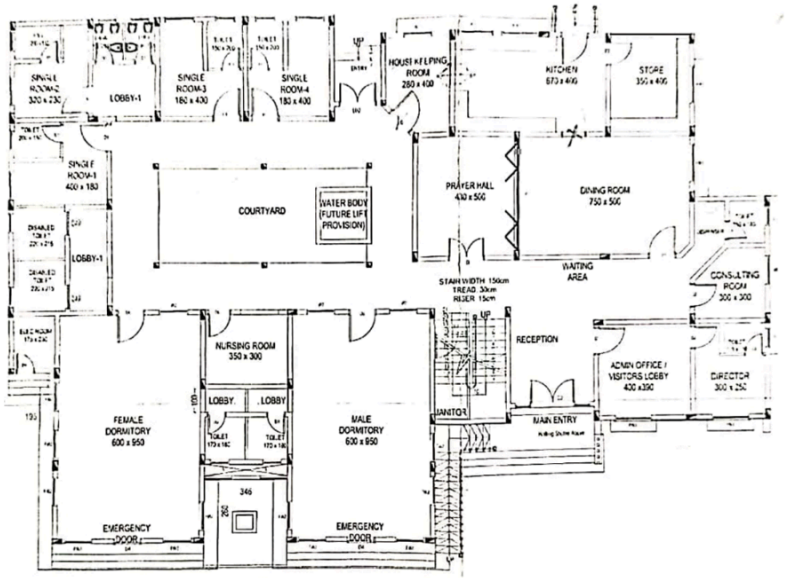
ii) Hospice in Kerala- Bethesda Hospice Care

Bethesda Hospice Care is a purpose-built located at Mannarakulanji in Pathanamthitta in Kerala, India. Constructed in 2024, the study helps to understand how the existing hospice models in Kerala considers the residential elements in Kerala architecture and translates it to the hospice care settings. The study of current built form implication helps to understand what all factors to be considered further and how existing factors affect the emotional, psychological and social needs of the inhabitants. Double-storied building with four single rooms and separate dormitories for male and female patients. The single rooms are provided with attached toilet. There are rooms for staff accommodation. The spaces are arranged around a gathering space with its roof covered. Dormitories and single rooms are provided at ground floor whereas staff accommodation at the first floor. The design includes lobby, admin and staff area, prayer hall, private room, kitchen, dining area. There is no lift provided, but provision for future addition is given.



(a) (b) (c) (d)

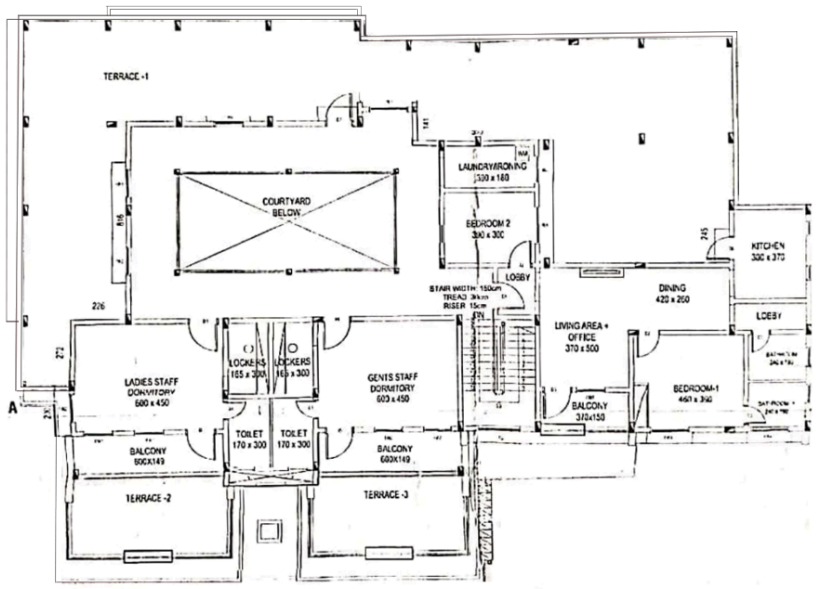
Fig. 11. (a) Double height central space (b) Dormitory outdoor view (c) lobby (d) Central gathering space



(a)

Ground floor: Reception
admin & staff area
prayer area
counselling room
dining
kitchen
male & female dormitory
single rooms
central gathering space

First floor: Staff area

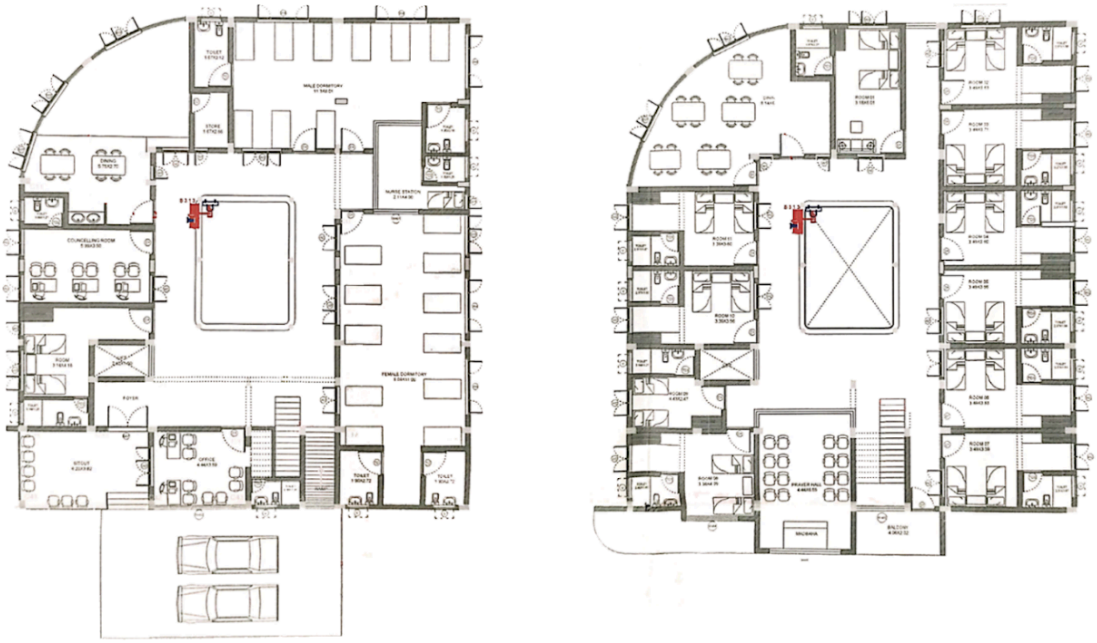


(b)

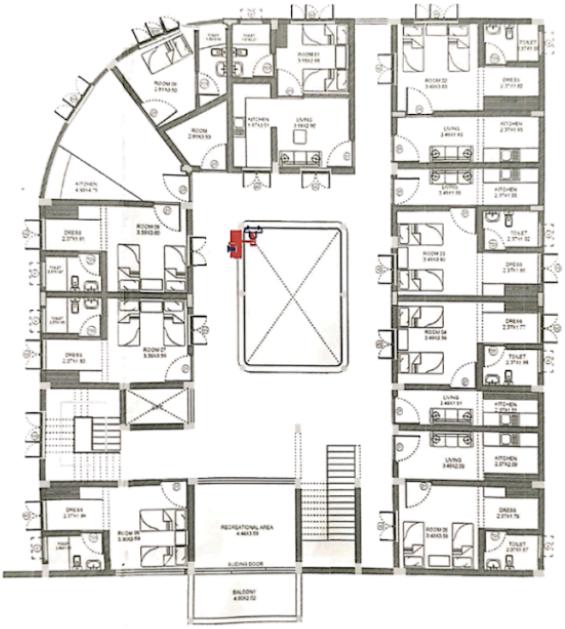
Fig. 12. Floor Plans of Bethesda Hospice Care (a) Ground Floor Plan (b) First Floor Plan

iii) Palliative care in Kerala- Mar Chrysostom Palliative Centre

Located in Mavelikkara in Kerala, India, is a purpose-built triple-storied building with palliative care and assisted living. The study is done for understanding the current built form implications in palliative care setting in Kerala. It was constructed in 2023 with built-up area of 1475sq.m in the site of area 3137sq.m. There are single rooms and separate dormitories for male and female patients. Single rooms are provided with a living, small kitchenette and bedroom with attached toilet. Staff accommodation is also provided. The spaces are arranged around a courtyard with its roof covered. The design includes counselling room, admin area, nursing station, prayer area, common gathering space, kitchen, dining area. Dormitories are provided at ground floor whereas single rooms at the first floor. All floors are accessible by lift.



(a) (b)



Ground floor: Sit-out
admin area
staff area
counselling room
dining
kitchen
male & female dormitories
First Floor: Single rooms
prayer area
dining
Second floor: Assisted living
recreational area

(c)

Fig. 13. Floor plans of Mar Chrysostom Palliative Centre (a) Ground floor (b) first floor (c) second floor



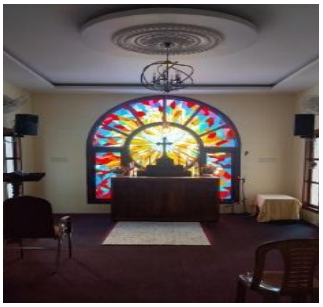
(a)



(b)



(c)



(d)

Fig. 14. (a) Sit-out (b) recreational area (c) dormitory (d) Prayer area

5. Result and Analysis

The following section analyses three architectural settings individually, the residence, hospice, and palliative care centre based on the spatial needs and planning, indoor environmental quality, homelike environment, and social interaction and cultural aspects which are factors identified earlier. Each typology is studied to understand how these factors are expressed through spatial organization and design elements as shown in Table 2.

Table 2. Detailed findings of case study based on identified factors

Factors	***Sub factors***	***Residence (Contemporary)***	***Hospice***	***Palliative Care***
Spatial needs and planning	Zoning	Sit-out directly faces the street. Sit-out, living, dining, and kitchen are arranged linearly along one axis. Bedrooms are in three different levels	Lobby, administration, and family rooms in one end. Private areas - away from the direct visual axis of the entrance Dining and prayer spaces, mediate between the entry and the central zone Vertical circulation core (stair and lift) is discreetly positioned adjacent to the lobby Central space and lobby functions as node for private and public areas.	Organized around the central courtyard Linear arrangement enables the administration to monitor both visitor and patient movement Clear segregation between the functions- public semi public and private Self-contained unit layout in first floor
	Privacy	Arrangement of different spaces. Bedrooms away from public zones excluding the room used by bedridden person. Plants are used as natural visual barriers	Clear linear spatial segregation, without physical barriers External openings maintain restricted access to the outdoors Use of curtains for each bed	Privacy within the building is achieved through spatial hierarchy and sectional zoning Open corridors and courtyard-facing windows allow visual connectivity
	Climate responsiveness	Openable windows to facilitate cross-ventilation. Clerestory windows on the south. Use of locally available materials, sloping roofs, shading devices	Orientation avoids direct western glare Central courtyard allows cross-ventilation and light diffusion Absence of open verandahs and shaded external pathways leads to harsh solar radiation	Building's orientation in cardinal direction Triple-height courtyard, with clerestory openings Private areas in areas with harsh solar radiation causes discomfort

	Cultural spatial norms	Inclusion of prayer area in the main living zone. Use of threshold – sit-out Elevated site and plinth from the street, use of interior courtyard Plants are used as natural visual filters	Planning around a central courtyard-like space - retained at the plinth level Prayer area is located along the corridor Dining area is designed as flexible communal zone Unlike traditional Kerala residences, limited physical connection with external spaces	Nalukettu typology, with spaces arranged around a central courtyard Sit-out at the entrance evokes domestic familiarity Arrangement of spaces according to privacy required

Indoor Environmental quality	Thermal comfort	Passive design strategies- orientation, material, north facing large windows, openable windows	NE-SW alignment allows controlled daylight entry in morning and minimize direct exposure to harsh western sun Central courtyard with covered roof and clerestory allows indirect light and air movement across internal corridors and dormitories. Nursing station positioned internally without external openings	Building's orientation along the cardinal directions Dormitories positioned in the south and west receive stronger solar radiation Proximity of the kitchen and dining area to the dormitories results in discomfort for patients with heightened sensory sensitivity
	Ventilation	Openable windows ensure cross ventilation Multi-level and open planning ensure easy air flow	Achieved through central courtyard Absence of windows in nursing station restricts airflow	Central courtyard space, large windows, clerestories ensure air movement Each patient room and dormitory has openings both towards the outdoor environment and towards the internal corridor North-facing balconies on the first and second floors capture prevailing wind
	Natural light	South clerestory - diffused daylight into interior spaces	Central courtyard admits diffused natural light into adjoining spaces	Daylighting is balanced through clerestory openings, large windows, and internal courtyards,

		Openings on north- soft reflected light. Vegetation near openings filters harsh sunlight. Multi-level and open planning. Absence of open to sky internal green space limits natural light.	Spaces such as the nursing station receive limited daylight due to internal enclosed positioning	ensuring that the spaces remain well-lit without glare Patient rooms and dormitories benefit from soft daylight entering from both external and internal openings
	Sound	Materials of high thermal mass Open planning and linear arrangement cause acoustic privacy. Use of plants in facade reduces street level noises	Calmness due to its inward-focused planning The administrative and public spaces are concentrated near the entrance which helps to isolate dormitories from visitor traffic and service noises.	Dormitories are located away from the public and administrative zones Light roofing at the central courtyard space may introduce some degree of sound reflection during heavy rainfall
	Nature	Internal green space on the middle level Natural materials - laterite, rubble, and vegetation are used	Physical and visual access to the outdoor is very limited Absence of verandah and balcony limits engagement with the nature.	Central planted courtyard and the balconies facing the north landscape
Social interaction and cultural aspects	Family involvement	Open, linear and hierarchically organised planning of functions Multi-level arrangement provides personal spaces	Family room and sick room are located near the administrative zone which allow family members to stay close to patients without intruding into patient-specific areas Single allows one family member to stay with the patient	First-floor patient rooms include provisions for a bystander and small kitchenette Administrative zone positioned near the entrance acts as a spatial filter that regulates visitor access Absence of semi-private transitional spaces
	Community interaction	Sit-out directly facing the street Elevated site and landscape edge maintain a clear threshold	Dining and prayer area is located along the corridor act as the main points of community engagement Courtyard functions as heart of the community within the hospice	The courtyard is visually accessible from multiple rooms, functions as a shared visual core to patients, staff, and visitors Prayer areas, recreational space and balcony

				Design remains inward-oriented, with limited outward-facing community interface except near administrative zone
	Kerala Cultural Pattern	Human scale, climatic sensitivity, material usage and integration of nature	Central courtyard mirrors the nadumuttam of vernacular dwellings Spatial arrangement focusing privacy	Kerala's traditional domestic architecture- its courtyard centric organisation and human-scaled built form North-facing sit-out and entry
Home like environment	Domestic scale and proportion	Proportion of openings and the tactile presence of natural materials Open, continuous, comfortably confined volume Split-level design challenge elderly and physically limited users.	Low-rise built form Spatial segregation without physical barriers other than wall Communal spaces and prayer areas, narrow corridors curtains as screens in dormitories uses the colours as used in institutions	Human-scaled rhythm of spaces, using moderate ceiling heights Absence of long corridors Spatial arrangement-functional hierarchy Private rooms on the upper floor are designed with residential proportions
	Non-institutional	-	Absence of long corridors Central gathering space	Absence of long corridors Central green space Usage of colours in private rooms
	Indoor-outdoor connection	Sit-out bordered by planting Internal green space- but absence of an open to sky limits natural light and ventilation Use of terrace	Very limited indoor-outdoor connection due to lack of verandahs and balcony	Central courtyard filled with plants and open to the sky through clerestories Presence of balcony and large windows

In residence, well-structured zoning maintains the functionality despite the open planning. Vertical levels differences add privacy to the inhabitants but accessibility is difficult for elderly or differently-abled users and reduce the immediate interaction between the levels. Sit-out directly facing

the street reduces visual privacy and acoustics. Open linear planning departs from compartmental zoning of traditional Kerala homes which can reduce the sense of enclosure and introspection valued in older typologies. This linear zoning may cause less variety in movement and privacy is ensured using landscape. The plantings act as soft barriers. Internal and external greenery adds to natural cooling and psychological comfort. Inner positioning of private areas ensures personal privacy. The spaces provide a strong alignment with the cultural pattern by using thresholds, prayer areas, natural elements. Controlled daylight receives through the clerestories. Use of fixed windows and clerestory cause discomfort which caused by the reduced air movement. Enclosed central green space between the levels with covered roof and poor ventilation might trap humidity. Use of plants around sit-out reduces harsh solar penetration into the interiors. The open planning and linear zoning promote constant communication and togetherness among the family. Spaces flow into one another without harsh boundaries which supporting shared meals, conversations, and daily rituals. The vertical layering of spaces allows sense of personal not institutional.

In Kerala, the hospice and palliative care settings are functioning in almost same way. The palliative care is also treating terminally ill patients as in hospice. Even now, people are unaware about the concept of hospice.

In hospice, proper zoning and proper public to private transition supports patient's privacy, ensures administrative control and supports ease of supervision. In Kerala, generally this is done through the use of corridors. Linear and narrow corridor appear monotonous and institutional which lacks the climatic transition and social permeability of a traditional verandah. The separate dormitories for male and female patients and single rooms respect patient's dignity and comfort. Along with patients, other occupants of the hospices also needed to be considered in the design. Integration of prayer and dining spaces promotes social and spiritual wellbeing. Central courtyard and communal dining foster a sense of internal community. Central open space provides visual permeability and spatial clarity and also enhances microclimatic comfort by enabling air circulation and filtered daylight. It also provides passive light and moderate ventilation. Courtyard centric organization reflects the Kerala vernacular spatial language. Outdoor extensions and verandah spaces which is a typical transitional zone in Kerala is not used in the hospice which reduces opportunities for natural interaction, movement and transitional microclimate zones. Introverted design reduces the external noise intrusion. Placement of public spaces near entrance limits sound transmission to private zones. But minimal visual connection to the family and patient zone reduces the interaction between patient and family members. Minimal landscape integration limits biophilic and therapeutic potential of the environment. The low-rise form preserves human scale and accessibility of the building. Spatial hierarchy mirrors domestic progression from shared to private spaces. Repetitive dormitory layout reduces the sense of personal identity and domestic warmth. Dormitories also lack direct semi-open spill-out zones for casual outdoor engagement of patients.

In palliative care, logical functional segregation of spaces ensures clarity and control. Dormitories in the south and west direction causes heat gain in afternoon. In addition to this, the kitchen and dining area near the patient's ward cause discomfort through transfer of heat and odour. The orientation of building in cardinal direction enables balanced solar radiation. Central courtyard design and clerestory openings enable passive design regulation by effective air movement through the spaces, and also offers visual connectivity. Windows in the predominant wind direction captures cool breezes which enhances comfort. Clerestories enhance the diffused daylight which reduces the glare and visual fatigue. Well-lit interior spaces with natural light during daytime enhances the well-being of patients. Covered central courtyard limits the full potential of stack effect and also reduces the direct view to

the sky which changes the lighting quality. Introverted and enclosed design minimizes the external noise intrusion and make a quiet interior environment which supports the emotional healing. The triple height spaces can cause sound reflections. Proximity of kitchen can cause noise in resting areas. Plants integrated to the interior spaces increases the connection to the nature even though the physical movement is impossible to the patients. Absence of semi opened landscaped zone reduces the sensory engagement with the nature. Common areas encourage informal interactions and shared activities.

6. Design Recommendation and Guidelines

The following guidelines and recommendations translate earlier findings into a practical design framework, shifting the focus from an institutional facility to a culturally empathetic home for end-of-life care.

1. Spatial Needs and Planning

Spatial planning of a hospice is important to move away from institutional like to home like environment.

Hierarchical Spatial Flow: The progression of spaces as in Kerala homes should be used. Spaces should flow from entrance, sit-out and reception/administration (public) to dining, community gatherings spaces, family spaces (semi-public) to patient rooms (private areas). This layered organization of spaces maintains privacy while maintaining security.

Courtyard-Centric Organization: The retaining of courtyard can act as spatial and emotional node, but need to modify it for its use in hospice. Instead of fully enclosed or opened courtyards, provide partially opened, double height courtyards with adjustable roofing which helps to balance daylight, ventilation, rain etc. Also integrate plants, shaded seatings to support sensory therapy and microclimate regulation.

Cluster Planning Over Linear Corridors: Avoid usage of long narrow corridors instead use cluster planning around courtyards, shared gathering spaces (de-institutionalizing the circulation). Each cluster (4 to 6 rooms) forms a small neighbourhood which create a sense of belonging and reduces institutional feel.

Integration of Transitional Zones: Incorporation of verandahs, sit-outs, and shaded walkways between clusters and in the exterior can create zones as in Kerala residential architecture.

Zoning for Sensory Comfort: Avoid placing of kitchen and dining zones close to patient's zone. Also avoid these spaces in prevailing wind direction. Avoid the placement of private areas in areas with harsh solar radiation. Plants can also act as shading devices if this is not possible.

Accessibility and Flow: Level differences should be avoided within the floor. Use gentle, straight ramps avoid turning, wide circulation corridors.

2. Indoor Environmental Quality

Thermal Comfort through Passive Design: Use of passive cooling techniques inspired from traditional homes, that is deep eaves, double roofs, shaded verandahs, and landscape buffers. Patient's rooms should be oriented toward the north or east to receive diffused daylight and minimize heat gain.

Ventilation and Air Flow: Use openable windows in the room in both sides for effective cross ventilation. The window size should be of optimum. The clerestories, courtyards ensure effective air

flow through the spaces. Jali walls can be used for interior to diffuse airflow while maintaining privacy. Avoid congestion in room.

Daylight Quality: Use diffused daylight for illuminate the interior rather than using direct sunlight. Clerestories, double height spaces enable this. Diffused daylight supports circadian rhythm, improves mood, and reduces glare which are important for bedridden patients.

Sound: Use textured materials which can avoid the echoes in the double height spaces. Place noisy areas like kitchen and services away from the patient's zone. Landscape buffers with bamboo or dense shrubs can cut external noise.

Integration of Nature: Visual and physical contact with nature should be possible from every bed which helps in emotional and psychological well-being.

3. Social interaction and cultural aspects

Family Participation in Care: Design patient spaces with family spaces in the adjacent region. Physical proximity can be reduced and could provide visual connectivity with the patient's room. Individual rooms can be provided with small living, kitchenette which can give a home like environment reflecting Kerala's caregiving culture where families stay with patients.

Community and Shared Spaces: Provide multi-purpose common areas for dining, prayer, and activity areas that encourage informal social bonds among patients, families, and caregivers. The emotional connection between the caregivers and patients are important for the home like feel. Small gathering spaces, balconies near patient's area promote community without crowding by balancing interaction with privacy.

Cultural Familiarity: Use verandahs, sit-outs, inner courtyards as symbols of home and memory.

Spiritual Inclusivity: Include neutral spaces for prayer which are open to all beliefs and connected to nature rather than enclosed halls.

4. Home-like Environment

Domestic Scale and Intimacy: Maintain a horizontal and low-rise built form. The smaller room volumes and intimate proportions can enhance the home like feel (ceiling heights between 2.7-3.3m) and avoids the sterile feel of hospital wards thus reducing patient anxiety. The rooflines and heights should vary gently for avoiding a monotonous institutional feel. Avoid repetitive layouts by introduce small variations in window form, furniture, and orientation of individual spaces without affects the circulation.

Personalization and Identity: Allow patients to personalize their adjacent spaces with family photos, belongings, or plants. This transforms into their space which reinforces dignity and individuality.

Indoor–Outdoor Continuity: Every unit should open to a garden, veranda, or courtyard to the places where one can experience sun, wind, or rain safely. This blurs the line between interior life and nature that mirroring the openness of traditional Kerala homes.

7. Conclusion

This study aims to explore how residential architectural principles can be reinterpreted for creating more comforting, sensitive and regionally rooted hospice design in Kerala. The analysis revealed that spatial planning, indoor environmental quality, nature and community integration, social interaction

and the use of domestic scale elements significantly enhance the home-like environment. These findings suggest that hospice design in Kerala should integrate these aspects to improve end-of-life experiences. The study was limited to very few case studies within Kerala and not represent other climatic and cultural contexts. Although the study concentrates on a purposeful sample of two facilities in Kerala, both locations were chosen as crucial case studies that exemplify common palliative care typologies. Such a sample size enables a detailed, high-fidelity examination of spatial arrangements in qualitative architectural research that a more comprehensive statistical survey could miss. The depth of this inquiry is triangulated with a robust analysis of vernacular residential grammar of Kerala. This allows for the synthesis of a framework, while it is regionally specific, offers a transferable logic for culturally empathetic design. Future research could expand this evidence base through cross-regional comparisons to further validate the generalisability of these findings. The study does not investigate the medical technologies, clinical and patient's medical data and treatment protocols and does not focus on the financial feasibility or operational management models of hospice design. The primary data collection from the terminally ill patients is limited due to the sensitivity of the EOL care. This study prioritized proxy-narratives from long-term caregivers and specialists in order to uphold ethical standards and patient dignity. This ensures that the design framework is informed by those with the most consistent, long-term experience of patient needs. Future research can explore on the sensory aspects that influence the end-of-life. This study contributes to the ongoing hospice architecture by extending current design trends towards more human-centred, residential models of care.

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Architectural Historiography of the Airavatesvara Temple: Revisiting Chola Heritage through Epigraphic and Cultural Narratives

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ABSTRACT

The Airavatesvara Temple at Darasuram is widely regarded as one of the most refined creations of Later Chola architecture and sacred artistic imagination. Constructed during the reign of Rajaraja II in the twelfth century CE, the monument reflects the maturity of Chola artistic traditions and religious patronage. This article revisits the historiography of Chola temple heritage by closely examining the epigraphic, architectural, and cultural materials associated with Darasuram. Drawing extensively from the works of C. Sivaramamurti, S.R. Balasubrahmanyam, S.R. Krishnamurthi, and G.J.R. Mevissen, the paper investigates the historical evolution of Darasuram within the political and cultural environment of the Chola state. While earlier scholarship largely concentrated on monumental architecture and stylistic classification, less attention has been paid to ritual continuity, sacred geography, inscriptional traditions, and cultural memory surrounding the temple. Through historical interpretation of inscriptions, temple iconography, mythological friezes, and cultural traditions, this article situates Darasuram within broader debates concerning Tamil heritage, sacred kingship, and UNESCO heritage discourse. The paper concludes that Darasuram should be interpreted not merely as a static archaeological monument but as a dynamic cultural institution that integrated religion, administration, economy, literature, music, sculpture, and social life during the Chola period.

Keywords: Chola Heritage, Airavatesvara Temple, Architectural Historiography, Epigraphy, Sacred Landscape, Living Heritage.

1. Introduction

The Chola dynasty has a glorious place in the history of South India and is still influencing the cultural heritage of Tamil civilization. The Cholas, from the 9th to the 12th century CE, built one of the most powerful empire states in Asia and turned Tamilakam into a significant hub of political and temple culture, maritime trade and artistic creativity. The construction of the temples by the Cholas represents some of the most enduring symbols of Tamil civilization and the cultural heritage of India.

Darasuram Airavatesvara Temple is a fine example of the temple architecture of South India and one of the great undertakings of the Later Cholas. The temple is situated close to Kumbakonam in the present day district of Thanjavur and was constructed in the reign of Rajaraja II (1146-1163 CE). It is one of the three ‘Great Living Chola Temples' which are inscribed as a UNESCO World Heritage Site, the other two being the Brihadisvara Temple at Thanjavur and the Gangaikondacholapuram.

In the last century there has been a lot of change in the historiography of Chola temple legacy. The colonial archaeologists were more interested with the architecture and style of Chola monuments. Then Indian scholars added to these theories the temple economy, Bhakti traditions and political ideology and cultural development. Many of the older works, however, treated the Chola temples as individual pieces of artistic excellence, but not as a whole as a socio-cultural organisation in its sacred landscape.

The unusual combination of architecture, iconography, inscriptional evidence, ceremonial practices and sacred landscape of the Darasuram make it a case for special consideration. Beyond its royal context and Saivite association, the temple is a repository of the evidence of social organization, cultural memory, artistic patronage and political symbolism.

Through a detailed reading of inscriptions, cultural practices, architectural study and literary references, the paper attempts to revisit the historiography of Chola temple heritage with a historical reading of the Darasuram. The work is a blend of architectural history, reading inscriptions, mythology, cultural geography and discourse of legacy.

The aim of this study is:

1. To study the development of Chola temple architecture development studies through the history
2. To examine inscriptional and literary evidence relating to Darasuram.
3. To understand the cultural and sacred space of the temple.
4. To reevaluate Darasuram as an evolving heritage entity in the history of Tamil culture

Unlike earlier studies that examined Airavatesvara Temple primarily through architectural description, dynastic chronology, or iconographic analysis, the present study argues that Darasuram should be understood as an integrated cultural memory landscape where architecture, inscriptions, sacred geography, ritual continuity, and heritage discourse collectively construct Chola identity. By combining historiography, epigraphy, sacred landscape theory, and heritage studies, this paper offers a new interpretive framework for understanding Darasuram as a living cultural institution rather than merely a monumental structure.

2. Literature Review

2.1 Global Perspectives on Heritage, Sacred Landscapes and Cultural Memory

Heritage studies have undergone a decisive shift from monument-centred conservation toward living heritage, cultural landscapes, and community memory. Smith (2006) critiqued the Authorized Heritage Discourse, arguing that dominant practice privileges expert interpretations at the expense of community agency and intangible cultural significance. Harrison (2013) advanced a relational conception of heritage as a process co-produced between present societies and their inherited pasts. These frameworks are significant for living religious complexes such as the Airavatesvara Temple, where ritual continuity remains inseparable from architectural fabric. UNESCO's 1992 recognition of cultural landscapes broadened heritage assessment beyond individual monuments to encompass spatial interactions between communities and their environments (UNESCO World Heritage Centre, 2021). Brumann and Gfeller (2022) critically demonstrate that this category has continued to reflect European institutional dominance, marginalising South Asian sacred landscapes in global heritage discourse. Graham, Ashworth, and Howard (2000) examined how heritage is selectively produced within political contexts,

while Tunbridge and Ashworth (1996) theorised dissonant heritage, identifying tensions when a site carries conflicting meanings for different groups. Assmann (2011) provides a framework for understanding how Chola temple traditions, transmitted through ritual, inscription, and artistic convention, constitute institutionalised cultural memory, while Nora (1989) illuminates how temples like Airavatesvara function as condensed repositories of collective Tamil identity.

2.2 Heritage Studies and Temple Heritage in India

Scholarship on Indian temple heritage reflects complex intersections of colonial knowledge production, postcolonial nationalism, religious continuity, and tourism pressures. The Archaeological Survey of India has historically approached temple heritage through preservation and stylistic classification, prioritising physical fabric over living traditions. Ministry of Tourism reports (Government of India, 2022) acknowledge the economic significance of temple tourism yet inadequately address tensions between development and the sanctity of living religious sites. Prabha Ray, Kulshreshtha, and Suvrathan (2022), in The Routledge Handbook of Hindu Temples, reorient this discourse by approaching the Hindu temple explicitly as a lived, dynamic space whose social base — community formation, patronage networks, and institutional continuity — deserves precedence over aesthetic analysis. Singh (2011) and Poria, Butler, and Airey (2003) highlight that for millions of visitors to South Indian temples, the experience is primarily spiritual rather than touristic, a point extended by Sinha and Kamalapurkar (2024), who demonstrate that pilgrims perceive the sacred landscape as living collective memory. Timothy and Olsen (2006) examined management challenges at sacred heritage sites as tourism destinations, a framework directly applicable to Airavatesvara, where active worship coexists with UNESCO conservation obligations.

2.3 Tamil Nadu Heritage and Chola Temple Scholarship

Scholarship on Chola temple culture productively integrates architectural history, epigraphy, social history, and religious studies. Karashima (2014) demonstrated through inscriptional analysis the sophisticated administrative apparatus underlying temple management, land tenure, and commercial networks of the imperial Chola period. Hall (2001) examined temple networks as institutional nexuses of political authority and economic redistribution. Dehejia (2021), in The Thief Who Stole My Heart, extends this analysis through material and epigraphic evidence of Chola bronze production, demonstrating that royal endowments, ritual processions, and temple administration constituted an integrated sacral-political programme. In a subsequent article in South Asian Studies, Dehejia (2024) applies epigraphy directly to Kaveri-region Chola temple sites. Champakalakshmi (1996) demonstrated how major temple complexes catalysed temple-town formation in the Kaveri delta.Subbarayalu (2014) supplied detailed epigraphic evidence of devadana land grants and ritual regulations, while Orr (2000) illuminated the gendered dimensions of temple patronage. Branfoot (2007), Michell (1995), and Ali (2004) contributed architectural surveys situating Chola temple design within broader Dravidian trajectories.

2.4 Architectural Historiography of the Airavatesvara Temple

The earliest systematic studies of Chola temples emerged through the Archaeological Survey of India, concentrating on chronology, iconography, and architectural classification. Sivaramamurti (1978) identified Darasuram as the culmination of mature Chola architectural experimentation, placing it within the developmental sequence of Chola temple design. Balasubrahmanyam (1979) advanced this historiography by rejecting derivative characterisations of later temples, arguing instead for a mature phase of decorative elaboration correlated with dynastic chronology and sacred ideology.

Champakalakshmi (1996) broadened the interpretive frame to situate temples within the socio-cultural history of medieval South India, demonstrating that the Chola period integrated religion, literature, music, sculpture, and civic institutions simultaneously under royal patronage, with temples functioning as hubs of dramatic performances, education, and art guilds. Cinthia (2023), in a recent ICSSR-funded study, examines Darasuram specifically as a heritage monument promoting cultural identity in the contemporary context. While these studies established an indispensable foundation, they remain largely insulated from theoretical advances in heritage studies, treating the temple primarily as an aesthetic object rather than a living social institution.

2.5 Epigraphy, Iconography and Sacred Landscapes

Mevissen introduced approaches to interpreting the symbolic dimensions of Darasuram. In Mythology Meets Architecture: The Stone Chariot at Darasuram (1993), he interpreted the rathamandapa as a cosmic structure reflecting Saivite cosmological concepts, while in An Interesting Frieze at Darasuram (2001) he demonstrated how narrative friezes encode mythological sequences associated with the Tripurantaka legend. Chola epigraphy constitutes one of the richest archives for reconstructing medieval South Indian social, economic, and religious history. Karashima (2014) demonstrated how inscriptions encode agrarian organisation and inter-regional exchange, while Ali (2004) revealed the epigraphic corpus as a performative text legitimating royal authority. Dehejia (2024) in South Asian Studies applies epigraphy directly to Kaveri-region Chola temples, demonstrating how inscriptions sequence temple foundations and encode sacred geography. A recent study of the Vasishtesvara Temple at Karanthai, Thanjavur — contemporaneous with Darasuram — confirms that Chola inscriptions record civic, festival, and ritual dimensions of temple life beyond administrative data (Dinesh Kumar (2025). The sacred landscape of the Kaveri delta, encompassing the Mahamaham tank, the Navagraha circuit, and pilgrimage routes, has been examined by Stein (1994) and Heitzman (1997), situating Darasuram within a living sacred geography theorised by Eck (2012).

2.6 Heritage Interpretation and Tourism Potential

UNESCO recognition transformed Chola monuments from regional sacred spaces into global heritage sites. UNESCO (2024) affirms that worship and ritual at the Great Chola Temples continue daily as an inseparable part of surrounding community life. Heritage interpretation has developed since Tilden (1957), with Moscardo (1996) advancing mindful visitation and Staiff (2014) emphasising constructivist interpretation at complex sites. Ozdemir and Zonah (2025), in Sustainability, demonstrate that digital tools — virtual tours, QR-based trails, and educational apps — enhance visitor engagement at UNESCO sites while supporting conservation sustainability, providing an operational framework applicable to Darasuram. Liu et al. (2022) show that UNESCO designation produces a double-edged effect of enhanced conservation resources alongside risks of tourism commercialisation threatening community livelihoods. Sustainable heritage tourism frameworks by McKercher and du Cros (2002) provide models for balancing conservation with visitor access, yet these have not been systematically applied to Darasuram within the Chola Heritage Circuit.

2.7 Research Gap

The above review shows that a number of gaps exist. The simplest, the most essential, void is the division of architectural history, epigraphic research and heritage studies into separate projects. The findings of Sivaramamurti, Balasubrahmanyam, and Champakalakshmi laid an essential foundation, but were cut off from recent advances in theory reflected in the works of Prabha Ray et al. (2022) and Brumann and Gfeller (2022). No historical reflection can be found in the Darasuram literature: no

critical examination of the ways in which different traditions of scholarship have built knowledge around the temple. Mevissen's iconographic contributions are mostly on symbolic aspects, without involving epigraphic or living heritage aspects. Secondly, the inscriptional record has been underutilised so far in revealing the role of Darasuram as a living cultural institution, which is highlighted by Dehejia (2024) and Dinesh Kumar (2025). Third, there have been no studies of these intangible aspects of the temple, such as oral history, ritual, and musical connections, that have used cultural memory theory. Fourth, although recent sustainable heritage tourism models have been developed and operated (Ozdemir and Zonah (2025); Liu et al., 2022), sustainable heritage tourism framework models have yet to be applied to the specific context of Darasuram. The present study aims at bridging these gaps by combining different disciplines such as architectural analysis, epigraphic evidence, cultural narratives, sacred landscape theory and heritage studies discourse.

3. Theoretical Framework

This study applies three interrelated theoretical lenses: cultural memory, sacred landscape, and living heritage discourse. Cultural memory theory is used to interpret Darasuram as a repository of Chola royal identity, ritual continuity, mythological narratives, inscriptions, and Tamil historical consciousness. Sacred landscape theory is applied to examine the temple not as an isolated monument but as part of a wider ritual and cultural geography connected with Palaiyarai, Kumbakonam, Pattisvaram, Swamimalai, Thanjavur, and Gangaikondacholapuram. Heritage discourse is used to understand Darasuram as both a protected UNESCO World Heritage monument and a living cultural institution where ritual practice, community memory, conservation, and tourism intersect.

Table 1. Analytical Framework for Interpreting the Airavatesvara Temple as a Cultural Memory Site, Sacred Landscape, and Living Heritage Monument

Theoretical Lens	Key Scholar(s)	Application in This Study	Sections Applied
Cultural Memory Theory	Assmann (2011); Nora (1989)	Interprets Darasuram inscriptions as mnemonic records institutionalising Chola dynastic identity, ritual continuity, and collective memory across generations.	Sections 6.1, 6.3, 10.1
Sacred Landscape Theory	Eck (2012); Heitzman (1997); Stein (1994)	Situates Darasuram within the Kaveri delta pilgrimage geography — connected to Palaiyarai, Kumbakonam, Pattisvaram, Swamimalai, and Gangaikondacholapuram.	Sections 5, 8, 8.1, 10.3
Living Heritage Discourse	Smith (2006); Harrison (2013); UNESCO (2024)	Examines the tension between UNESCO Authorised Heritage Discourse (expert-driven conservation) and the living ritual practices, community memory, and sacred traditions that constitute Darasuram's intangible significance.	Sections 8.2, 8.3, 10.3

Source: Prepared by the author (2026). Theoretical frameworks drawn from Assmann (2011), Eck (2012), Smith (2006), and Harrison (2013).

4. Methodology

The study employs qualitative historical methodology based on textual interpretation, epigraphic analysis, architectural reading, and historiographical comparison. Primary sources include temple inscriptions, Archaeological Survey of India records, sculptural and iconographic panels, literary traditions, and UNESCO heritage documentation. Secondary sources comprise scholarly books on

Chola history, architectural studies, cultural history texts, heritage studies literature, and scholarly articles related to Darasuram and Chola heritage.

4.1 Analytical Procedure

The study was conducted in four stages. Major historiographical works of Sivaramamurti, Balasubrahmanyam, and Mevissen were reviewed to identify dominant interpretations of Darasuram. Inscriptional evidence was examined to understand temple administration, sacred kingship, and socio-economic functions. Architectural and iconographic features were analysed through Cultural Memory Theory and Sacred Landscape Theory. Finally, contemporary heritage and tourism literature evaluated Darasuram as a living heritage site within UNESCO heritage discourse.

4.2 Application of the Theoretical Framework

The three theoretical lenses generated specific analytical questions directing source reading at each stage. Cultural memory theory (Assmann, 2011) directed inscription analysis toward mechanisms of identity transmission, asking what collective memory was being institutionalised and for whose benefit. Sacred landscape theory (Eck, 2012; Heitzman, 1997) directed spatial analysis toward the relational geography of the Kaveri delta, asking how Darasuram's significance was constituted within pilgrimage routes and royal patronage circuits. Living heritage discourse (Smith, 2006; Harrison, 2013) directed heritage analysis toward tensions between expert-driven conservation and community-centred living traditions, asking whether UNESCO management supports or constrains the site's intangible significance. This theoretically guided reading enabled the interpretive synthesis presented in the Discussion.

5. Historical Background of Darasuram

Darasuram is a significant place in the historical Geography of the kingdom of Cholas. The area, which is close to Kumbakonam, was on the southern side of the river Arisalaru and was the second capital of the ancient Chola kingdom.

The significance of Palaiyarai is pre-date to the Later Cholas. Both literary and inscriptional sources point to the city's role as a royal residence for a number of Chola Kings. Various spellings of the city name were used such as Arai, Palasai and Palaiyarai.

After the decline of Kaveripumpattinam with the submergence of the coast, the inland political centres like Uraiyur and Palaiyarai became prominent. Throughout the successive Chola reigns, the Palaiyarai was very much associated and it was a prominent centre for political and ceremonial purposes. In the twelfth century CE, a temple dedicated to Airavateswara was built by Rajaraja II. From inscriptional evidence, the temple was originally called Rajarajeswaram. Subsequent traditions linked the site with the white elephant of Indra named Airavata and thus Airavateswara was born. Rajaraja II's period of rule marked the maturity of Chola artistic and religious culture. Temple iconography and devotional ideology were greatly influenced by the Saivite Bhakti traditions of the Periyapuranam written by Sekkilar.

Darasuram also reflects the close relationship between royal authority and sacred legitimacy in the Chola period. The construction of monumental temples served not only as an expression of religious devotion but also as a demonstration of political power, cultural patronage, and dynastic prestige. The Airavatesvara Temple, commissioned by Rajaraja II, exemplifies the maturity of Later Chola artistic

and architectural achievements. The temple is renowned for its finely carved pillars, miniature relief sculptures, dancing figures, narrative panels, ornamental friezes, and sophisticated iconographic programme. These artistic features demonstrate the advanced stage of Chola craftsmanship and reveal the integration of religion, aesthetics, mythology, and royal ideology within the sacred architectural landscape. Consequently, Darasuram stands as both a religious monument and a cultural testament to the artistic excellence and intellectual sophistication of the Later Chola age.

6. Epigraphic Analysis of Darasuram

6.1 Temple Inscriptions and Historical Identity

One of the most significant historical sources for reconstructing the history of Darasuram is the inscriptions (plaque). The epigraphs discover that the temple was called Rajarajeswaram and provide information on royal patronage, donation, ritual and administration of the temple. The inscriptional variations, such as the use of the term 'deity' as 'Rajaraja Iswaram' and 'Rajasuramudaiya Narayanar', reveal the historic changes and the adaptation of the temple through linguistic and cultural changes from one generation to the next. Using Assmann's (2011) definition of cultural memory, the inscriptions are not only historical documents but also institutionalised ways of transmitting identity and dynastic legitimacy and collective Chola memory in permanent architectural form.

Table 2. Epigraphic Analysis of the Airavatesvara Temple, Darasuram

Inscription Type	Location / Type	Historical and Cultural Significance	Source / Reference
Nayanmar Sculpture Inscriptions	Basement of Central Shrine	Records the Nayanmar tradition and highlights the temple's Saiva devotional heritage.	ASI, ARE 16 of 1908
Royal Foundation Record	East Wall, First Prakara	Provides evidence for the temple's association with Rajaraja II and Chola patronage.	ASI, ARE 17 of 1908
Chola Historical Inscription	East Wall Fragment	Records dynastic history and reinforces Chola political legitimacy.	ASI, ARE 18 of 1908
Temple Endowment Record	South Wall	Documents land grants and temple renovation activities under Kulottunga III.	ASI, ARE 20 of 1908
Worship Endowment Record	Inner Gopuram	Records donations for worship, reflecting continuity of ritual practices.	ASI, ARE 22 of 1908
Festival and Repair Record	Temple Complex	Provides evidence of temple administration, repairs, and festival organization.	ASI, ARE 23 of 1908
Dvarapala Victory Inscription	Base of Dvarapala Image	Commemorates a Chola military victory and the transfer of a Dvarapala image from Kalyani.	ASI, ARE 24 of 1908
Historical Introduction of Kulottunga II	Temple Courtyard	Contains portions of a royal prasasti illustrating Chola kingship ideology.	ASI, ARE 26 of 1908
Gopuram Construction Record	Courtyard near Outer Gopuram	Records gopuram construction and elite patronage of temple architecture.	ASI, ARE 27 of 1908

Source: Archaeological Survey of India (ASI), Annual Report on South Indian Epigraphy (ARE), Nos. 16–27 of 1908. Table prepared by the author (2026).

6.2 Administration of the Temple

The epigraphic evidence reveals a highly organised administration during the Chola period. Rulers, local elites and devotees endowed the temple heavily with land grants, tax exemptions, agricultural income, ritual endowments, etc. for ritual activities, festivals and institutional functions. The administration included accountants, priests, officials in charge, craftsmen, dancing women and musicians. Inscriptions also indicate that the temple served as a religious as well as administrative hub and was directly engaged in agricultural management, economic redistribution and the administration of the region, thereby highlighting the importance of the temple institutions in the socio-economic life of the Chola state.

6.3 Social and Cultural Life

Chola temples were major centres of music, dance, dramatic performances, education, philosophy, and literary production. As Champakalakshmi (1996) and Subbarayalu (2014) demonstrate, Chola temple institutions functioned as centres of education, artistic patronage, ritual performance, and socio-economic organisation. Women played an active role in music and dance traditions associated with ritual performance and devotional practice. Temple institutions thus functioned as powerful cultural agencies through which artistic expression and intellectual life were organised during the Chola age.

6.4 Sacred kingship and religious patronage

Chola rulers presented themselves as defenders and patrons of Saivism, making temple construction a primary expression of royal authority and sacred legitimacy. The Airavatesvara Temple exemplifies the sacred authority and imperial piety undergirding the Chola political system, functioning as a locus where state ideology and sacred geography mutually reinforced each other. As Ali (2004) observed, Chola inscriptions performatively legitimated royal authority through sacral association, maintaining the intimate relationship between political power, religious devotion, and cultural identity that defined the Chola age.

7. Architecture and Iconography of Darasuram

The Airavatesvara Temple is the pinnacle of later Chola architecture in its mature phase.
While the colossal verticality of the Brihadisvara Temple in Thanjavur dominates, Darasuram stresses ornamental elegance, sculptural complexity and symbolic articulation.

The temple plan includes: *vimana*, *mukhamandapa*, *rathamandapa*, subsidiary shrines, and extensive sculptural programs.

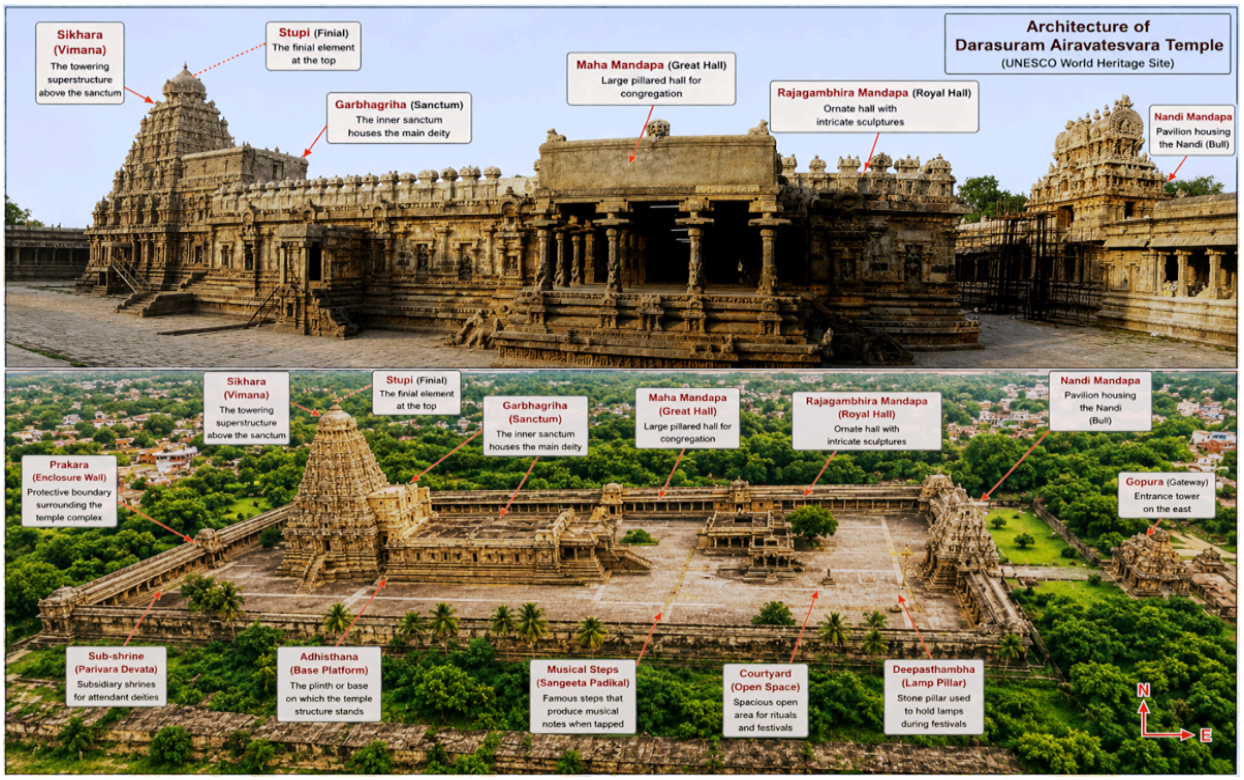


Fig. 1. Architectural Components and Spatial Layout of the Airavatesvara Temple, Darasuram.
Source: Photograph and design by the author (2026). Architectural terminology referenced from Archaeological Survey of India documentation

7.1 The Stone Chariot Concept

According to Mevissen (1993), the adhisthana niches of the Darasuram rathamandapa contain seven deities arranged around a central image of Brahma, namely Surya, Chandra, Indra, Agni, Vayu, Vishnu, and Brahma, forming a symbolic cosmological scheme associated with the stone chariot (Mevissen, 1993). Sivaramamurti (1978) and Balasubrahmanyam (1979) similarly identify these sculptural figures as part of the iconographic programme of the Airavatesvara Temple.

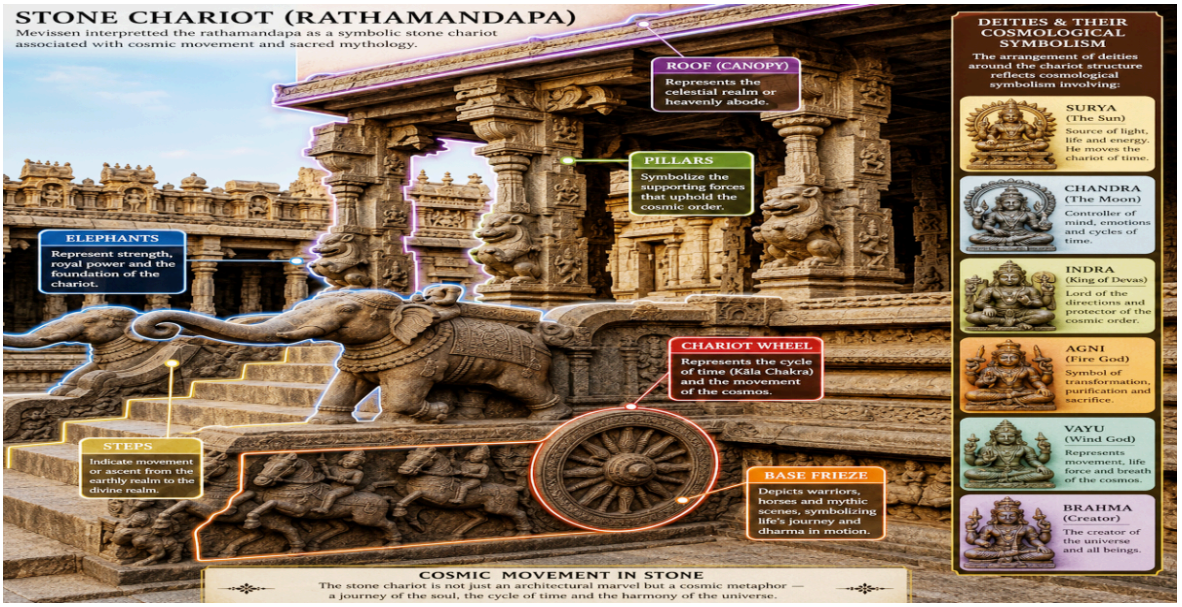


Fig. 2. The Rathamandapa (Stone Chariot) and Cosmological Deity Arrangement, Airavatesvara Temple, Darasuram. Source: Photograph and design by the author (2026). Cosmological interpretation informed by Mevissen (1993)."

Table 3. The Rathamandapa Cosmological Deity Arrangement, Airavatesvara Temple, Darasuram

Rathamandapa Location / Niche Position	Associated Deity	Cosmological Symbolism and Attributes	Cultural Memory and Heritage Interpretation
CENTRE	Brahma	Creator; presides over the cosmic scheme	Central axis of the cosmological programme; Brahma's presence legitimises the rathamandapa as a microcosm of creation.
Niche 1 (East)	Surya (Sun)	Solar deity; light and divine kingship	Associates the Chola ruler with solar legitimacy; Cholas claimed solar dynastic lineage.
Niche 2 (North-East)	Chandra (Moon)	Lunar deity; time and ritual cycles	Governs festival calendars and ritual timing within the temple's liturgical year.
Niche 3 (North)	Indra	King of gods; sovereignty and rain	Linked to temple's name — Airavata is Indra's elephant; legitimises royal authority through divine parallel.
Niche 4 (South-East)	Agni (Fire)	Fire deity; ritual sacrifice and purification	Encodes the ritual fire ceremonies performed at the temple; fire as medium of divine communication.
Niche 5 (West)	Vayu (Wind)	Wind deity; breath and cosmic movement	Completes the elemental cosmological scheme alongside fire and water; represents omnipresence of the divine.
Niche 6 (South)	Vishnu	Preserver; Vaishnavite presence within Saivite temple	Reflects Chola theological eclecticism; Vaishnavite imagery coexists with Saivite iconography in the narrative friezes, encoding plural devotional traditions.
Niche 7 (South-West)	Brahma (outer)	Completion of cosmological circuit	Closes the cosmic scheme; the rathamandapa as a whole represents the

Rathamandapa Location / Niche Position	Associated Deity	Cosmological Symbolism and Attributes	Cultural Memory and Heritage Interpretation
			divine chariot (ratha) conveying the universe.

Source: Cosmological interpretation informed by Mevissen (1993); Sivaramamurti (1978); Balasubrahmanyam (1979). Table prepared by the author (2026).

7.2 Narrative Friezes and Mythological Programs

The narrative friezes beneath the mukhamandapa constitute one of the most significant iconographic features of the Airavatesvara Temple. Incorporating themes of Tripurantaka mythology, Vaishnavite symbolism, Buddhist imagery, and cosmic regeneration, these sculptural panels form components of a broader mythological programme communicating interconnected religious and cosmological ideas, emphasising the triumph of divine order over demonic forces (Mevissen, 1993). Applying Assmann's (2011) cultural memory framework, these friezes function as visual repositories of sacred knowledge, preserving theological concepts within the architectural fabric and transmitting religious memory and cosmological understanding across generations. The coexistence of multiple devotional traditions within a single iconographic programme further reflects the intellectual complexity characteristic of the Chola period (Mevissen, 1993; Balasubrahmanyam, 1979).

7.3 Sculptural Refinement and Artistic Excellence

The sculptural refinement of the Airavatesvara Temple represents one of the highest achievements of Later Chola artistic expression. Its intricately carved pillars, miniature reliefs, dancing figures, and ornamental friezes demonstrate exceptional technical skill reflecting the maturity of Chola sculptural traditions under Rajaraja II (Balasubrahmanyam, 1979). Viewed through the lens of cultural memory, these sculptures preserve collective memories of devotion, mythology, and sacred kingship, transforming the temple into a living archive of Chola cultural identity and representing a sophisticated expression of the intellectual and aesthetic ideals of the Later Chola age (Sivaramamurti, 1978; Balasubrahmanyam, 1979).

8. Darasuram as Cultural Landscape and Heritage Tourism Potential

Darasuram should be understood as a sacred cultural landscape rather than an isolated monument. Sacred Landscape Theory highlights its deep historical connections with Palaiyarai, Pattisvaram, Swamimalai, Kumbakonam, Thanjavur, and Gangaikondacholapuram, forming an interconnected network sustained through pilgrimage, royal patronage, festivals, and ritual traditions. The region's sacred geography encompasses heritage circuits, temple festivals, sacred water bodies, rural settlements, and artisan communities. Even today, Darasuram retains its character as a living heritage site through continuing worship, local traditions, and cultural practices. UNESCO recognition has further strengthened its global heritage status while preserving its identity as an active sacred centre, making it a significant example of continuity between Chola cultural traditions and contemporary heritage practice.

8.1 Chola Heritage Tourism Circuits

The historical interconnectedness of Chola temple centres offers significant scope for developing structured heritage tourism circuits across the Cauvery delta region. A carefully planned Chola Heritage Circuit encompassing Brihadisvara Temple at Thanjavur, Airavatesvara Temple at Darasuram, Gangaikondacholapuram, Pattisvaram Temple, Swamimalai, the Kumbakonam temple clusters, the Palaiyarai archaeological region, and Thirubuvanam would collectively represent the full architectural,

epigraphic, and cultural achievement of the Chola dynasty. The circuit connects three UNESCO World Heritage Sites with state-protected monuments and living pilgrimage centres, offering visitors an integrated experience of Chola heritage across its imperial, devotional, and artistic dimensions. Figure 3 presents the circuit sites, their locations, heritage significance, and protection status.

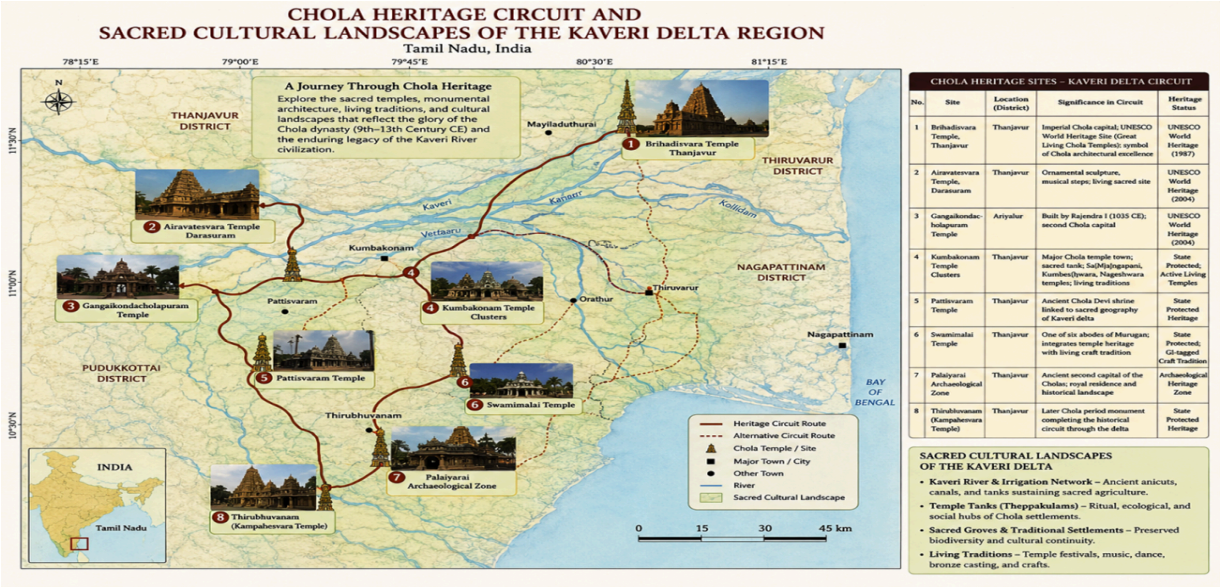


Fig. 3. Chola Heritage Circuit and Sacred Cultural Landscapes of the Kaveri Delta Region
Source: Prepared by the author based on UNESCO World Heritage Centre documentation, Tamil Nadu Tourism records, and field observations (2026).

8.2 Heritage Interpretation and Visitor Experience

Many visitors to Darasuram focus primarily on photography or religious activities without fully appreciating the monument's historical and cultural significance. Applying Living Heritage Discourse, interpretation should communicate not only architectural features but also ritual continuity, community memory, and sacred traditions, enabling visitors to understand Darasuram as a living cultural institution. The site's heritage offers opportunities for guided heritage walks, epigraphic interpretation centres, digital storytelling, QR-based information systems, multilingual signage, and immersive cultural experiences. The mythological friezes, stone chariot symbolism, and Darasuram's historical association with Palaiyarai provide rich thematic foundations for heritage interpretation and tourism development (Rahaman & Tan, 2011).

8.3 Sustainable Heritage Tourism Development

Sustainable heritage tourism at Airavatesvara Temple requires careful attention to long-term cultural preservation and heritage management. The site faces increasing challenges of over-commercialisation, unmanaged visitor flows, and tourism-related pressures threatening both its physical structure and surrounding ritual landscape. Future tourism planning must prioritise conservation-oriented practices, community participation, visitor education, heritage-sensitive infrastructure, and cultural sustainability. Local communities, traditional artisans, temple musicians, and small-scale entrepreneurs are essential to developing an inclusive and sustainable heritage tourism framework. A balanced management model should regulate visitor flow, protect sculptural panels and inscriptions, improve interpretation facilities, and encourage responsible tourist behaviour through digital tools such as QR-based systems, multilingual signage, and guided heritage walks. Thus, sustainable heritage tourism at Darasuram

should combine conservation, community participation, cultural interpretation, and responsible visitor management so that the temple continues to function as both a protected monument and a living cultural landscape (McKercher & du Cros, 2002).

9. Historiographical Reinterpretation

9.1 Interpretations of Colonisation

Chola temples were primarily seen through the lens of archaeology, art history and architectural documentation by colonial era archaeologists and early European scholars. Their studies were primarily interested in the chronology, stylistic classification, dynastic history and structural analysis of the temple architecture. These works were important in the documentation and preservation of the South Indian monuments, but they were inclined towards treating temples as archaeological objects rather than living cultural institutions. Many colonial readings, therefore, failed to recognise the continued ritual practices, sacred meanings and indigenous cultural contexts of Chola temples. In this context, however, the living traditions that surround worship, local memory, and community participation were only marginally addressed in the academic literature.

9.2 The Writing of Nationalist History

After Indian independence, nationalist historians and Tamil scholars began to reinterpret Chola temples as powerful symbols of Tamil cultural identity, artistic achievement and civilisational excellence. In this phase the Chola period became widely celebrated as a "golden age" of remarkable advancements in temple architecture, literature, music, dance, administration, and maritime expansion. Chola monuments such as the Airavatesvara Temple were increasingly perceived not only as religious edifices but also as symbols of regional pride and cultural continuity. This historiographical approach focused on the political power and artistic sophistication of the Chola Empire and engaged in the wider debate of Indian cultural nationalism.

9.3 Contemporary Views on Heritage

Modern heritage studies take a more interdisciplinary and community based approach to these Chola temples and sacred landscapes. Studies in modern scholarship center on ideas of community memory, ritual continuity, sacred geography, heritage conservation and cultural sustainability. In this context, the Airavatesvara Temple is increasingly perceived not only as an archaeological monument, but also as a living heritage site that continues to sustain ritual traditions, local identity and collective historical memory. Contemporary heritage perspectives also recognise the importance of incorporating epigraphy, mythology, architecture, anthropology and cultural geography to develop a more holistic understanding of the Chola civilisation. These approaches enable us to view the temple as a historical monument and a living cultural landscape that continues to influence contemporary Tamil heritage consciousness.

10. Discussion

10.1 Inscriptions as Cultural Memory: Beyond the Architectural Paradigm

The epigraphic evidence examined in Section 6 enables a fundamental reorientation of how Darasuram has been understood in the scholarly literature. Sivaramamurti (1978) and Balasubrahmanyam (1979) interpreted the temple through architectural classification, identifying it as the culmination of a stylistic

sequence within the Later Chola building. While foundational, this approach treats the temple as a finished aesthetic object rather than an active institution. The inscriptional record reveals a different reality: the temple was continuously endowed, administered, and reinterpreted across successive reigns, indicating that its cultural significance was reproduced through ongoing institutional practice rather than fixed at the moment of construction.

Assmann's (2011) distinction between communicative memory and cultural memory is directly illuminating. Communicative memory, living oral and ritual traditions and cultural memory institutionalised, inscribed collective identity are not opposed at Darasuram but mutually reinforcing. The inscriptions naming the temple Rajarajeswaram stabilise dynastic identity in stone, outlasting the oral traditions of any generation. Yet the epigraphic record of endowments for musicians, dancers, and administrators simultaneously demonstrates that communicative memory was maintained within the same institution. This dual operation is what earlier scholarship, focused on architectural form alone, could not observe. By combining epigraphic and architectural analysis, the present study makes this dynamic visible for the first time in the Darasuram literature.

10.2 Architecture, Epigraphy, and the Convergence of Evidence

A central finding is that architectural and epigraphic evidence at Darasuram do not merely supplement each other; they converge to construct a unified legitimation strategy no single disciplinary approach can fully capture. Mevissen's (1993, 2001) iconographic analyses demonstrated that the rathamandapa and narrative friezes constitute a cosmological programme encoding Saivite theology and royal mythology, yet were conducted independently of the inscriptional corpus. When Mevissen's reading of the stone chariot is placed alongside the epigraphic evidence of Rajaraja II's endowments and administrative authority, a more complete picture emerges: the same ruler who established the temple's economic infrastructure also commissioned its iconographic programme. Architecture and administration were integrated expressions of a single political theology, not parallel activities.

Hall's (2001) analysis of temple networks as nodes of political authority gains additional force when iconographic evidence is incorporated: the rathamandapa's cosmological deities sacralised the very administrative functions the inscriptions record. Champakalakshmi's (1996) argument that the Chola period represented an integration of religion, administration, art, and civic life is confirmed not only by the literary record she examined but by the architectural and epigraphic evidence at Darasuram specifically. The present study provides a material, site-specific demonstration of this broader cultural history thesis.

10.3 Living Heritage, UNESCO Discourse, and the Limits of Authorised Heritage

The heritage analysis in Section 8 reveals a significant tension that existing management frameworks have not adequately addressed. Smith's (2006) critique of Authorised Heritage Discourse argued that UNESCO-style conservation prioritises expert-defined, physically bounded heritage at the expense of community agency and intangible cultural practice. Darasuram presents a particularly instructive case. Its World Heritage inscription has strengthened conservation infrastructure and international visibility. Yet the Airavatesvara Temple remains an active site of Shaivite worship, festival practice, and community ritual precisely the living heritage dimensions the Authorised Heritage Discourse tends to subordinate to physical preservation.

Harrison's (2013) relational conception of heritage as a process co-produced between past and present societies offers a more adequate framework. The temple's significance is not reducible to its

twelfth-century fabric: it is continuously reconstituted through ritual practice, pilgrimage, and community memory. Eck's (2012) tirtha network framework supports this reading Darasuram's significance is partly constituted by its position within a living pilgrimage geography connecting Palaiyarai, Kumbakonam, Pattisvaram, and Gangaikondacholapuram. Management strategies treating the temple as a bounded monument risk severing it from the relational network that gives it meaning

10.4 Historiographical Contribution and Limitations of the Study

The foundational works of Sivaramamurti, Balasubrahmanyam, and Mevissen established the architectural, stylistic, and iconographic parameters of Darasuram scholarship. What none provides is an integrated framework bringing epigraphic evidence, architectural analysis, sacred landscape theory, and heritage discourse into a single argument. The present paper demonstrates that Darasuram operates simultaneously as a cultural memory institution in Assmann's sense, a node in living sacred geography in Eck's sense, and a site where tensions between Authorised Heritage Discourse and living heritage practice identified by Smith and Harrison are concretely visible. This triple framing constitutes the paper's specific interpretive contribution.

Three limitations deserve acknowledgement. First, reliance on published epigraphic compilations rather than direct archival engagement means a systematic re-reading of the Darasuram corpus in Tamil and Sanskrit would likely yield further evidence. Second, the heritage tourism analysis relies on secondary literature rather than field-based visitor studies; empirical research would substantially strengthen the recommendations. Third, comparative analysis with other Chola circuits, such as the Navagraha circuit or Thanjavur delta routes, would determine whether patterns observed are site-specific or broadly characteristic of Chola sacred geography. These limitations point toward a productive research agenda in which this interdisciplinary approach can be extended and empirically grounded.

11. Conclusion

The Airavatesvara Temple is a legacy of the Chola cultural, architectural and artistic traditions which has stayed one of the greatest achievements. As shown in the current paper, the historiography of Chola temple heritage has been shifting steadily towards a more monument-centric architectural conception to a more cultural, social and heritage-focused one. The paper suggests that the city of Darasuram can be viewed as a vibrant cultural area, which embraces divine kingship, continuity of rites, social structure, artistic quality and historical memory, in the epigraphic, architectural and cultural examination. It was not merely a religious monument, but also a living institution which influenced the political, intellectual, economic and cultural life of the Chola world. Collectively, its inscriptions, sculptural programs, ritual traditions and spatial organization reveal how religion, governance and society were intertwined in South India mediaeval times.

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The Embodied Experience of Vernacular Architecture: A Case Study on the Material and Art Aspects of *Kathkuni* Style in Kinnaur, Himachal Pradesh

ABSTRACT

The recent trend in architectural literature has made a shift from understanding architectures as mere representations or signifying systems, towards a more experiential dimension and beyond the visual bias. They are not seen as a static backdrop but as part of a continuous dialogue with the body, mind and the environment. The study employs the method of embodied experience of architectures for a more intimate and meaningful interaction. The space between the self, the perceived and the conceived is traversed through the regions architectural landscape where the body, the object of experience and the mind are in a continuous process of interaction and communication to understand the spaces of the studied aspects of material and art from a more experiential point of view. In this process, the study also highlights some of the important facets of *Kinnauri* architectural heritage such as indigenous knowledge, ancient designs and generational skills, inherited and practiced by the local craftsmen known as the *oras*. These artisans and craftsmen have been responsible for making the earthquake resistant *kathkuni* architectures from locally available resources. They not only craft tools to build and sustain the structure but embellish it with intricate carvings and art work that bears testimony to the articulation of a harmonious balance between nature and culture of the region throughout centuries, where the physical and the spiritual come together to manifest sacred spaces of everyday living. This is required for further sustenance of not only the architectures arts and aesthetics but its credibility and meaning in socio-cultural life of the people and adaptability to the changing environment.

Keywords – Vernacular Architecture, *Kathkuni* Style, Indigenous Knowledge, Phenomenology, Embodied Experience, Drawing

1. Introduction

The traditional vernacular architecture of Kinnaur represents the cultural values of its people and the ecological sensibility which is manifested in its materiality, art and aesthetics that has been practiced for past many centuries in one of the many architectural styles found in the region, commonly known as the *kathkuni* style or the 'hill architectural style' (Chetwode, 1973). This particular architectural style also expands across the Himalayan region, varying in its structural and artistic characteristics. While spanning generations of aesthetic, structural and functional use, it is said to have inherent sustainable characteristics and is an important landscape attribute (Alves, 2017). The advent of erratic climatic condition, weather anomalies, changing socio cultural and economic characteristics has prompted the need to address vernacular architectural practices of indigenous areas as they are an outcome of locally sourced raw materials, artistic skills, designs and

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techniques that are attuned to the physical and cultural conditions of the place. The *kathkuni* style is made by alternating wood and stone layers for the basic framework of the house and the functional and aesthetic attribute of an open and a closed verandah called *tongang* and *motongang* respectively, are added to the floors above the ground floor, this feature comprises entirely of wood. The trimmed fascia of the roof is also made by wood with detailed carving and intricate art work added as an embellishment. Features like these are hardly visible in the modern constructions and vague modified version are seen in hybrid constructions. The wooden carvings are done by hand and the contemporary steel trimmed fascia are cut by machines, which is considered less expensive.

A deep concern here arises from the fact that there is a trade of priceless and authentic artwork for imitating machine-made designs. The traditional vernacular attributes in many cases are being transferred in meaningless forms to the new constructions using machines and other modern technologies without realizing their actual implicated meaning and cultural significance. Further, 'the iconization of rural culture and value is exploited for contemporary consumption' (Park & Coppack, 1994) to which Postalci and Atay (2019) also add by stating that 'cultural features are also used in spatial design to create architectural product identity on the global stage, which more often ends up in kitsch.' There is a loss in meaning that comes with mass production and a more market-oriented display of these cultural features, highlighting only the visual appeal for consumption that are driven by capitalistic goals. Experiencing architectural spaces of these traditional vernacular buildings at a more intimate and experiential level may help to bridge the gap between understanding of sacred spaces and a more meaningful representation in hybrid and modern constructions. The recent trend in architectural literature has made a shift from architecture as mere representations or a signifying system and its visual bias to an experiential dimension where these vernacular structures are not seen as a static backdrop but as part of a continuous dialogue with the body, mind and the environment. Viewing these structures from such a perspective can help create meaningful experiences for space users (Bonabi, 2025).

An interdisciplinary approach will add to this new perspective of approaching and understanding architectural spaces. The study employs the method of embodied experience of architectures for a more intimate and meaningful interaction. The space between the self, perceived and the conceived is traversed through the regions architectural landscape where the body, the object of experience and the mind are in a continuous process of interaction and communication to understand the spaces of the studied aspects of material and art from a more experiential point of view. In this process, the study also documents, represents and highlights some of the important facets of *Kinnauri* architectural heritage such as indigenous knowledge, ancient designs and generational skills. This is required for further sustenance of not only its arts and aesthetics but its credibility and meaning in socio cultural life of the people and adaptability to the changing environment. The scope of the study is also to bring forth the issue that the dependence on indigenous technologies and practices of vernacular construction, art and design is decreasing and is at a risk of getting completely eroded without even analyzing its potential in the growth and development process.

2. Literature Review

2.1 The Concept of Vernacular Architecture

According to Bera (2019) the term 'vernacular' is derived from the Latin word 'vernaculus' which means domestic, native or indigenous, a style that is specific to the region or surrounding culture (Oliver, 2003). From the initial use of the term 'vernacular' which was used to denote a regionally recognizable language pattern, the application of the term has diversified over the years to building

forms of folk origin with lately as an umbrella term for anything that is not high style, as mentioned by Heath (2003). Brown and Maudlin (2012) state that the term vernacular architecture first appeared in the post war period of 1950's and 1960's and with the progression in time it was understood as 'a functional shelter for people and animals and stores to meet their needs but more as complex social and cultural relations spatially constituted from locally sourced materials and response to climate and environment', more recently 'it has become the study of cultural impact of specific people upon building practices in a specific place'. According to Jackson (1984) architecture is not just a simple dwelling space where 'form follows function' but is also meaningful in the expression of cultural identity. Traditional vernacular architecture, which is an outcome of a non-professional act of generational passing down of indigenous skill and knowledge (Manurung et al., 2022) is attuned to the cultural and physio-geographic conditions of a place. It can be 'resourceful for contemporary architectures by learning how the vernacular architectures have deep respect and perfect communion with the natural environment' and 'the perfect relation and understanding of user's needs' (Creangă et al., 2010). This is when architectures steps beyond the restricting category of a physical manifestation and static backdrop to not only an artform that is 'an important visual language' rooted in history and culture (Yang, 2024) but which also continuously generates 'a non-verbal communication which evokes meaningfulness in its users' (Verma & Panchal, 2021).

2.2 The Kathkuni Architectural Style of the Study Region

Kath-Khuni, which means 'wooden corner' (Atrey, 2019) is a prominent sight of the traditional cultural landscape of Himachal Pradesh. The *kath-khuni* construction 'alternates timber and stone to create structures that are both resilient and expressive' and the 'construction itself embodies and enables cultural life' (Singhal et al., 2025). Also known as the 'Indian Hill architecture', it can be found over the Western Shiwalik range of the Sub Himalaya between 3000-10000 feet. Himalayan cedar, which is insect proof like teak, is grown around 6000-10000 feet and has a lifespan of around 1000 years, is used in the process (Chetwode, 1973). In Kinnaur the old architectures are still relevant as they 'affect people' in the sense, as inspirations in making new houses with a hint of the past reflected in their design, form and structure. The functional spaces of the rooms that are allotted to various socio cultural and religious activities are still an important component in making new houses and the geographical, climatic and environmental factors that are also responsible for the traditional vernacular architecture and other expressions of culture (De Blij, 1977) still play a role in contemporary constructions.

2.3 Embodied Experience, Felt Body and New Phenomenology in Architectural Studies

Paterson (2011) states that geography in more recent times, has been concerned with the embodied experience of architectural spaces while attempting to understand them. This has led to a shift from visual bias that refers to architecture as a mere representative and signifying system, leaning towards a more critical approach of more than visual perspective, to which he adds includes a range of sensory-somantic and affective experiences that include but are not limited to the visual or mere retinal but deeper than skin sensation, thus referring to it as the embodied encounter. Supporting the previous statement, Bonabi (2025) argues that 'critiques of architecture in this context often highlight its shift towards visual dominance, where the multisensory and profound aspects of experience are overshadowed. This results in a form of architecture that treats space as three-dimensional devoid of meaning, perceives users as detached observers, and reduces architecture to mere objects.' Gregory and Torino (2024) state that 'experience is not mere sensation; it is on the contrary interaction of living with the environment.' Here, it is seen that the role of the living body is emphasized in relation to the built environment which as a result creates multisensory experiences that may help understand those spatial

aspects of architectures that are not only seen but can also penetrate beyond the visual layers and dive into the empathetic, emotional, sacred spaces that the body encounters and experiences. Gregory and Torino (2024) further add that 'the body we are referring to is not the object body, but the living body or the felt body.' This 'felt body' is emphasized more profoundly under new phenomenology. In the South East Asian context Chiranthanut (2020) talks about the sacred space in the house of the Tai speaking communities are part of 'intangible cultural wisdom heritage' that play a significant role in the design and formation of their houses and this space has been reproduced from generation over generation. According to El Amrousi et al. (2019) there is a re-emergence of *majlis* and *liwan* as a cultural counter space to the rapid sprawl of modernity in UAE, with an increased concern towards sustainability, culture and identity, which they refer to as an example of 'neo heritage.' It seems like Downing et al. (2008) view buildings as living, that are not opaque but transparent to analogies and metaphors that expands its comprehension beyond objects that are fixed in time and space as they state that 'buildings have boundaries of foundation, wall, or roof, parts of which could be thought of as the 'skin', these various skins of the building have become more porous as the fields of architecture expands while aligning itself with a new moral code, one that is inclusive of our biological reality and the embodiment of ideas, systemic evolution, and ecological necessities'. Soltani and Kirci (2019) also redirect attention towards accounting the body and the environment in architectural discourse and state that 'architectural work is not experienced as a series of isolated retinal pictures, but its fully integrated material, embodied and spiritual essence'.

Here, phenomenology helps in creating experiences that not only steps into but also goes beyond the tangible and the visual dimension to a more experiential endeavour where the body, the object of experience and the mind are in continuous interaction as part of the lived experience. This is what (Bonabi, 2025) also states as 'lived experiences' where action is emphasized and 'immediate perceptions, spontaneous emotions and thoughts are at the forefront' as opposed to mere observation of 'non lived experiences' and also different from 'life experiences' that 'unfolds over an extended period, encompassing one's life and expanding as time progresses.' Here, the 'New Phenomenology aims to become a thoroughly empirical endeavour focusing on the concept of a state of affair rather than the concept of a thing in describing a phenomenon as such' where 'the human relation to the environment is characterized by continuous contemplation in ubiquitous embodied communication' (Andersen, 2024). Kraftl (2010) states that 'the bodily practices, allows geographers to explore the way that the built environment is shaped and given meaning through the active and embodied practices by which it is produced, appropriated and inhabited.' His statement calls for a focus not just upon what people think about buildings but also what they do in them challenging the assumed boundaries and enacting on the role of the body in buffering the boundary between the building and the mind. Current trends in literature have focused on the 'acting on' and 'doing' rather than on simple symbolic representation of buildings, seeing building as spaces of continuous activity, everyday practice and motion rather than static backdrops and visual artifacts. With embodied practices and performances the body 'assumes a position of centrality' and for the buildings to be understood in such a way the practice of embodiment is crucial, which is to experience these spaces through performing in them and therefore the act of 'doing'. Hence, 'numerous contemporary architects may be regarded as practicing architecture inspired by phenomenology' through 'embodied first-person experience' (Waterton, 2019). 'Phenomenology is an attempt to describe the basic structure of human experience and understand from a first-person point of view' (Landes, 2012). Andersen (2024) states that the New Phenomenology conceived by Hermann Schmitz focuses on the more experiential dimension of architecture and the felt body drawn from those experiences by an individual, he writes that 'Schmitz distinguishes between the physical body that can be seen and touched, and the felt body that is the place of affective involvement', 'the embodied,

first-person experience is determined solely by embodied dynamism and embodied communication' (Andersen, 2024) and this experience is 'recorded in notes, sketches and/or photographs, and subsequently summarized in a short description', 'the aim is not to give a complete and exhaustive account of all the aspects of the respective works but rather, through an embodied first-person perspective, to say something meaningful that may help uncover characteristics of the experienced buildings as part of the embodied communication' (Andersen, 2019).

2.4 Drawing as a Tool to Help Express the Embodied Experience of Different Aspects of Vernacular Architecture

'Within the realm of phenomenology, applications including material, transcendental, and embodied can be used to approach mathematics, the sciences, art and architecture' (Linde, 2017). Geography has always been interest in visual art which 'stems from field practices within the discipline, observing, sketching and mapping landscapes' (Cant & Morris 2006) and which is why drawing and other form of visual art as mediums and methods are so crucial in understanding the distribution and characteristics of natural as well as cultural attributes across a landscape. The act of perceiving and then representing through drawing is beautifully put into words by Pal (2001) who states that 'images have many lines and also tends to outline a human life'. In reference to understanding architectural attributes, Chetwode (1973) says that 'under certain circumstances freehand drawing is more effective than the camera in recording architectural detail'. 'Though drawing has been much discussed as a medium for design and of communication in architecture, but the potential of its role as a medium for analysis, though recognized, has not enjoyed the same attention' (Unwin, 2011). Art in the further study is used as a tool and medium of 'critical exploration' (Hawkins, 2012) as well as of 'communication' (Ohri, 1975) in showing 'the journey' traversed from perceived to the conceived space through engaging the body, mind, architectural landscape and surrounding environment as part of a continuous dialog in understanding architectural spaces especially focused on material and art aspects through an embodied experience.

3. Methodology: Adopting Field Investigation Techniques, The Embodied Experience of Vernacular Architecture

Table 1. Types of Traditional Housing Structure in Kinnaur

Different Regions Identified for Variation in Traditional Housing Structures Through the Method of Geographical Area Sampling based on Geographic, Climatic and Cultural Factors	Types of Traditional Housing Structures	Name of the Villages where the Field Survey was Conducted
Upper Kinnaur Region	• Stone Masonry with flat roof • Mud Block Construction • Mud Shuttering Construction	----
Middle Kinnaur Region	Hill Architecture/ *Kathkuni* Style or Alternative Layer of Stone and Wood Construction with Flat Roof	Moorang, Kanam, Jangi, Ropa, Sunnam, Asrang
Lower Kinnaur Region	Hill Architecture/ *Kathkuni* Style or Alternative Layer of Stone and Wood with Sloping Slate Roof. In some rare cases Sloping Wooden Roof were also observed	Kalpa, Rogi, Powari, Kilba, Kafnu, Katgaon, Yangpa, Sungra, Nichar, Chagaon, Chota Kamba, Nigulsari, Chansu, Bara Kamba, Urni, Yulla

The qualitative nature of this research employs a methodological framework guided by investigation techniques as listed below.

- The entire study area in the beginning was first divided into different broad intra-regional categories on the basis of different types of traditional vernacular houses observed during the initial field visit. The identification and categorization were done by considering the intra-regional climatic, physio-geographic and cultural factors. This geographical delineation on the basis of differential characteristics for the collection of samples is also known as geographical or area sampling. The middle and lower region of Kinnaur were selected for the study of *kathkuni* housing type of vernacular architecture, as this housing type mainly and majorly persists in these two regions. Kumar et al. (2016) have categorized 4 types of house construction of the *Himachali* houses based on the material used, 1) Wood and stone or the *kathkuni* type. 2) Mud: rammed earth block walls for cold, arid, alpine and desert regions. 3) Mud mortar: prepared from soil or clay and 4) Stone construction, that uses different sizes of stones. These traditional vernacular architectures of houses in reference to Kinnaur district of Himachal Pradesh can be generally categorized into different regions where they can be majorly found as seen from Table 1. The Hangrang region and The Tashigang area or the Upper Kinnaur region, Kunu Charang Region and Nessang Region constitute vernacular architectures that are majorly of stone, mud and mud mortar construction and are identified with flat roof. The middle Kinnaur region which includes the Ropa valley region, the Shumso region, Jangram region and Moorang region are majorly characterized by the *kathkuni* type of architecture with flat roof. The lower Kinnaur region is characterized by *kathkuni* type of architecture but have sloping roof made of stone slate and shingle or sometimes wooden slates were also used, though the usage of wood with time has become rare. This study is particularly concerned with the *kathkuni* type found majorly in the middle and lower regions of Kinnaur.

- Landscape reading and observation was done as part of an initial a priori survey of the entire study area through travelling and visiting different sites which helped in the identification of different architectural types found in the region. A field survey was then conducted in the middle and lower regions of Kinnaur that identified with the *kathkuni* type of architecture. The houses were initially selected randomly. Snowball sampling technique was initiated afterwards as locals were able to guide to the resource persons who could give detailed description and held knowledge on the traditional building methods of the *kathkuni* type as well as its different attributes. ‘To counter the dichotomies of culture and nature, vernacular and the ‘other’ why not express architectural criticism in architectural form instead of words’ as stated by Bruno Zevi and ‘operative criticism’ by Manfredo Tafuri as mentioned in Sabatino (2009) emphasized the experiential dimension over the perceived formalism (Sabatino, 2009). This influences the presentation of the following work in which the field data is analyzed and represented from the perceived space to the conceived space with help of diagrams, illustrations, sketches and photographs. Illustrations, sketches and drawings were used as art tools to express the physical and cultural experience of the architectures sited and their spaces that are studied, understood and experienced. The use of these visual methods in presentation are ‘not used to state a final proposition but rather to help to give it a perceptual structure that can sustain imaginative engagement’ **(**Bafna, 2008).

- Personal in-depth semi-structured and open-ended interviews were carried out with the resource persons, the locals and a special category of house makers and artists known as *oras*.

- The representation of an object of inquiry from one space to another (perceived to the conceived) invites spatial configuration and aspects of different dimensions. The inquiry here does not simply

follow the description of field observation of the material and art aspect but shows a gradual process of transformation from one space to another with the help of sketches and illustration as a method. The chain of thought, feelings, sensation and emotions is expressed from the authors perspective from being in the field, having personal interactions with the craftsmen and living and embodying the architectural spaces. This approach is specially adopted to make an attempt towards bringing closer the theoretical and empirical aspects of the study.

4. Findings and Analysis

4.1 Material and Construction

An illustration in Figure 2 and 3 shows the main elements, *thelo*, *tokoth* and *manang* that are used with long wooden beams to make the basic framework of a *kathkuni* house. The layer that contains stones is piled along with the framework or *dhancha* between two wooden beams or layered and adjusted to the wooden framework at the end (also see Figure 1). The wooden beams used in the old structures were made of *dyar* or *deodar* tree. In some case wood from *chilgoza* or pine tree was also used. *Manang* which is a small wooden element, helps to keep the two adjacently and horizontally placed wooden beams together and for them to not fall apart from their positions. It also helps prevent the structure from earthquake by giving it tensile strength. *Tokoth* works as a nail but is bigger and rectangular in shape, both these elements are made of *thom* (in the local dialect), a tree with small leaves found in the region. It is said that the wood when boiled and given to animals, cures them from various diseases. The wood from this particular tree was also used to make *hal* to plough the fields in the past which is now replaced with iron. The alternating wooden beams or *pangdarang* and the layering of the stone *chinai* should be of equal width and symmetry for all layers for an aesthetic display as well as strength.



Fig. 1. Traditional *Kathkuni* Type of Construction in Kinnaur

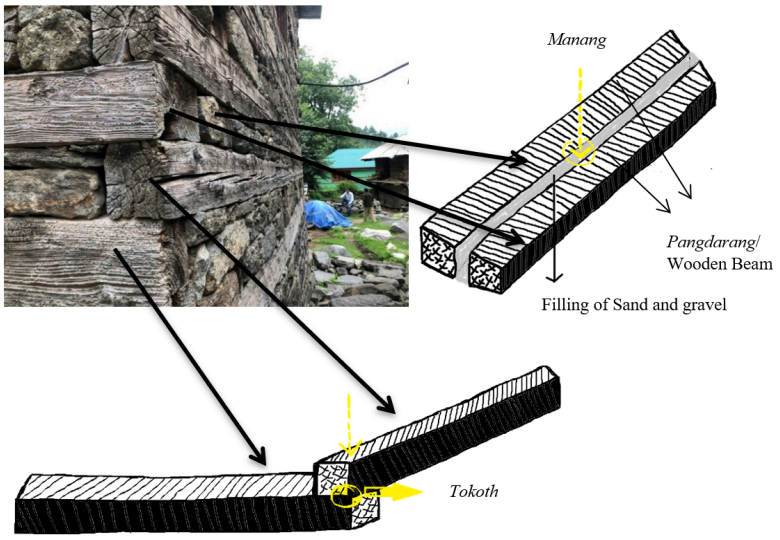


Fig. 2. The placement of *tokoth* and *manang* which are the two most important elements of hill architecture in Kinnaur that holds the structure together and gives it tensile strength. It helps prevent and protect the structure from falling apart during an earthquake, as the Himalayan region is prone to it.

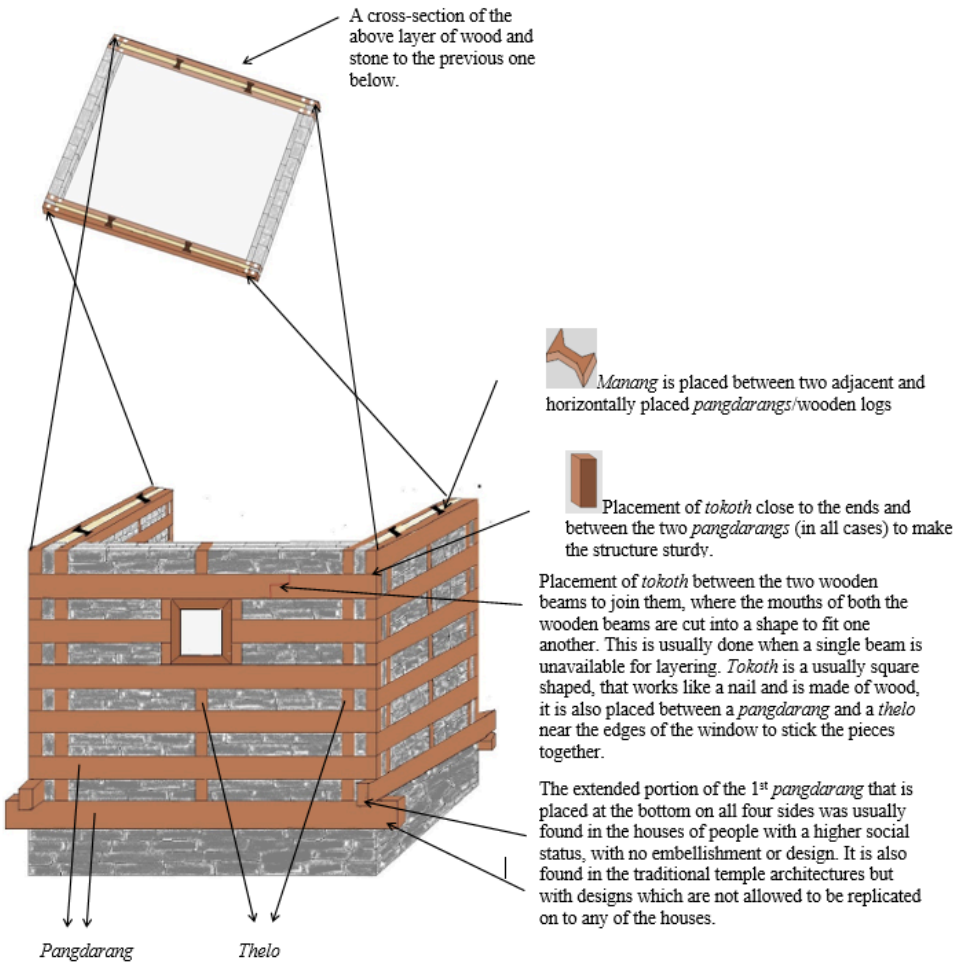


Fig. 3. Morphology of traditional hill architecture or the *kathkuni* style of alternate layering of wood and stone. In middle Kinnaur it is found with flat roof and in lower *Kinnauri* houses it is found with sloping stone slate or sloping wooden roof.

4.2 The Local Artists/Craftsmen/Masons known as the '*Oras*'

The construction of these architectures and the artistic details that are added is all done by the local *karigars* or craftsmen, artists and masons known as *oras*. Their families have been responsible for carrying out and keeping alive the indigenous techniques, skills, design and craft for generations. They understand the ancient art of house and temple building and the associated paraphernalia that have been practiced in the region from ancient period, though succumbing to modifications with time. Swangla et al. (2021) state that 'traditional knowledge refers to knowledge innovation and practices of indigenous and local communities around the world, developed from experience gained over centuries and adapted to local culture and environment' which plays an important role in expressing the physical characteristics and underlying cultural meaning of the vernacular houses. Many of the attributes of the houses such as the windows, doors, roofs and fascia have detailed carvings and designs. This art is an outcome of balance and articulation that represents a symphony of the surrounding environment when perceived through the senses, vivid in the display of its structure, material, colors and construction that is also synchronic to the cultural practices. The *oras* are a lineage of local professionals and since many generations have been devoted to the art of traditional house making and temple building for the local deities. The skills to be acquired and to be replicated by commoners is quite difficult. Designs as well as some other elements used in the temples need immense precision and also cannot be used on the houses as it is considered sacrilegious. There is a lot more attention which should be given to these local artisans and their work as their families have been crafting skills and knowledge for generations admired but rarely understood by the other locals themselves as well as non-natives. There is a sense of perfection and professionalism in old traditional structures, one reason is the way the structure is built, its building technique and the tools used. The entire construction is calculated, the designs and layout of the houses may vary according to the needs and choices of its habitants. The buildings reflect a sense of aesthetic, strength, material used, skills and indigenous knowledge in tune with the surrounding nature and environment and yet aesthetically pleasing with immense precision in design and other artistic details.

Another thing to be noted here is that these structures, with the skills they are built have stood the test of time conforming to the climatic sensitivity and other physical and socio-cultural characteristics. The ornamentation or the wooden carving on the overhanging *verandah* as seen in Figure 4 could not be exactly identified for their implicated meanings even by the *oras* who were interviewed. These ornamentations are considered very old as many of these houses can be dated decades or sometimes even centuries back. If there is still a comparison to be drawn from some of the literatures, an example of the work of O'Brien in the paper "Architecture as Ornament: Louis Sullivan's Late Work" can be considered in which the author has identified basic ornamentation types. One of the forms of ornament in the given figure could be compared to the Medallion type or the geometrically structured type which presents the morphological development of ornament and the geometric pattern such as the circle as seen in Figure 4 both images which is termed as 'containers of energy' (O'Brien, 2020). Another type of ornamentation in his article called the still life type or 'arabesque' which is a space filling type can be associated to the wooden slabs placed vertically alongside the medallion type ornamentation in the Figure 4 second image. This type of ornamentation can also be seen in and around the traditional windows, called *hashen*, as seen in Figure 6. *Hashen* are small windows with intricate designs made by *oras* as an embellishment which serves more than just a functional purpose. The inspiration must have been nature itself as the ornamentation apart from the medallion type and the space filling type that have geometric patterns and intertwining vines with leaves and flowers, also have carving of different birds on the overhanging *verandah* as seen in both the images of figure 4. It can be noted that architecture has a role, as a work of art, to express a metaphysical or transcendental idea (Hendrix,

2013). These artistic expressions are critical and subjective as they need to be unfolded for the deeper meaning that raise these structures above and beyond just their functional utility.



Fig. 4 Ornamentation on an overhanging verandah in Nigulsari and Chagaon village

4.3 Experiencing the Art and Aesthetic aspects of Vernacular Architecture



Fig. 5. The first sketch shows a representation of a modern window in Sumra village that has precise geometric shapes, symmetry and consistency. The second sketch is of a Hybrid door in Sumra, with precision and geometry in carving but has traditional designs. The third sketch is of a traditional door in Hango village that is usually seen outside animal shed and 'gwara' (an open space outside the animal shed) made by putting together random pieces of wooden planks and the fourth sketch is of a window in Hango village that bears the size, shape, design and geometry of contemporary windows but are fitted in the traditional stone and mud houses. This is representative of the hybrid and evolving architectural landscape of Kinnaur.



Fig. 6. A handmade sketch of a vernacular house and traditional windows or *hashen* in Middle Kinnaur

The technique of free hand drawing and sketching was used for the Figure 5, 6 and 7 by author. Multiple layers of shading had to be done to get the exact colour and tone of the houses and windows and a rawness of the material used in construction is clearly seen as opposed to the perfection on the wall paints and also in the geometrics of structural framework in more modern construction within the region. Different tones of brown and yellow and basic grey, black and white pencils were used in images 6 and 7. There was a precision in carving of windows of middle and lower *Kinnauri* architecture and detailed designs, especially of the windows as seen in Figure 6. whereas the architectural feature of upper Kinnaur were much simpler. Drawing is used here with the intent to represent the architectural aspects through perceived senses of what was observed as well as

experienced and to use an artistic medium for the understanding and explanation of an artistic attribute. As for many who observe, it might be just a door, a window or a building but when experienced and perceived through an artistic medium, it talks about the expressions of the unknown and the unsaid, fostering inquisitiveness to know more about these vernacular architectures, its people and its inhabited spaces. Every attribute of a house has a quality, a door that makes you curious of what lies beyond, a transporting medium from one space to another. The windows have a different quality and purpose, a resting place with different spatiality, where one can get a breath of fresh air or experience a change of space without actually crossing a boundary physically. The method of sketching was employed to showcase the researchers expedition, an odyssey, a 'performative practice' (Ebbensgaard, 2017), a phenomenological embodied experience into the space of the vernacular architecture.



Fig. 7. A handmade sketch of vernacular house and traditional windows in Upper Kinnaur

The flowers and leaves protruding out from a stem in the carvings of *hashen or* the window in figure 6. third image and the intertwining vines that fill the spaces in a sense represent continuity itself. Smudge technique was used to get the faded and washed off effect which is due to severe geoclimatic factors like exposure to direct sunlight in high altitude, extreme windy conditions in some places, heavy rainfall in lower regions of Kinnaur during monsoons and dust storm and heavy snowfall which is experienced more in upper regions of Kinnaur. The difference in construction can also be clearly noticed due to the availability of different raw material specific to different location within the region. Chetwode (1973) in her essay on 'The Himalayan Temples: Drawing can be more effective than the camera in recording architectural detail' had also used sketches in her work to explain the temple

architecture of Kinnaur, there were insights that were revealed through drawing while studying architecture of a region which the images from the camera could not explain. The purpose of sketching was not just to display the aesthetics but how it can be used as an explorative method to understand why the different vernacular architectures across the regions landscape look a certain way. It also helped with the understanding of the spatial configuration better when the architectures as perceived and experienced on the field were transferred to a paper.

5. Discussion: Vernacular Architecture as Cultural Capital and what Representations Can Do

The vernacular architecture is representative of the unique indigenous knowledge and the local craftsmanship that should be considered as a form of cultural capital. This can help contribute towards intergenerational equity through continuity, cultural affinity and therefore help in maintaining the cultural identity of the region. The vernacular architectures that have been built over time represents the artistic skills which have been passed down from generations, practicing and perfecting skills with adjustments, placements, designs and carvings that is not only taught but inherited. The different architectural houses are a mix of individual taste, style, family needs and wants, artistic expressions, daily lifestyle, social conditioning and cultural norms. There is situatedness of particular styles to particular micro climatic regions in the study area but the differences in designs and artistic expressions can be noticed clearly. These artistic expressions like symbols, differences in designs and carvings makes these architectures diverse in their communicable ways, abstract, ambiguous, interpretive and non-discrete.

It was explained by one of the artisans that traditional skills of house making and temple making which are very detailed in artistic designs and structure need immense precision as the designs cannot be tampered. Ancient designs or as translated in Hindi *pauranic karigari,* example *mauri tham* which is wood and stone carving using specific designs, are only used in temples. In the construction of houses, the accuracy in *tokoth* placement between two wooden logs needs measurement, not taken with scale but an estimate which comes from years of experience. One of the *oras* explained that it is not easy for a person who is not an *oras* to comprehend how every element of the indigenous structures in the region has spiritual, environmental and cultural values underpinned under its overall façade that are reflected in the building structure, its organization of space and art. The local craftsmen associate to the vernacular architecture as artisans who with practice, experience and generational inheritance of skills embark on a daily journey to create artifacts that represents their faith and the faith of the community. They consider it their duty and feel accountable to create this work of art to the best of their ability which they undertake with their hands and manifest extraordinary pieces from ordinarily available resources. It is these human agents that help bind the natural factors with the cultural ones.

According to Muhammad and Said (2015), ‘architecture in a place is a result of multiple affairs that includes exchange of ideas, communication and transactions between people’, therefore, architectures are a result of and also induce the synthesis of human needs, desires, relationship with the environment and socio-cultural affairs. The old construction technique and material used can provide ‘significant leads for designers/ architects/ scientist involved in energy efficient and sustainable buildings’ as mentioned by Dhar (2022). The cultural aspects are also important which are referred to as ‘spatial performances that connect people, place, and memory’ as mentioned by Singhal et al. (2025). With the use of locally available raw material to sustain the architecture in the given climatic condition and the cultural hearth that has developed in and around giving it shape and inflicting it with many meanings, makes us accustomed with the fact that these structures are a lot more than what they are perceived for

and that such multifarious nature can exist in one frame literally or otherwise. To capture its essence in entirety within a drawing and illustrations is not possible, rather it is used as a visual representative tool in the article reflecting few attributes of the vernacular landscape, a figment of its essence, first perceived and then conceived as part of the experience on the field.

The investigation is more than visual perception, transcending boundaries of cognitive understanding and space being reproduced as the architectural representation through an embodied artistic medium is used with the aim of gaining insight on the architectural aspects as lived experience rather than being just perceived as a signifying system. Representation as a concept here steps beyond and becomes the 'force of representation- in - relation' (Anderson, 2018) where the role of representations from the signifier and the signified moves beyond to what representations are able to do. As a 'force of representation- in- relation' architecture was experienced as an intimate space through the lived experience between the researcher and the studied aspect of material and art. The experience has affected my perceptual ability and cognitive realization that percolates to the deeper and intimate encounters and understanding of indigenous architectural spaces. Whether its conducting further research of these architectural spaces or taking the research endeavours towards understanding other cultures, the connection that I made with the people during the study, the way these architectural spaces affected me, my experiences and my emotional journey throughout the whole process will travel with me where ever I go, not restricting me but opening up new doors to look at the world and be appreciative of its varying colours and textures, a metaphor one can deconstruct however they want to. This, for me is 'what the representations did.'

6. Conclusion: From a House to Home and from Materiality to Conscience, The Journal of Vernacular Architecture

Architectural representations vary across space and time and are continuously changing and evolving as cultural forms. It is only right to ponder on, how people make a shelter for themselves, for them to be situated in one particular location for a long time generating an emotional attachment and for it to be called home.

Kinnaur before it became an independent district in 1960, was part of the Mahasu district and even before that, it was a tehsil under the Bushahr kingdom, despite being a part of the Bushahr state there is barely any resemblance to its cultural characteristics (Sharma, 1976). One of many reasons that makes the region unique is its different dialects, cultural practices and belief system. The current architectural landscape is functional to fulfill everyday needs, providing a personal and communal space or a juxtaposed intimate and social space. As the phenomenon of globalization continuously persists, modernism has spread from centers to the peripheral regions and has resulted in the hybridized transformation of traditional vernacular structures. In addition to it, the changing climatic conditions and resource scarcity in terms of raw material such as timber, has put the relevance of the old *kathkuni* building structures into question for their sustainability and associated cultural practices.

According to contemporary socio- economic and cultural needs re-modelling and refurbishment in case of vernacular architectures is done where ecological and cultural considerations and representation are often compromised. The building material, methods, construction techniques, tools as well as people engaged with the traditional art of vernacular house making are being affected. While many attributes of the material aspects as discussed are still relevant, functional and hold meaning for the people but at the same time some of these attributes are succumbing to changes with the rapid pace of unchecked development. By realizing the traditional aspects as cultural capital that are attuned to the socio-cultural

and environmental surroundings and developing methods and approaches to study and document them while also incorporating them in performance and practice in different ways will foster their continuity and availability for future generations. The home is a living entity and comes alive when there are people, movement and activity in it. The abandoned, revived and reused spaces of the old are also vital as they are a living testimony to the once active and the bygone past with memories and identities associated to the people who at one time appertained to it. Therefore, the emphasis should not only be on how the cultural spaces look and function but also how people connect to it emotionally (Hassanein, 2018). 'The beliefs and sacred space are the key parts in spatial organization' (Chiranthanut, 2020) that still persist in the contemporary vernacular architectures. Animism, rituals relating to the anthromorphic spirits (with human attributes) and polytheism also creates a metaphysical environment of magical realism, where the material characteristics of the houses are rooted in both physicality and spirituality.

I conducted the fieldwork to observe and to study the various aspects of vernacular houses, through an embodied experience of engaging my senses and to imbibe the essence of the various aspects of the vernacular architecture by being in the place, participating in various activities for a lived experience and noting down all key elements that I thought were important for each studied aspect. I try and make an attempt to recreate that experience and the sense of place that I felt during the field work. The methods employed in this study come from an amalgamation of my experiences and also my attachment to the place and with the interviewees who helped me in the experience. Drawing, here serves not just as a tool of visualization, but also as a tool of conception (Arkell, 2013) and art was chosen as a medium of representation since it helps 'manifests the "common knowledge" of a culture' (Scruton, 1981) and helped move close to the essence of the studied aspects revealing that the vernacular architecture is the living space of practice, creation, mobility, complexity, what people create in the process of using, adjusting, readjusting, reorienting its space therefore making it live and dynamic. An ideal environment for a region will be in which a culture thrives in both physical and cognitive sense. The transition from a house to a home and from materiality to conscience is the continuing journey of a vernacular architecture.

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Branding and Advertainment: Examining the Role of Entertainment Media in Marketing Communication

ABSTRACT

The purpose of this paper is to present a theoretical basis for advertainment, including its multiple perspectives and its efficacy as a tool for marketing communication. Furthermore, it evaluates how effective advertainment is in stimulating brand recall and recognition. A study using self-administered questionnaires was conducted to accomplish the goal. The responses obtained from consumers were gathered using the non-probability convenience sampling method. The study reveals that the majority of consumers believe advertainment leave a lasting impression on their minds compared to traditional advertisements. According to findings, advertainment has emerged as a technique that influences the audience's intention to buy a product by making it more credible and appealing to them. Additionally, it enhances brand recall value and makes it easier for a brand to establish itself in the market. Consumers develop a favorable mindset as a result, and their purchasing decisions are influenced.

Keywords - Advertising, Advertainment, Branded entertainment, Communication, Marketing

1. Introduction

Advertising is a means of persuading and attracting people, as well as communicating with them, and creating impact on their minds. In this digital era, advertising is changing the way of communication and consumers are being exposed to more promotional messages than ever before. However, as technology advances people are discovering innovative ways to skip, or block advertisements, which is one of the most crucial issues that advertisers face. Due to busy schedules, shorter attention spans, media fragmentation and technological developments, the appeal of conventional advertising media is fading. Previously, the main purpose of advertising was to bring a product or service in front of a consumer, but due to intense competition and an abundance of advertising messages, this has changed, and today's advertising is now primarily concerned with integrating brands into consumers' everyday interactions in a relatable way. incorporating brands into consumers' daily interactions in a relatable way. It is challenging for a brand or marketer to stand out in a competitive marketplace and establish a deep connection with their target audience.

Everyone uses the internet and smartphones in this digital age to stay in touch with loved ones, socially active on web portals and watch entertainment content. India now has 82 million internet users, with the number likely to grow in the future. Due to this fast advancement of technology and the shifting patterns of entertainment consumption, brands have begun to look for innovative ways to advertise. Earlier television and print media were the

dominant advertising mediums, but this has changed and now a variety of new media are used for marketing communications. One of these new media that is becoming more popular in India is advertainment, which aims to influence and engage consumers. The combination of advertising and entertainment is referred to as advertainment. It is the incorporation of advertising into entertainment-oriented media including movies, music, web series, video games and so on. By incorporating brands and their messages into entertainment contexts, advertisers may break up the repetition of traditional advertising and enhance brand recall.

The objectives of this paper are two-fold. First and foremost, it provides an in-depth understanding of the concept of advertainment in India. Second, this paper delves on the effectiveness of advertising brands within entertainment mediums.

2. Literature Review

Advertainment is a way of communication that combines elements of advertising and entertainment with the goal of overcoming people's predisposition to change channels or lower the volume during traditional advertising, especially among television viewers. It evolved in reaction to the escalating frequency of advertising, increasing advertising expenses, and falling efficacy of conventional advertising messages. The term 'advertainment' was coined by Patrizia Musso in 1999 to describe the practice of promoting a product or service by presenting a story in series. The practice of advertainment uses the same narrative structures as television fiction, a story is told in segments through a collection of continuous advertisements that introduce a new product and develop the storyline with information. As a result, it's a popular method for providing continuous updates on various cellular telephone services without boring viewers.

Russell (2007) explains that the word advertainment was devised to describe how advertising and entertainment have become more entwined. It refers to marketing strategies that include brand messages into the content of entertainment mediums. Kretchmer (2004) investigates the significance of product placement development as well as the blurring of the boundaries between entertainment and commercial persuasion along with promotion of brands in television shows and video games. Gupta and Lord (1998) evaluated the recall efficacy of auditory and visual modes of product placement in movies to each other and to advertising. The authors discovered that prominent brand placements were more likely to be remembered than advertisements. A product's evident mention in the audio script without a visual presentation resulted in higher recall than a discreet visual placement without audio. They also discovered that adding more complementing audio messages to a product that already had prominent visual portrayal did not significantly boost recall.

Buckley, Ashman, and Haenlein (2025) analyze the role of influencer marketing, highlighting the audience engagement, interaction and authenticity it provides. The study explains that entertainment driven digital experiences can enhance relationship of consumers with brand and increase the effectiveness of marketing communication. Fernández-Gómez, Neira Placer, and Feijoo Fernández (2024) studied advertainment and influencer advertising among young audiences. They found that advertainment enhances brand awareness and audience engagement while making promotional content less interfering than traditional advertising. Product placement is the most common type of advertainment, in which the name, logo, or packaging of a brand is utilized as a prop in the entertainment content. The second technique is product integration, which includes a brand or product in a character's speech or activity. The last one is branded entertainment, or branded content, in which a

brand takes the lead while creating entertainment content to increase brand recognition by associating it with content that supports its values.

3. Advertainment Prevalence in Entertainment Media

Advertising has become widespread in various genres of entertainment media. All types of entertainment media, including films, video games, and web series are seeing a multibillion-dollar boom in the product placement industry.

3.1 Bollywood Movies

In India, films are a common form of entertainment, and its influence can be seen in the fact that Indians view film actors as iconic figs. Coca-Cola's appearance in the motion picture Shree 420 in 1955 became the first recorded instance of brand placement. Following this many other Bollywood movies came up with brand placements such as Bournvita in Raaz (1967), Coca-Cola in An Evening in Paris (1967), Wills in Johny Mera Naam (1970), Coco-Cola, Lipton, Dalda in the film Bawarchi (1972) and Rajdoot motorbike in romantic movie Bobby (1973). This type of product placement was perpetuated and began to develop by providing more visibility to brands and by inserting many products in a single film. By the decades close, movies were being used to introduce new brands.

Bollywood became an appealing spot for big businesses to reposition themselves through sponsored entertainment in 2012. In the movie Ferrari ki Sawaari, the expensive sports automobile by Ferrari, was promoted. The advertiser-funded programming is raised to a new level in the 2013 movie Mere Dad Ki Maruti. The brand name is loudly advertised throughout the whole two hours of the film, not only in the title. This indicates that in contrast to earlier informal brand appearances as props, the technique of placing products has come a long way in the Hindi film business and is now more prevalent. Modern filmmakers started writing stories that were specifically developed for the brand, so that the integration appears effortless. This practice is becoming ever more prevalent in Indian film and is bringing an unparalleled shift in the entertainment and marketing sector.Define abbreviations and acronyms the first time they are used in the text, even after they have been defined in the abstract. Do not use abbreviations in the title or heads unless they are unavoidable.

3.2 Web Series

Despite the fact that the majority of the attention has been on advertainment in movies, this trend is rapidly extending to web series. Due to its extensive reach and dedicated focus on reaching millennials to tell brand stories, this entertainment medium presents enormous opportunity for marketers in terms of brand integrations.

Since the emergence of online streaming services like Disney Hotstar, Netflix, and Voot as well as websites like YouTube and Facebook, the popularity of web series has risen. The Viral Fever (TVF), All India Bakchod (AIB), Y-Films, and Arré are some renowned web series makers in India that are always coming up with fresh ideas and diverse narrative lines to captivate youngsters. Brands and advertisers have a lot of possibilities to promote because of the way people consume content in the digital world.

Web series have a significant following that regularly tunes in and watches them, which gives marketers the opportunity to include their brand in the content, position their product, integrate their logo, develop a character for their brand, become the title sponsor, and other strategies. Therefore, advertisers are continually creating innovative strategies and investigating the new advertising possibilities of digital media and web series.

3.3 Video Games

Video games are now incorporating branded entertainment and product placement trends. Advergaming, which refers to the incorporation of brands into video games, is the smallest but fastest-growing subset of the advertainment practice. With a current market worth of USD 890 million, the Indian gaming business is one of the largest gaming industries worldwide.

Many popular brands have used advergames to spread their message or raise brand awareness. Crazy Taxi, a popular racing game, was introduced in 1999. In it, the player assumes the character of a taxi driver who makes money by taking passengers to their destinations while pulling wild stunts. Well recognized brands like KFC, Levi's, and Pizza Hut were employed by the designers in the creation of their map. Crazy Taxi includes a precise model and design of every store, in contrast to other advergames that mostly focus on the logo. Considerably research has proved that video games have a high degree of involvement, since 10 to 15 minutes of playing a game is likely to have a bigger influence than a radio or television advertisement of 10 seconds. The creation of an engaging gaming experience that successfully communicates the brand's value is the single most important aspect of any advergame success.

4. Research Methodology

The efficacy of advertainment is evaluated in this paper using brand recall as a criterion. Existing literature and articles were read, and an online survey using a questionnaire was conducted to analyse this. The survey is limited to 360 respondents, largely young people between the ages of 18 and 45 restricted to Delhi- NCR region.

5. Analysis & Findings

The data was analyzed using descriptive statistical techniques, primarily percentages and frequencies technique. The analysis was intended to describe the awareness, perception, and attitude of respondents towards advertainment. First, the traditional advertising channels, primarily television, were discussed with the respondents (Refer fig 1).

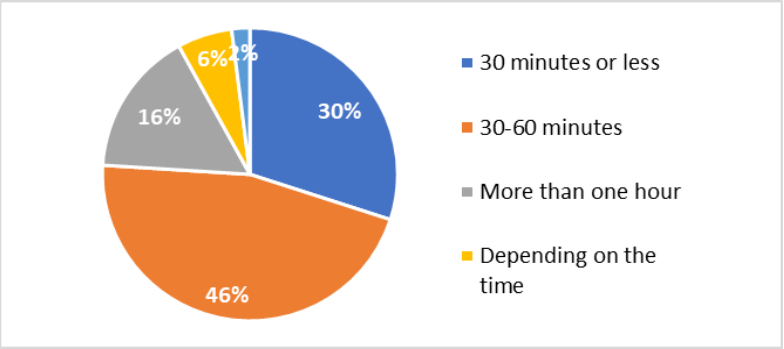


Fig. 1. Duration of watching television per day

After examining the information most people find television advertisements disturbing, respondents were questioned about whether they change the channel when advertisements appear in between the shows. 42% of respondents indicated they occasionally switch channels, 49% said they always switch channels and 9% said they never switch channels (Fig 2).

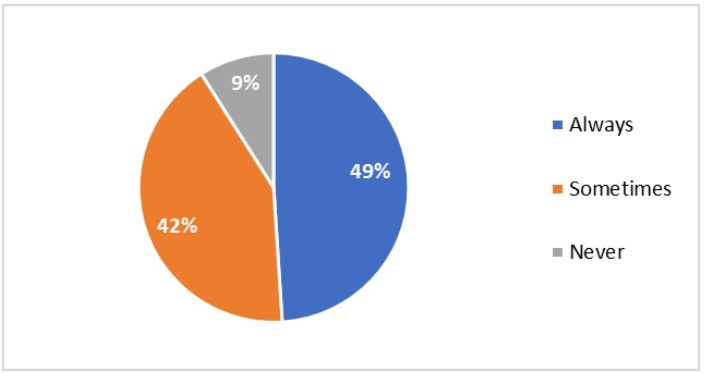


Fig. 2. Tendency to switch channels whenever advertisements shown on television

In response to a question on how television or newspaper advertising affect consumers purchasing decisions, 43% of respondents stated they get influenced by advertisements, and this will have an impact on their buying decisions, considering the fact that 57% of respondents indicated they are not influenced by advertisements.

When the phrase 'Advertainment' was tested for familiarity, 16% of respondents indicated that they heard it, 46% indicated that they had heard it quite a bit, and 38% indicated that they never heard this term (refer fig 3). The respondents who were unfamiliar and just moderately familiar with the concept were given a brief explanation of advertainment to assist them comprehend it.

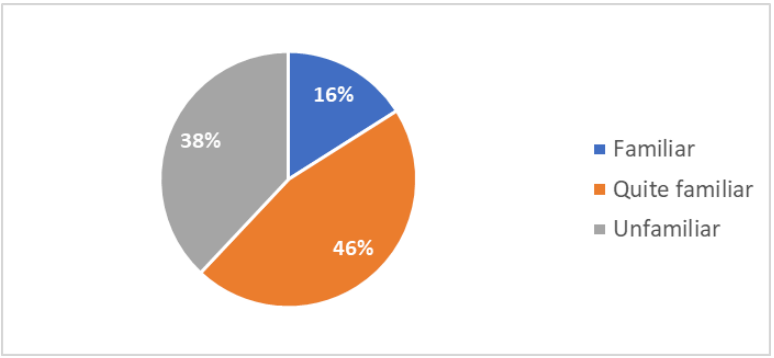


Fig. 3. Familiarity with the term 'Advertainment'

After assessing how familiar the respondents were with this advertising technique, we asked them where they had seen this sort of advertising. The majority of respondents had seen instances of advertainment in movies, followed by web series, television programmes and eventually video games.

The respondents were asked what kind of brand integration grabs their highest attention. As per the responses received when the brand is used by an actor it catches the highest attention, when it is verbally mentioned it has a moderate impact and when the brand is displayed in background the least attention was given to it. This shows that prominent visual and verbal placement got maximum attention of a consumer as compared to subtle placements.

When asked how their attitudes towards a brand change after recognizing it in a movie or other entertainment media, 72% of respondents said their views about a brand have changed positively, 10% said their attitudes have changed negatively, and 18% said their attitudes have not changed. The respondents who stated that seeing a brand in a movie caused a favorable shift in their opinions provide explanations for the attitude shift, including the actor's popularity, the movie's positive image and the

lifestyle that the brand's use represents. The positive brand image established by the movie has the greatest influence on customer's attitude.

Subsequently consumers were questioned whether they think advertising brands in entertainment mediums is an effective tool of marketing communication. According to most respondents, advertainment is a smart tool of marketing communication if employed efficiently. Figure 4 shows that integrating brands into entertainment media makes them less obnoxious and irritating, makes them more appealing, has a subliminal effect on the viewer, and differentiates them from other brands.

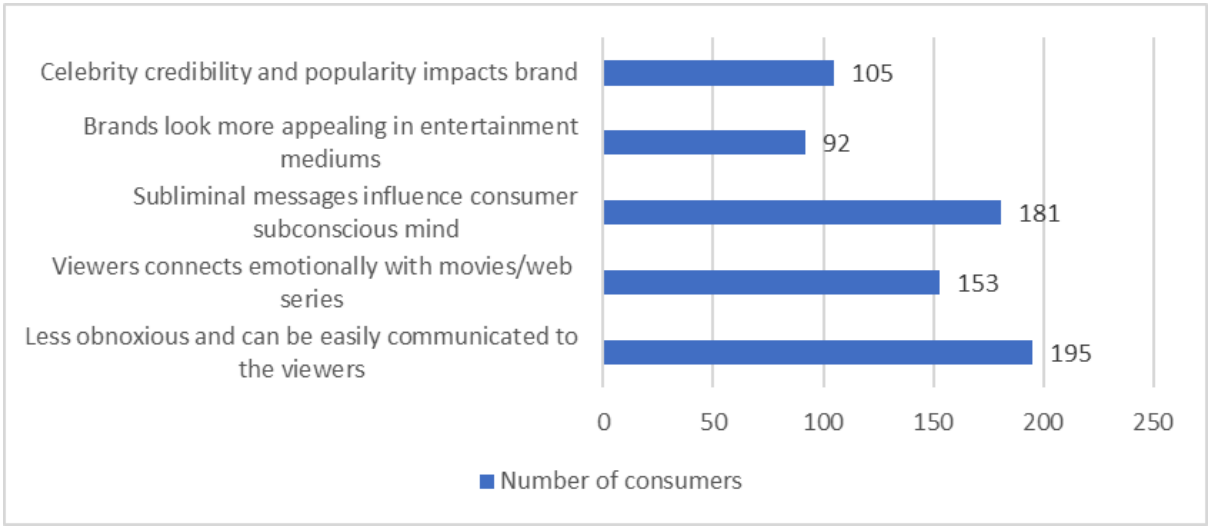


Fig. 4. Reason to Agree (69% respondents) with the above statement

However, those who disagree with the assertion claim that brands are overlooked because of the focus on the plot and characters, as well as other factors such as the brand diverts attention and irritates, the failing of entertainment content affects brand reputation, and entertainment mediums are for enjoyment, not advertising (refer fig 5).

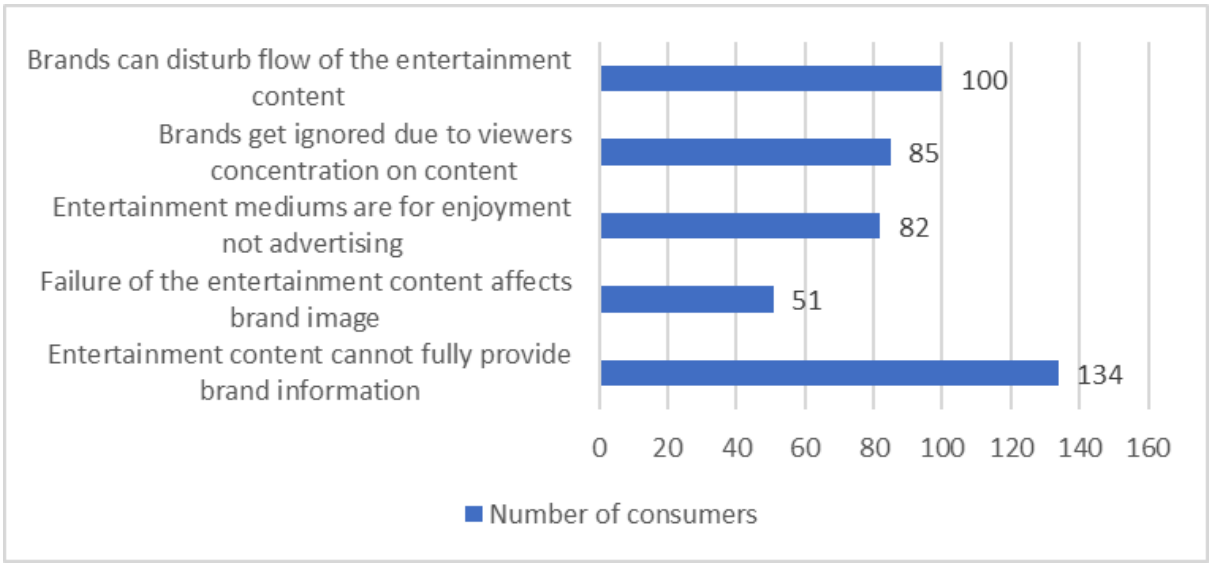


Fig. 5. Reason to Disagree (31% respondents) with the above statement

When it comes to audience attitudes and acceptance, the analysis of this questionnaire survey shows that respondents perceived advertainment as an effective communication tool. A large number of respondents mentioned noticing brands in movies followed by web series, whereas video games, television programmes, and books and novels had the least number of views. Since video games are mostly played by a certain age group and the idea of advertainment in television programmes is not very prevalent in India, that is why not all people are specifically aware of this medium. The majority of respondents agree that consumers are more likely to purchase brands if the entertainment content endorses a positive brand image. Additionally, it is evident from the survey that active brand placements such as those in which the actor uses the product or addresses it directly are easy to recognize.

The majority of respondents consider that entertainment-based advertising may be preferable to conventional forms of advertising, however some do not. When we study the explanations, the findings indicate that consumers have a favorable attitude about advertainment since it is less obnoxious and allows them to connect and interact with the brand. However, one drawback of advertainment is that it misses out the detailed information about a product or service.

6. Conclusion

This research paper concluded that consumers had an optimistic view towards advertainment strategy. They are quite familiar with this combination of entertainment and advertising, which has a high rate of identification and recall. A brand's image improves when consumers hear or see it in a natural environment on a large screen beside a celebrity. The use of advertainment was acceptable as long as it seemed appropriate and relevant to the entertainment content. Although this intriguing trend is still in its initial stages, and only a few brands have attempted to use it as an advertising platform, the level of involvement and engagement it provides might make it a powerful promotional tool. Through placement in entertainment media, brands may form a strong connection with their target audiences. This form of media is especially appealing to individuals who tend to avoid traditional advertising.

During the conduct of this research, it was discovered that the majority of respondents had a favorable opinion of advertainment as a means of communicating brand messages. Advertisers, media strategists, scriptwriters, and producers should keep in mind that brand recall is greatly influenced by originality and creativity. The content should be created with the intended audience in mind. In terms of brand memory and recognition, this medium offers a lot of potential. Hence, we can recapitulate by concluding that advertainment is emerging as a useful form of advertising.

With the advent of technology and escalating need of less cluttered communication channels, embedding brands within entertainment media is a great strategy. Advertainment and traditional advertising are both non-sustainable, as traditional advertisements generate wide awareness, advertainment adds richness and interactivity to the brand. Entertainment mediums provide opportunities to marketers and corporates to leverage on clutter free environment, emotional quotient, and psychological impact through the content. Advertainment is a new wave of marketing communication which is going to last with its entertainment spark and complement the traditional forms of communication.

7. Limitations

This research paper has certain limitations that should be considered while interpreting the data. The study employed convenience sampling techniques which do not represent a broader population. The

sample was restricted to Delhi NCR region, which may not reflect the perceptions of other geographical regions. The study had descriptive analysis and did not employ inferential techniques.

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Social Design as a Critical Lens: A Comparative Approach to Interpreting Community Practices

ABSTRACT

This paper examines Social Design not as an applicative method or pragmatic toolkit, but as a critical analysis tool for interpreting existing practices in community development and social innovation. Rather than extending the theory of Social Design, the paper investigates insights gained by using Social Design as an analytical lens to evaluate real-world community practices, highlighting both successful examples and common failures. The paper employs a conceptual and comparative approach to explore community development benchmarks beyond the corporate realm, as identified in the existing literature. By reinterpreting these benchmarks through the lens of Social Design theory, the study conducts a comparative analysis to uncover common patterns related to participation, agency, relational infrastructures, and the creation of social value, as well as issues of legitimacy and reputation. The analysis reveals that Social Design makes a crucial distinction between practices that only simulate participation and those that truly encourage collective agency and relational value. Best practices show coherence among social practices, supportive infrastructures, and positive social outcomes. Conversely, recurring failures demonstrate patterns such as participation without agency, digital solutionism, and metrics-driven engagement. These patterns help clarify why similar community-oriented interventions can lead to vastly different social outcomes. As a conceptual paper, the study does not provide empirical validation. Future research could operationalise Social Design as an evaluative and diagnostic framework and test its analytical capacity across different cultural, institutional, and community contexts. For policymakers, designers, and community practitioners, the paper proposes Social Design as a diagnostic lens for critically assessing existing and proposed community interventions, thereby helping identify ineffective participatory models and reducing the risk of symbolic or superficial forms of engagement. The paper contributes originality by positioning Social Design as a critical interpretative framework rather than a prescriptive method. It demonstrates its value in making visible otherwise overlooked social dynamics, recurrent failure patterns, and the conditions under which community practices can generate legitimacy, well-being, and resilience.

Keywords - Social Design, Community Development, Participation, Social Innovation, Social Value, Collective Well-Being

1. Introduction

In neighborhoods worldwide, residents are invited through signage to take part in community activities, download apps, or participate in projects. New shared spaces are opened, workshops held, and digital platforms launched to connect neighbors and strengthen social bonds. This reflects a growing recognition that well-being depends not only on infrastructure but also on social relationships, mutual trust, and a sense of belonging (Wilkinson &

Pickett, 2009). The focus on community life responds to broader concerns about weakening social ties, declining trust, and increasing isolation, widely documented across societies (Putnam, 2000; Wright, 2022). Community initiatives are seen as ways to rebuild trust, foster cooperation, and address shared problems. Participation is a key principle in policy, social innovation, and local development strategies (Mulgan et al., 2007; Pawar, 2014), but outcomes vary. In some neighborhoods, residents take ownership of shared spaces and build collaborations; in others, participation remains marginal, with poorly attended meetings and fading initiatives. The same community garden or digital platform can be lively in one place and unused in another. This variability shows that participatory mechanisms alone don't ensure meaningful involvement. Participation varies: people may be invited to meetings where decisions are made elsewhere, consultations may collect opinions without exerting influence, and digital platforms may facilitate communication without building relationships.

Social Design has recently been investigated in the context of Community Management (Bevolo, Rapaccini, Fabris & Monacelli, 2026), as an extension of a case study that reviews a robust application of community management in real estate (Bevolo, Rapaccini, Fabris & Monacelli, 2025). These two publications formed a foundation for further reflections. Following these two peer-reviewed papers, the authors herewith posited that both scholars and practitioners might benefit from a sound understanding and a novel interpretation of both community development and Social Design in urban contexts, and of their mutual interrelations and potential interdependences. Departing from these lines of reflexivity, this original article therefore proposes Social Design as a critical lens for re-interpreting community practices.

Specifically, the authors do not adopt Social Design as a method to be implemented, but as an interpretive framework that helps bring into focus the conditions under which participation becomes meaningful, relationships take hold, and collective value begins to emerge, leading to the (self-) development and management of citizen communities within given urban areas. By revisiting existing community practices beyond the utilitarian principles of best practice versus worst practice through this lens, we aim to identify recurring patterns that help explain why outcomes diverge so sharply, patterns that conventional best-practice stories tend to leave in the background. Instead of prescribing "what ought to be done", this paper will help us understand under which conditions social bonds and collective resilience can emerge and be sustained over time. Instead of asking which models work best, we should ask why the same tools produce different results in different contexts. This requires interpretative frameworks that reveal underlying dynamics, an understanding of "Design" beyond capital-driven models, and an embrace of concepts like the pluriverse (Escobar, 2018).

1.1 Social Design: reading community practices with a different lens

As Arnstein (1969) emphasized, participation without real agency is superficial, more a formality than a driver of change. Social Design helps us grasp not only what occurs in community initiatives but also why and how social bonds and resilience develop. When reduced to procedures, efforts to boost cohesion often lead to superficial engagement, creating a gap between goals and practice. As de Certeau (1984) noted, social life is shaped mainly by everyday practices rather than formal structures; neglecting these structures can create an illusion of community without fostering it. Socio-cultural practices reflect community life, while shared spaces often lack the social conditions necessary for genuine collective use. Engagement becomes a series of events rather than an ongoing process, and community is rhetorically invoked without changing daily practices. When outcomes fall short, practitioners turn to toolkits and models, assuming methods can be transferred regardless of local

contexts. However, what's less explored is how participation, relationships, and governance interact to enable or hinder collective agency.

2. Theoretical Backgrounder: Relational Infrastructures, Participation and Governance

Research on commons governance indicates cooperation occurs when institutions empower communities to organize and manage resources (Ostrom 1990; 2009). Community development studies and urban sociology research show that community dynamics stem from interactions among participation, social environments, and institutional structures. Jacobs (1961) highlighted how social interactions in shared spaces can lead to familiarity and trust, while social capital studies reveal cooperation arises from daily relations (Coleman 1988; Putnam 2000). Participation, therefore, is meaningful when embedded in routine life. Klinenberg (2015; 2018) introduced the concept of social infrastructure – physical and organizational spaces that support repeated encounters – as a means of bolstering community resilience. However, relational infrastructure alone doesn't explain collective agency; governance arrangements also play a role.

Critical views reveal that not all participation leads to engagement – Arnstein (1969) and Cornwall (2008) argued that participation can remain superficial without shifts in decision-making power or conditions for sustained interaction. Overall, community initiatives are configurations of social relations, infrastructure, and governance that enable collective action. Social Design emphasises participatory methods such as co-design and collaborative practices (Manzini, 2015; Escobar, 2018), expanding design beyond objects to social systems. While participation in public policy and urban development has increased, outcomes vary widely – some communities mobilize around shared spaces, others remain passive or symbolic. Literature highlights that Social Design distinguishes between superficial participation and genuine collective agency. Successful practices, on the other hand, might be described as aligning social efforts with supportive infrastructure and positive results, while failures – such as participation without agency, digital solutionism (Morozov, 2014), and metrics-focused engagement – explain the varied social impacts of similar interventions. This might suggest that tools alone don't ensure community dynamics.

3. From Social Design as Applicative Practice to Social Design as a Critical Lens

Over two decades, Social Design has gained visibility, evolving from critiques of industrial design to a practice focused on human needs and well-being (Manzini, 2015). Recent research highlights new collaborations in addressing social needs (Mulgan et al., 2007), while sociological approaches emphasize networks, trust, and cooperation in collective action (Coleman, 1988; Putnam, 2000). These perspectives might position Social Design at the intersection of practice, theory, and governance, where design is inseparable from social relations. Indeed, it could be argued that design now shapes social interactions, institutions, and environments, extending far beyond the realms of product development or digital innovation at technological levels, reflecting more profound shifts in society and culture, from application to theory. To be precise, early design focused on form, function, and production, but as social challenges intensified, designers began to describe these as "wicked problems" (Rittel & Webber, 1973). Design expanded to systems, services, and social practices (Buchanan, 1992), requiring inquiry engaging multiple actors, values, and perspectives.

While participatory processes can empower communities, they also have limitations, sometimes remaining superficial or symbolic, leaving power structures unchanged. Constructivist perspectives

suggest that social realities are constantly shaped through interactions, meaning communities form through ongoing negotiation. Design, therefore, explores social relations, emphasizing systemic thinking and interconnected networks of institutions, norms, and power, and recognizing that community initiatives operate within complex environments. Social Design can be described as a framework focused on shaping spaces and enabling relationships within and beyond communities, promoting participation, co-creation, and collective learning. It often appears as a backbone of co-design toolkits, participatory methods, and engagement strategies, especially where traditional planning failed to include citizens.

Ambiguities and contradictions in Social Design pose challenges. Viewing it as just" methods" can make it hard to grasp why some initiatives lead to lasting cooperation while others do not. A conceptual shift might be suggested: seeing Social Design as an interpretative framework rather than a toolkit. It then becomes a lens for understanding community dynamics, emphasizing the relational circumstances and institutional conditions that shape collective action. Concepts such as participation and relational infrastructures help analyse how community initiatives work. Instead of only evaluating methodological success, the focus shifts to how social relationships and governance influence outcomes.

4. Analytical Dimensions of Social Design

As articulated above, from a Social Design perspective, community initiatives can be understood as configurations that include social relations (among people), infrastructures (within space and place), and governance arrangements (i.e., policies and strategies). Accordingly, the analytical lens proposed in this paper examines the conditions under which participation becomes embedded in everyday practices and enables forms of collective agency. Drawing on design theory, urban sociology, and research on social capital and commons governance, three analytical dimensions are particularly useful for interpreting community practices: participation structures, relational infrastructures, and governance and collective agency. Consequently, the following analytical dimensions will be introduced as a means of interpreting community practices through the lens of Social Design:

Dimension 1: Participation structures

Dimension 2: Relational infrastructures

Dimension 3: Governance and collective agency

These parameters together help analyze and reveal how community initiatives organise relationships, distribute agency, and sustain cooperation over time. These dimensions provide the conceptual basis for the comparative interpretation of community initiatives, and, in our view, are deeply interconnected.

4.1 Dimension 1: Participation Structures

Participation is widely considered a defining element of contemporary community development and social innovation initiatives (Mulgan et al., 2007; Pawar, 2014). Workshops, consultations, collaborative platforms, and neighborhood activities are frequently designed to involve citizens in shaping their environments. However, the concept of participation itself has long been the subject of critical debate. In her influential Ladder of Participation, Arnstein (1969) highlighted how participatory processes may range from symbolic consultation to genuine redistribution of power. Later studies have shown that many participatory initiatives remain limited to providing feedback or attending events organised by external actors, without substantially affecting decision-making processes (Cornwall,

2008). For this reason, participation needs to be interpreted not only as a procedural feature of community initiatives but also as a structural characteristic of the organization of collective action. It becomes meaningful when it moves beyond isolated events and becomes embedded in everyday community life. In such situations, residents are not just invited to participate but gradually become co-producers of the social environments in which they live.

From a Social Design perspective, as Manzini (2015) argues, the most significant forms of social innovation often emerge when people begin to organize their own collaborative practices rather than simply joining initiatives designed by external actors.

4.2 Dimension 2: Relational Infrastructures

Community life is not produced solely through institutional arrangements or participatory procedures; it also depends on environments that enable people to meet, interact, and develop familiarity over time. Urban sociology has long emphasized the importance of everyday encounters in shaping neighborhood dynamics: Jacobs (1961) famously described how frequent interactions in streets, parks, and local businesses help build networks of trust and mutual awareness. These everyday encounters generate what later research would describe as social capital, the networks and relationships that enable cooperation and collective action (Coleman, 1988; Putnam, 2000). More recently, Klinenberg (2018) introduced the concept of social infrastructure to describe the physical and organizational environments that support social interaction, such as libraries, parks, community centers, and neighborhood hubs, which function not only as service providers but also as places where relationships are formed and sustained.

From a Social Design perspective, these infrastructures can be understood as relational environments: shared kitchens, workshops, community gardens, or local meeting spaces enable residents to experiment with forms of collaboration, exchange knowledge, and build relationships through repeated interaction (Manzini, 2015; Escobar, 2018). What distinguishes these infrastructures is not simply their physical presence but their capacity to support everyday social practices. Community initiatives that generate lasting cooperation often rely on environments that make collaboration accessible, visible, and repeatable. Through these repeated interactions, casual encounters can gradually evolve into more structured forms of collective activity.

4.3 Dimension 3: Governance and Collective Agency

While participation and relational infrastructures create opportunities for interaction, the emergence of sustained community initiatives ultimately depends on governance arrangements that enable collective agency. Research on commons governance has demonstrated that communities can manage shared resources effectively when institutional arrangements enable them to develop locally adapted rules and decision-making processes (Ostrom, 1990). In those contexts, participation becomes meaningful because individuals recognize that their involvement has tangible consequences for shared outcomes. Similar insights have emerged from studies of social capital and collective action, which highlight how trust, cooperation, and shared responsibility develop when individuals perceive themselves as participants in a common endeavor rather than as passive beneficiaries of external programs (Coleman, 1988; Putnam, 2000).

From the perspective of Social Design, governance refers not only to formal institutions but to the broader ways in which authority, responsibility, and decision-making are distributed among people. The community initiatives may range from top-down programs designed by institutions to

collaborative arrangements in which residents actively shape priorities, rules, and practices. The degree to which governance structures enable communities to exercise agency strongly influences the sustainability of community initiatives: when people can shape decisions and organize collective practices, participation often evolves into a sense of shared ownership and stewardship, and when participation remains disconnected from governance, engagement frequently declines once external programs or incentives disappear.

5. Methodological Approach: Comparative Conceptual Interpretation

To explore the interaction among the three dimensions mentioned above in analytical applications, a comparative conceptual framework is proposed herein. Instead of conducting empirical fieldwork, this analysis draws on comparative reviews of community initiatives frequently cited in the literature on community development, participatory governance, and social innovation. These serve as conceptual reference cases that illustrate various configurations of participation, infrastructure, and governance in real-world settings.

Comparative interpretation is common in social sciences for identifying patterns across contexts (Flyvbjerg, 2006). By studying how similar participation aspirations are achieved across initiatives, underlying dynamics are revealed. Selected initiatives are prominent in literature, encompassing grassroots, civic governance, policies, and digital platforms. Rather than judging projects by their success, the approach highlights recurring configurations that shape participation in practice. Some initiatives align participation mechanisms, infrastructure, and governance, fostering collaboration and shared stewardship. Others show sporadic or symbolic participation, disconnected from decision-making or social practices. This allows for the examination of a variety of community practices. Each initiative is analyzed in terms of participation structures, relational infrastructures, and governance. The next section summarizes the cases through the Social Design framework, with subsequent analysis exploring emerging patterns.

5.1 Selection of Community Practices as Cases for Analysis

This section draws on a selection of community initiatives widely discussed in the literature on community development, social innovation, and participatory governance. As already mentioned, these initiatives have been selected not as representative cases, but as conceptual reference points that illustrate different configurations of participation, relational infrastructures, and governance arrangements.

The selected and referenced cases included span a range of contexts:

- everyday participation: grassroots initiatives (e.g., Repair Cafés)
- neighborhood-scale participation ecosystems (e.g., Participatory City)
- institutional governance innovations (e.g., Bologna Commons, Community Land Trusts)
- public policy interventions (e.g., Medellín Social Urbanism)
- digitally mediated participation platforms (e.g., Nextdoor, smart city apps)
- developer- or program-led engagement initiatives

This diversity allows us to compare how similar aspirations for participation are translated into practice under different social and institutional conditions. Rather than classifying these initiatives as simply successful or unsuccessful, the Social Design perspective enables their interpretation as

different configurations of community-making, revealing how participation, infrastructures, and governance interact to either enable or constrain the emergence of collective agency.

5.2 Everyday Participation: Grassroots Initiatives

The significance of environments enabling everyday participation through grassroots initiatives has long been highlighted in the field of urban sociology. Jane Jacobs argued that the vitality of neighborhoods relies on frequent informal interactions in shared spaces, allowing residents to gradually build familiarity and mutual trust (Jacobs, 1961). More contemporary research has identified libraries, parks, community centers, and local hubs as crucial forms of social infrastructure that bolster social relationships and collective resilience (Klinenberg, 2015; Klinenberg, 2018). Various initiatives highlighted in the literature demonstrate how community life can emerge when participation is integrated into daily practices and supported by relational infrastructures:

1. The Participatory City's Everyone Everyday program in Barking and Dagenham, London, provides a particularly well-documented example. The initiative established a distributed network of neighborhood spaces designed to host open, accessible activities such as cooking, making, gardening, and repairing. Instead of relying on formal participatory meetings, the program enables residents to initiate and organize activities themselves, with support from facilitators and shared spaces embedded in everyday neighborhood life (Participatory City, 2019; Manzini, 2015; Manzini, 2014). Through these repeated interactions, participants gradually develop networks of trust, familiarity, and cooperation. Participation becomes part of daily routines rather than a special event organized by external actors.
2. The Repair Café movement is a grassroots initiative where residents collectively repair everyday objects while sharing knowledge and practical skills. Scholars have interpreted these initiatives as examples of grassroots innovation environments in which collaboration emerges through shared practices rather than through formal participation mechanisms (Charter & Keiller, 2014; Smith et.al., 2014).
3. Australia's Neighbourhood Houses further showcase how dedicated community spaces can serve as meeting points for ongoing interaction and self-organized activities. These centers host locally initiated programs that range from cultural events to skill-sharing workshops, forging opportunities for residents to connect through everyday practices rather than formal participation processes (Ames, 2014). Across these examples, communities are built not just through institutional programs but through infrastructures that enable repeated encounters, shared experiences, and participation, which is not merely encouraged but becomes ingrained in the daily rhythms of life.

5.3 Institutional Arrangements Enabling Collective Agency

A second group of initiatives demonstrates how community dynamics can develop when governance arrangements trigger and enable collective stewardship and decision-making. These include:

1. The Bologna Regulation on the Urban Commons, introduced in 2014, is widely cited as an innovative example of civic collaboration in urban governance. The regulation allows citizens and public authorities to establish "collaboration pacts" for the care and management of public assets such as parks, buildings, and public spaces. Instead of viewing citizens merely as participants or beneficiaries, the framework recognises them as co-managers of urban commons (Iaione, 2016; Foster & Iaione, 2019). From a Social Design perspective, the significance of the Bologna model lies not only in the participatory processes it enables but

also in the institutional arrangements that distribute responsibilities and decision-making capacities between citizens and public authorities.

2. Community Land Trusts (CLTs) place land under community stewardship to ensure long-term housing affordability and neighbourhood stability. By separating land ownership from speculative markets and establishing community governance structures, CLTs enable residents to participate directly in decisions concerning housing and neighbourhood development (Davis, 2010; DeFilippis, Saegert, and Krinsky, 2018).
3. Medellín's Social Urbanism illustrates how infrastructural investment combined with inclusive governance can contribute to community development. Projects such as libraries, cable car systems, and cultural facilities were intentionally located in marginalised neighbourhoods to create spaces that foster civic participation and social interaction (Brand and Dávila 2011). In these cases, participation is not limited to consultation or event-based engagement but, instead, the governance arrangements create the institutional conditions through which people can influence decisions and assume responsibility for shared environments.

5.4 Symbolic Participation and Programmed Engagement

In potential contrast to the above references, many contemporary community initiatives involve configurations in which participation remains largely symbolic or episodic. These initiatives often adopt participatory language while maintaining governance arrangements that limit community agency. Urban planning processes frequently illustrate this dynamic; public consultations and participatory workshops are widely used to gather citizen feedback on planning proposals. However, research has shown that such processes often leave decision-making authority unchanged, reducing participation to consultation rather than shared governance (Arnstein, 1969; Cornwall, 2008). Digital neighborhoods and civic platforms provide another example of this tension.

Nextdoor is a platform that might be presented as a tool to strengthen local connections by enabling residents to communicate online; however, studies suggest that these platforms often reinforce social divisions or focus primarily on surveillance-oriented interactions rather than cooperative engagement (Sadowski, 2020). Similarly, many smart city initiatives promote digital participation platforms to facilitate citizen engagement: critics argue that these initiatives frequently prioritize technological solutions over the social and institutional conditions required for meaningful community participation (Greenfield, 2013; Sadowski, 2020). Another common pattern can be observed in residential developments where community engagement is organized through programmed events such as festivals, workshops, or networking activities. While such initiatives can generate short-term interaction among residents, participation often remains structured as attendance rather than as a co-production process of community life. Community becomes something to be consumed rather than collectively produced. Short-term community projects funded through corporate social responsibility programs or public grants may also fall into this category. These initiatives may temporarily mobilize residents around specific activities but often lack the relational infrastructures and governance arrangements required to sustain engagement once the project ends. Across these cases, participation is a visible organizational feature, yet the deeper relational and institutional conditions required for collective agency remain largely absent.

Table 1 below provides a visual summary of the above analysis, including all the cases mentioned alongside their key analytical parameters:

- context

- participation structure
- relational infrastructure
- governance arrangement
- observed outcome
- pattern

Table 1 is therefore proposed as a means of providing the necessary synthesis and capturing the essential findings of a Social Design-based interpretation of the above selection of cases from various fields of practice.

Table 1: Synthesis Matrix

Case / Initiative	Context	Participation Structure	Relational Infrastructure	Governance Arrangement	Observed Outcome	Pattern
Participatory City – Everyone Everyday (UK)	Neighbourhood participation ecosystem	Open participation through everyday activities	Network of neighbourhood hubs and shared spaces	Facilitated but citizen-led initiatives	Sustained everyday collaboration and local initiatives	Relational infrastructure
Repair Café movement	Grassroots community innovation	Residents voluntarily participate in repair sessions	Shared physical spaces enabling collective practices	Informal self-organisation	Knowledge sharing and community networks emerge through practice	Everyday social innovation
Neighbourhood Houses (Australia)	Community hubs	Open participation in activities and learning	Community centres embedded in neighbourhood life	Locally managed organisations	Ongoing social interaction and support networks	Relational infrastructure
Bologna Regulation on Urban Commons	Urban governance experiment	Citizens engage through collaboration pacts	Public spaces managed as shared resources	Institutional co-governance between citizens and municipality	Civic stewardship and collaborative management of commons	Institutional commons governance
Community Land Trusts	Housing and land governance	Resident participation in organisational governance	Housing and neighbourhood infrastructures	Community ownership and governance boards	Long-term stewardship and neighbourhood stability	Institutional commons governance
Medellín social urbanism	Urban regeneration policy	Citizen engagement around public spaces	Libraries, public transport and cultural centres	Strong municipal leadership with local participation	Increased civic participation and urban inclusion	Infrastructure-enabled participation
Community gardens (various cities)	Urban commons	Volunteer-based participation	Shared cultivated spaces	Mixed governance models	Highly variable outcomes depending on local organisation	Conditional community infrastructure
Participatory planning consultations	Urban planning processes	Citizens invited to meetings or consultations	Limited or temporary infrastructures	Decision-making remains institutional	Limited influence on planning outcomes	Symbolic participation
Smart city participation platforms	Digital governance initiatives	Citizens invited to engage through apps or platforms	Primarily digital infrastructures	Technology providers and public institutions control systems	Low sustained engagement and limited collective agency	Digital solutionism
Nextdoor neighbourhood platform	Digital neighbourhood network	Online communication among residents	Digital platform infrastructure	Corporate platform governance	Fragmented interactions and occasional conflict	Platform-mediated community
Residential community event programming	Private housing developments	Residents attend organised social events	Amenities and event spaces	Property managers or developers organise activities	Short-term interaction but limited community agency	Programmed sociability
Short-term CSR community programmes	Corporate social responsibility projects	Participation through project activities	Temporary infrastructures	External organisations lead initiatives	Engagement declines after programme completion	Project-based participation
Tactical urbanism / pop-up placemaking	Temporary urban interventions	Citizens attend events or installations	Temporary spatial infrastructures	Organised by designers or institutions	Visible participation but weak long-term impact	Episodic participation

Table 1 summarizes the cases discussed above and maps them across recurring configurations of participation, relational infrastructures, and governance arrangements. Rather than representing fixed categories, these patterns should be understood as analytical tendencies that help explain why similar participatory approaches may lead to different outcomes, depending on the relational and institutional environments in which they are embedded.

6. Selected Findings by Dimensions: Emerging Signals

Using the comparative interpretation method, a set of key findings and potential patterns emerges, providing a more detailed understanding of how participation, relational infrastructures, and governance arrangements interact in practice. Rather than functioning as independent variables, these dimensions appear to operate in combination, shaping different configurations of community dynamics. A synthesis based on a discriminatory reading of the findings, divided into three analytical dimensions within Social Design, is provided below. This produces a Social Design-specific interpretation of the universe under investigation.

6.1 Dimension 1: Participation: Enabling Access towards Embedded Practice

Across the cases analysed, participation emerges in significantly different forms. In initiatives such as Participatory City or Repair Cafés, participation is embedded in everyday practices and organised through open-ended activities that allow residents to contribute according to their interests and capacities. In these contexts, participation is not structured as a formal requirement but as an ongoing opportunity for engagement.

By contrast, in many institutional and policy-driven initiatives, participation tends to be organised through discrete events such as consultations, workshops, or programmed activities. While these formats create moments of visibility and involvement, they often remain disconnected from the everyday practices through which community life develops.

As a result, participation becomes episodic rather than continuous, and its capacity to generate sustained social dynamics remains limited (Arnstein 1969; Cornwall 2008). This suggests that participation alone is not sufficient to generate community dynamics; its effects depend on how it is embedded within everyday practices and institutional arrangements.

6.2 Dimension 2: Relational Infrastructures: Enabling Repetition and Familiarity

A second key finding concerns the role of relational infrastructures in shaping community outcomes. In cases where shared spaces and practices are designed to support repeated interaction, such as neighbourhood hubs, community centres, or informal gathering spaces, participants have opportunities to encounter one another regularly. Over time, these repeated interactions contribute to the development of familiarity, trust, and informal coordination. This dynamic is evident in initiatives such as Participatory City, Neighbourhood Houses, and community-based repair networks, where infrastructure is not merely a physical asset but an environment that enables ongoing social interaction.

These findings are consistent with longstanding insights in urban sociology, which emphasise the importance of everyday encounters in producing social cohesion (Jacobs 1961), as well as more recent work on social infrastructure (Klinenberg 2015; 2018). In contrast, initiatives that rely on temporary or highly programmed infrastructure, such as one-off events or short-term project spaces, tend to generate more limited forms of engagement. Without opportunities for repeated interaction, social relations remain weak and often fail to translate into sustained forms of collaboration.

6.3 Dimension 3: Governance: Enabling or Constraining Collective Agency

The third dimension concerns the role of governance arrangements in enabling collective agency. The analysis shows that initiatives differ significantly in the extent to which participants can influence

decisions and assume responsibility for shared resources. In cases such as the Bologna Regulation on Urban Commons or Community Land Trusts, governance frameworks explicitly recognise the role of communities as co-managers of shared environments. These arrangements create the institutional conditions through which participation can evolve into forms of collective stewardship and long-term engagement (Ostrom 1990; Iaione 2016).

In contrast, many initiatives, particularly those based on consultation processes, digital platforms, or developer-led programming, maintain decision-making authority within institutional or organisational structures. In these contexts, participation may be visible but does not translate into meaningful influence, limiting the emergence of collective agency. This suggests that governance arrangements play a decisive role in determining whether participation can lead to sustained forms of collaboration.

6.4 Cross-Cutting Patterns across Dimensions: Alignment and Misalignment

Taken together, these Social Design-related observations indicate that community initiatives tend to produce sustained outcomes when participation, relational infrastructures, and governance arrangements are aligned. When these dimensions reinforce one another, participation becomes embedded in everyday practices, supported by infrastructures that enable repeated interaction, and connected to governance arrangements that recognise collective agency. In these cases, communities emerge through an ongoing social process rather than as a temporary outcome of specific interventions.

On the other hand, when one or more of these dimensions are absent or weakly connected, initiatives tend to produce more limited forms of engagement. Participation may remain symbolic, infrastructures may remain underutilised, and collaboration may fade once external programmes conclude. These findings might suggest that community initiatives are best understood not as isolated projects, but as configurations of social relations, infrastructures, and governance arrangements that shape the conditions for collective action.

7. Implications for Research and Practice

The Social Design-based analysis developed in this article suggests two potential implications for both future research and contemporary practice in the fields of community development, urban governance, and participatory programs and projects, namely:

7.1 Infrastructure and Governance

The findings of the analysis suggest that the way community initiatives are assessed should be reevaluated, placing greater emphasis on relational dynamics than on purely quantitative measures such as attendance or activity counts. While these indicators offer insights, they often miss how cooperation and trust emerge through everyday social interactions, as highlighted by social capital research (Coleman 1988; Putnam 2000). Recent studies on social infrastructure show that physical and organizational environments shape community resilience (Klinenberg 2018; Aldrich and Meyer 2015). Thus, initiatives should evaluate not only participation but also the infrastructure and governance that support ongoing collaboration. Future research should explore how relational infrastructures, governance, and daily practices influence community dynamics across varied contexts.

7.2 Enabling Conditions

A second implication concerns the design of participatory initiatives in urban policy and community development programs. As participation becomes increasingly institutionalized in public policy, there is a growing risk that participatory mechanisms become procedural requirements rather than meaningful processes of collective engagement. Public consultations, digital participation platforms, and event-based engagement strategies may create opportunities for involvement while leaving underlying governance arrangements largely unchanged (Arnstein 1969; Cornwall 2008). The findings of this study suggest that participatory initiatives are more likely to generate sustained outcomes when they combine three elements: accessible opportunities for participation, relational infrastructures that enable repeated interaction, and governance arrangements that allow communities to exercise collective agency. For practitioners and policymakers, this implies a shift in emphasis from designing participatory events toward cultivating the relational and institutional conditions that allow community practices to emerge. In practical terms, this may involve investing in shared community spaces, supporting local facilitators, enabling forms of civic stewardship, and developing governance frameworks that recognize people's capacity to participate in managing shared environments.

8. Conclusions

The "Social Design-based lens" proposed in this paper was adopted as a diagnostic framework for critically assessing existing initiatives. By examining how participation structures, infrastructures, and governance arrangements interact, researchers and practitioners can better identify why certain initiatives succeed in promoting collaboration while others remain largely symbolic. In this sense, Social Design provides a conceptual vocabulary for interpreting community initiatives not simply as projects or programs but as evolving configurations of social relations, institutional arrangements, and everyday practices.

The comparative interpretation method presented in this paper highlights key findings that clarify how community initiatives generate (or fail to generate) sustained forms of collective life:

- First, participation alone is not sufficient to produce community dynamics. Its effects depend on how it is embedded within everyday practices and institutional arrangements, rather than on its mere presence as a procedural feature (Arnstein 1969; Cornwall 2008).

- Second, relational infrastructures play a crucial role in enabling repeated interaction, familiarity, and trust-like conditions that are necessary for cooperation to emerge over time (Jacobs 1961; Klinenberg 2015; 2018).

- Third, governance arrangements determine whether participation can evolve into forms of collective agency, particularly when communities are enabled to influence decisions and assume responsibility for shared resources (Ostrom 1990; Iaione 2016).

- Lastly, the analysis shows that many contemporary initiatives produce visible but episodic forms of participation, remaining disconnected from both everyday practices and decision-making processes. This is particularly evident in digitally mediated platforms and event-based programmes, where engagement often fails to translate into sustained collaboration without relational infrastructures and shared governance (Sadowski 2020; Greenfield 2013).

When considered alongside the two future directions for research and contemporary practices, these conclusions might suggest that community initiatives are best understood not as isolated projects or participatory tools, but as configurations of social relations, infrastructures, and governance arrangements that shape the conditions under which collective action becomes possible. Based on this synthetic understanding, Social Design might be expected to play an increasingly key role in the design and management of communities within our cities.

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The Designer's Dilemma: Evaluating Hekkert's ViP and Brown's Design Thinking Through the Lens of Generative AI

ABSTRACT

Examining Paul Hekkert's Vision in Product Design (ViP) and Tim Brown's Design Thinking, this paper interrogates their relevance in an era increasingly shaped by generative artificial intelligence. Both methodologies emerged from pre-AI paradigms ViP from Delft University's industrial design tradition (1990s–2011) and Design Thinking from IDEO's human-centered consultancy practice (2009). While each offers distinct approaches to fostering creativity, empathy, and structured innovation, the rapid integration of AI tools into design education raises fundamental questions about their continued validity. Through comparative analysis of primary texts, systematic literature review of recent empirical studies (2024–2026), and critical examination of AI capabilities, this paper argues that both methods exhibit significant limitations when confronted with AI's capacities in pattern recognition, idea generation, and user research simulation. However, their core values contextual awareness (ViP) and empathic engagement (Design Thinking) remain indispensable. The analysis further identifies an experience dependent asymmetry: AI augments novice designers' ideation while supporting experienced designers' refinement. Drawing on recent empirical evidence, the paper proposes a hybrid pedagogical framework that preserves human-centric values while strategically integrating AI as a collaborative design partner. The analysis suggests that design education must evolve from teaching fixed methodologies to cultivating metacognitive skills that enable designers to orchestrate human–AI creative collaboration.

Keywords: Design thinking; Vision in Product design (ViP); Generative artificial intelligence; Design education; Design methodology; Empathy in design; Human-AI collaboration

1. Introduction: The Convergence of Design Methodologies and Artificial Intelligence

In the last ten years, design thinking has become a popular way to innovate in business, along with the more academic Vision in Product Design (ViP) approach. Tim Brown's Change by Design (2009) made design thinking well-known as a method that is easy to understand and focuses on people. It can be used in areas other than design, such as healthcare and public policy. At the same time, Paul Hekkert and Matthijs van Dijk's Vision in Design (2011) provided a strict, context-based framework that puts building future worlds ahead of coming up with new products. Both texts represent mature articulations of design methodologies developed during the late twentieth and early twenty-first centuries (Brown, 2009; Hekkert & van Dijk, 2011).

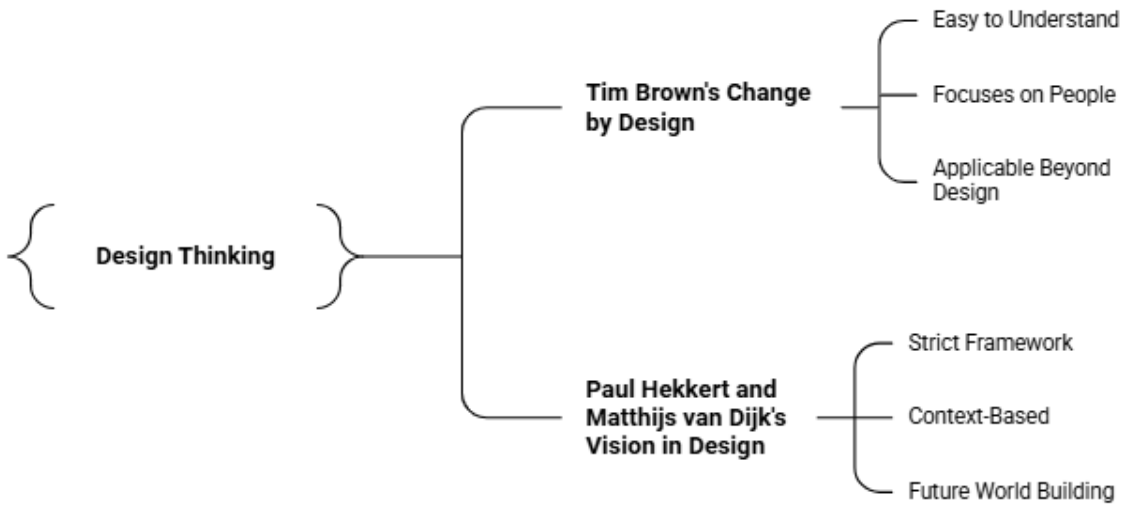


Fig. 1. Design Thinking Vs. Vision in Product Design

Generative AI systems large language models, image synthesis tools, and predictive analytics are now fundamentally challenging the assumptions underlying both approaches. Design Thinking's emphasis on empathy through ethnographic observation confronts AI's ability to simulate user behaviours and generate synthetic research data. ViP's complex context-building exercises confront AI's capacity to process vast information landscapes and discern patterns that may elude human perception. Recent empirical research has begun to quantify these tensions. A randomized crossover study of 52 undergraduate design engineering students found that AI support preserved fluency and originality but increased semantic convergence, with ideas more frequently resembling existing products and exhibiting reduced textual elaboration (Kim et al., 2025). Notably, students who began with AI support produced more original and diverse ideas across both AI-assisted and unaided tasks, suggesting a lasting positive transfer effect (Kim et al., 2025). However, qualitative analysis revealed predominantly passive and directive use of AI, with limited exploratory or collaborative engagement (Kim et al., 2025).

These developments compel a critical reassessment: Are these methodologies still pedagogically viable? Or do they require fundamental restructuring? This paper pursues three primary objectives designed to interrogate the intersection of established design frameworks and emerging computational technologies.

Objective 1: Conceptual Explication of ViP and Design Thinking

The initial phase entails a thorough understanding of the fundamental principles underpinning both methodologies through methodical close reading of primary theoretical texts. This establishes a deep comprehension of their philosophical foundations, examining how these frameworks interpret human experience, context, and designerly intentionality (Brown, 2009; Hekkert & van Dijk, 2011).

Objective 2: Critical Tension Mapping in the Age of AI

Building on this theoretical framework, the paper identifies and analyses ontological and functional conflicts between conventional design approaches and the evolving capabilities of artificial

intelligence. This section contrasts the algorithmic logic of generative models with the human-centric heuristics of Design Thinking, highlighting particular 'friction points,' including:

- **The Intentionality Gap:** The shift from designer-led visioning to prompt-based iteration. Recent work on AI image-generation technologies has conceptualized this as a transition from a 'history path' to a 'generation cycle,' where traditional iterative processes are replaced by prompt-driven cycles that produce entirely new imagery at each step (Zhang & Wang, 2025).
- **Synthetic vs. Empirical Empathy:** The difficulty of preserving user-centricity when direct human observation is replaced by data-driven synthesis. A mixed-methods study of 112 undergraduate students found that while 86% of responses to GenAI integration were positive, ethical concerns generated significant negative sentiment (62%), with students developing strategies for bias detection and source validation (Rana et al., 2025).
- **Computational Opacity:** The tension between the 'black box' character of AI-generated outputs and the reflective practice central to ViP (Schön, 1983).

Objective 3: Proposed Pedagogical Adaptations

The final objective culminates in the development of robust pedagogical adaptations for design curricula. Recognizing that the future of the field is increasingly intertwined with AI-augmented workflows, the paper proposes a recalibrated educational framework that preserves what is uniquely human while strategically leveraging computational capabilities.

2. Novel Approach

This study employs an interpretive, comparative, and critical methodology to investigate two established design frameworks through the lens of artificial intelligence, guided by three research questions:

First, what are the foundational principles and pedagogical assumptions of Brown's Design Thinking and Hekkert's ViP, and how do their approaches to creativity, user understanding, and problem-solving differ?

Second, which specific aspects of these methodologies are threatened, augmented, or rendered obsolete by generative AI capabilities including automated research synthesis, pattern recognition, ideation support, and prototype generation? Recent evidence indicates that AI-generated content significantly enhances design learning effects by improving usability, boosting students' intrinsic motivation and learning experiences, and elevating creativity across multiple dimensions including relevance, novelty, elaboration, and thoroughness (Chen et al., 2025). However, the same study cautioned against overdependence on AI and identified learning barriers requiring pedagogical intervention (Chen et al., 2025).

Third, how should design education evolve to maintain the human-centered values of these methodologies while integrating AI as a collaborative tool rather than a substitute for designerly thinking?

This analysis distinguishes itself by moving beyond both celebratory and alarmist positions on AI, offering a nuanced critique that identifies both vulnerabilities and enduring strengths within each methodology while grounding claims in recent empirical evidence. The paper contributes to emerging

discourse on AI-augmented design pedagogy while avoiding techno-deterministic conclusions. Recent theoretical work has proposed structured frameworks such as the Human-AI Co-Creative Design Process (HAI-CDP) model, which empirical comparative studies have shown substantially improves creative performance over traditional design processes (Lee & Park, 2025). This paper extends such work by examining how established design methodologies specifically ViP and Design Thinking can be adapted within such co-creative frameworks.

3. Research Methodology

This study adopts a qualitative, comparative, and critical framework to investigate the intersection of traditional design frameworks and generative technologies. The investigation commences with a rigorous textual analysis of Hekkert and van Dijk's Vision in Design (2011) and Brown's Change by Design (2009) to isolate their core pedagogical assumptions and implicit theories of creativity. These frameworks are then subjected to a systematic comparative analysis across dimensions such as contextual treatment, the role of empathy, and designer agency. To anchor this theoretical foundation within contemporary practice, a comprehensive literature review integrates recent empirical studies spanning 2024 to 2026, focusing on AI integration in design education and its impact on human-AI co-creative processes. This synthesis informs a critical interrogation of AI capabilities against traditional design assumptions, drawing on literature from human–computer interaction and design pedagogy to identify points of ontological conflict or synergy. Finally, the research derives propositional recommendations for curriculum modification and competency frameworks informed by recent intervention studies. While the scope of this paper is theoretical and does not include original empirical classroom trials, it serves as a rigorous conceptual basis for generating hypotheses to guide future empirical investigation.

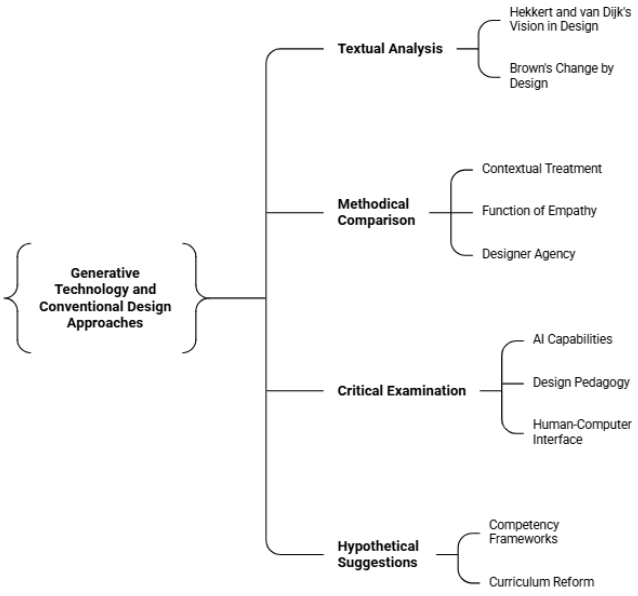


Fig. 2. Research Methodology

4. Deconstructing Two Design Methodologies: An Inferred Analysis

4.1 Vision in Product Design (ViP): Context-Driven Design

As a response to both purely technical engineering approaches and solely aesthetic styling, Hekkert and van Dijk's ViP emerged from industrial design education at Delft University of Technology (Hekkert & van Dijk, 2011). The methodology's three-layer model context, interaction, and product constitutes its core innovation.

- **The Context Layer:** ViP requires designers to construct a ‘future world’ prior to conceiving solutions. This context comprises factors: principles (stable human universals), states (relatively stable conditions), developments (changing phenomena), and trends (behavioural tendencies). Critically, context is not discovered but constructed by the designer through deliberate selection and composition. As Hekkert states, "The context is not a given, but a construction of the designer" (Hekkert & van Dijk, 2011). This constructive act is where recent AI-based context generation tools could either augment or undermine designerly agency.

- **The Interaction Layer:** Between context and product lies interaction the qualitative relationship between user and product. ViP uses invented descriptors to characterize interactions (‘confident zapping,’ ‘soothing surrender’), capturing the gestalt of the user–product encounter. Because "the product to be designed can only absorb meaning in relation to a user" (Hekkert & van Dijk, 2011), this layer is essential.

- **The Product Layer:** Only after context and interaction are defined does the designer address product qualities and, ultimately, tangible features. This sequence reverses conventional design processes that begin with product specifications.

- **Core Values:** ViP explicitly champions freedom, responsibility, and authenticity. The designer must be free from premature constraints, accountable for design choices, and authentic in personal vision (Hekkert & van Dijk, 2011).

4.2 Design Thinking: Human-Centered Innovation

As articulated in Change by Design, Brown's Design Thinking emerged from IDEO's consultancy practice and gained popularity as a management and innovation tool (Brown, 2009). Its accessibility has facilitated widespread adoption across sectors.

- **The Three Spaces:** Brown characterizes inspiration, ideation, and implementation as overlapping spaces rather than sequential stages. This non-linear framing acknowledges the iterative, exploratory nature of creative activity. Recent research on integrating generative AI into this framework has shown that AI tools can be effectively deployed across divergent and convergent phases, particularly when structured within established design process models (Wu et al., 2025).

- **The Desirability-Feasibility-Viability Triad:** Successful design balances what is desirable from a human perspective, technologically feasible, and economically viable (Brown, 2009). This triad provides a practical framework for evaluating design concepts a framework that AI can inform but not adjudicate.

- **Empathy as Method:** Design Thinking emphasizes empathy as "the effort to see the world through the eyes of others" (Brown, 2009). Techniques include ethnographic observation, analogous experiences (e.g., checking into a hospital as a patient), and immersion in user contexts. Whether AI can authentically contribute to this empathic stance remains contested.

- **Prototyping Culture:** "Thinking with your hands" through rapid, iterative prototyping is central. Brown advocates "failing early to succeed sooner" and emphasizes that prototypes should be "quick, rough, and cheap" (Brown, 2009). AI image generation and 3D synthesis now dramatically accelerate early-stage visualization, though physical prototyping retains unique value.

4.3 Comparative Analysis

Table 1. A Comparative Analysis for both Approaches

Dimension	**ViP (Hekkert)**	**Design Thinking (Brown)**
Primary Domain	Academic industrial design	Corporate/business innovation
Temporal Orientation	Future world construction (5-15 years)	Future world construction (5-15 years)
User Role	Implicitly defined through context factors	Actively observed and empathized with
Process Structure	Hierarchical (context→interaction→product)	Non-linear, overlapping spaces
Key Output	Vision (statement + interaction + qualities)	Prototype (tangible, testable)
Designer Stance	Authentic, responsible, free	Empathetic, experimental, optimistic
Role of Constraints	Deferred as long as possible	Embraced as creative fuel
Theoretical Grounding	Design methodology, psychology, philosophy	Business strategy, ethnography, pragmatism

5. AI's Challenge to Design Methodology Assumptions

The fundamental tenets of both ViP and Design Thinking are called into question by generative AI systems, especially big language models (GPT-4, Claude) and picture generators (Midjourney, DALL-E, Stable Diffusion).

5.1 Challenges to ViP

- **Context Construction:** ViP assumes that context formation is an exclusively human act of value expression, synthesis, and selection (Hekkert & van Dijk, 2011). However, AI can now

analyze millions of documents, identify emerging patterns, and generate plausible "future worlds" at scales unattainable for human researchers. A quasi-experimental study of 38 industrial design students found that AI-assisted classes achieved higher creativity and design quality, supported by enhanced efficiency and faster iteration across five project phases: research, ideation, design simulation, reporting, and prototyping (Tan & Lim, 2025). The question thus arises: Is designerly context construction still valuable when AI can generate more comprehensive, data-driven contexts? The evidence suggests the answer is affirmative but qualified AI augments but does not replace designerly judgment.

- **Interaction Descriptors:** ViP's invented interaction qualities rely on poetic, metaphorical language that expresses tacit, embodied knowing. While AI currently generates competent but often generic descriptors, research on designer intuition in AI-augmented workflows has identified that intuition plays a pivotal role during early ideation stages, gradually diminishing as design clarity increases but remaining integral throughout (Zhang & Wang, 2025). The distinction between authentic designer articulation and AI-generated description may thus persist where tacit, embodied knowledge is required.

- **Authenticity and Responsibility**: ViP's core value of authenticity assumes a singular designer-author. AI collaboration complicates authorship: When AI contributes significantly to context generation or concept development, whose vision prevails? How is responsibility allocated? A study of 112 undergraduate students using GenAI across Design Thinking's five stages found that students evolved from passive users to critical evaluators, developing strategies for bias detection and source validation—suggesting that authenticity and responsibility become more rather than less important in AI-augmented workflows (Rana et al., 2025).

5.2 Challenges to Design Thinking

- **Empathy and Observation:** Design Thinking's emphasis on firsthand ethnographic observation assumes that direct human encounter yields unique insights inaccessible through secondary sources (Brown, 2009). AI cannot (yet) experience being a patient in an emergency room or a subsistence farmer in Ethiopia. However, AI can synthesize thousands of ethnographic accounts, identify patterns across studies, and generate realistic user personas and scenarios. The critical question—whether this constitutes a form of "synthetic empathy" remains unresolved. Evidence suggests that AI-assisted assessment shows low statistical agreement with human instructors for empathy and pain point identification, with teachers consistently preferring human-assigned scores for these dimensions (Khan et al., 2025). This suggests that empathy remains a domain where human judgment is not easily automated.

- **Brainstorming:** Brown champions brainstorming as a collaborative ideation method, citing evidence that teams building on each other's ideas produce more creative outcomes (Brown, 2009). AI can now generate hundreds of variations on a theme, integrate concepts from disparate domains, and participate in human–AI brainstorming sessions. A randomized crossover study found that AI-assisted ideas more frequently resembled existing products and exhibited reduced semantic divergence, suggesting convergence in the way ideas were formulated (Kim et al., 2025). This finding complicates the assumption that AI simply expands creative possibility; it may also channel ideation toward predictable patterns.

- **Prototyping:** AI image generation and 3D model synthesis dramatically accelerate prototyping. What once required days in a model shop can now be generated in minutes. AIGC-based design methods have demonstrated high usability throughout all four design thinking stages, enhancing students' intrinsic motivation and learning experiences while improving creative outcomes in relevance, novelty, elaboration, and thoroughness (Chen et al., 2025). However, this efficiency gain challenges Brown's emphasis on "thinking with your hands," though it may democratize prototyping for those without access to physical workshops.

5.3 Shared Vulnerabilities

- **User Research Automation:** Both methodologies assume that user research requires human presence, observation, and interpretation (Brown, 2009; Hekkert & van Dijk, 2011). AI systems can now analyze customer reviews, social media discussions, support tickets, and usage data to produce insights that may complement or even precede human observation. A study integrating ChatGPT and Midjourney into divergent and convergent design phases found that the educational model fostered students' creativity and problem-solving skills while demonstrating the efficacy of AI integration in design curricula (Wu et al., 2025).

- **Idea Generation Quantity**: Both approaches value divergent thinking and generating many options. AI excels at combinatorial creativity, producing vast numbers of variations. The bottleneck shifts from generation to evaluation and selection a shift requiring new pedagogical emphases on curation and critical judgment.

- **Pattern Recognition:** Both ViP's clustering of context factors and Design Thinking's synthesis of observations depend on human pattern recognition. AI's ability to identify non-obvious correlations and patterns in complex datasets challenges the uniqueness of human synthetic capabilities. However, research also indicates that AI effectiveness in creative tasks is experience-dependent: for novice designers, AI's primary value lies in facilitating idea generation, whereas for experienced designers, it contributes more to elevating the quality and refinement of creative outcomes (Lee & Park, 2025).

6. SWOT Analysis: ViP and Design Thinking in the AI Era

- **Strengths (Preserved)**

  Human Embodied Knowing: Both methods value tacit, embodied knowledge that AI cannot replicate the feeling of using a product, the emotional resonance of an experience, the ethical weight of a design decision. Research on designer intuition in AI-augmented workflows confirms that intuition remains integral throughout the creative process, fluctuating in intensity but never disappearing (Zhang & Wang, 2025).

  Value Articulation: ViP's explicit values (freedom, responsibility, authenticity) and Design Thinking's implicit humanism provide ethical frameworks that AI lacks. Studies show that GenAI, when pedagogically scaffolded, augments rather than replaces human judgment, with students developing epistemic vigilance as they learn to critically evaluate AI outputs (Rana et al., 2025). Designers must articulate why certain futures are worth building a task beyond current AI capabilities.

Contextual Judgment: Both methods require judgment about which factors matter, which trade-offs are acceptable, and which directions are worth pursuing. AI can inform but not replace this judgment. Research on human–AI co-creation indicates that effective collaboration depends on assigning tasks where AI's strengths (scalability and precision) complement rather than substitute for human judgment (Norman, 2013; Simon, 1996).

Stakeholder Alignment: The social processes of design building consensus, negotiating trade-offs, aligning diverse stakeholders remain fundamentally human activities that AI can support but not lead (Cross, 2011).

- **Weaknesses (Exposed)**

Time-Intensive Research: Both methods require extensive upfront research (context building in ViP, ethnographic observation in Design Thinking). AI can dramatically accelerate these phases. A quasi-experimental study showed that AI-assisted classes applied AI tools across five project phases, achieving higher creativity and design quality through enhanced efficiency and faster iteration (Tan & Lim, 2025).

Limited Pattern Capacity: Human designers can only process limited information. AI can identify patterns across datasets of millions, potentially revealing factors human researchers would miss.

Ideation Bottlenecks: Human brainstorming sessions produce dozens of ideas; AI can generate thousands. The bottleneck shifts from generation to evaluation and selection a shift requiring new assessment approaches. Research on AI-assisted creative ideation found predominantly passive and directive use, with limited exploratory or collaborative engagement, suggesting that students require pedagogical guidance to move beyond passive consumption of AI outputs (Kim et al., 2025).

Prototyping Fidelity Gaps: Physical prototyping remains valuable, but AI-generated visualizations can communicate design intent faster and more cheaply for early-stage exploration.

- **Opportunities**

Hybrid Context Building: AI could generate preliminary context analyses that designers then refine, question, and personalize preserving ViP's emphasis on designerly construction while leveraging AI's processing power.

AI as Empathy Amplifier: AI could synthesize user research from multiple sources, identify marginalized perspectives, and help designers develop richer empathic understanding before field research, while preserving direct human observation for validation and depth.

Generative Prototyping Co-pilot: AI could generate multiple concept variations, allowing designers to explore broader solution spaces before committing to physical prototyping. Studies have demonstrated that AIGC-based design methods significantly enhance usability, boost intrinsic motivation, and elevate creativity across multiple dimensions including relevance, novelty, elaboration, and thoroughness (Chen et al., 2025).

Metacognitive Skill Development: Rather than teaching fixed methodologies, design education could emphasize the metacognitive skills needed to orchestrate human–AI creative collaboration. The Human–AI Co-Creative Design Process (HAI-CDP) model provides one structured framework for such integration, with empirical evidence showing substantial improvement in creative performance over traditional design processes (Lee & Park, 2025).

- **Threats**

Methodological Obsolescence: Students may perceive traditional design methods as irrelevant when AI can produce "good enough" outputs faster, potentially devaluing the slow, reflective practices that ViP and Design Thinking champion. Studies caution against overdependence on AI and identify learning barriers requiring pedagogical intervention (Chen et al., 2025).

Erosion of Empathy: Over-reliance on AI-generated user insights might reduce designers' motivation for direct human engagement, undermining the empathic foundation of both methods. A study on AI-assisted assessment found low agreement between AI scores and human instructors for empathy and user understanding, with teachers expressing concerns about AI's limitations in capturing contextual nuance and creative insight (Khan et al., 2025).

Homogenization of Output: If all designers use similar AI tools with similar training data, design outputs may converge, reducing the diversity and originality that both methods value. Research on AI-assisted ideation found that while thematic diversity was preserved, semantic divergence was significantly lower, suggesting convergence in the way ideas were formulated (Kim et al., 2025).

Attribution and Authorship Confusion: When AI contributes significantly to context, interaction, or product definitions, questions of credit, responsibility, and ownership become legally and ethically ambiguous. Studies report that students raised concerns about authorship ambiguity and bias as significant issues requiring pedagogical attention (Rana et al., 2025).

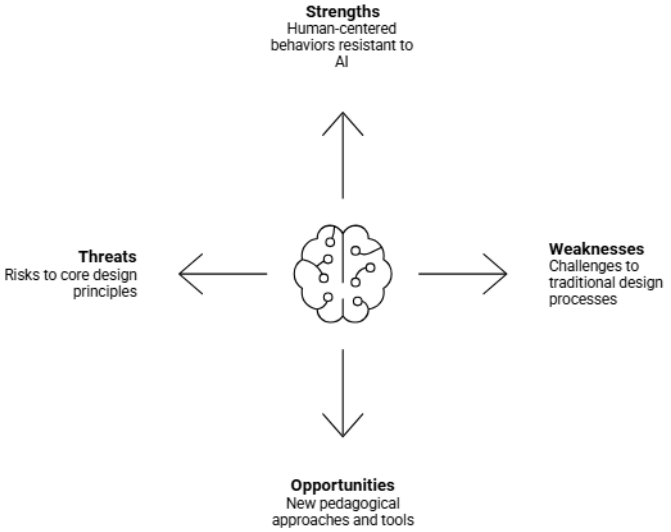


Fig. 3. SWOT Analysis

7. Pedagogical Implications: Toward AI-Augmented Design Thinking

The analysis suggests that neither wholesale rejection nor uncritical adoption of AI tools is appropriate. Instead, design education should evolve in four key directions.

7.1 From Methodology to Metacognition

Rather than teaching ViP or Design Thinking as rigid procedures, educators should emphasize the metacognitive skills of selecting, adapting, and orchestrating methods including knowing when to use AI tools and when to set them aside. Students need frameworks for deciding: Does this phase of the process benefit from AI acceleration, or does it require human-only engagement? Studies have shown that students who began with AI support produced more original and diverse ideas across both AI-assisted and unaided tasks, suggesting a lasting positive transfer effect when AI is introduced early and pedagogically guided (Kim et al., 2025).

The development of critical AI literacy emerges as a multidimensional competence encompassing creativity, ethics, and critical reasoning essential for navigating AI-mediated learning environments (Rana et al., 2025). This includes "epistemic vigilance" the ability to critically evaluate AI outputs, recognize embedded biases, and verify claims which students developed through structured engagement with GenAI tools across design stages (Rana et al., 2025).

7.2 AI as Collaborative Partner, Not Replacement

AI should be positioned as a design collaborator with specific affordances and limitations. The Human–AI Co-Creative Design Process (HAI-CDP) model provides one structured approach, demonstrating that such frameworks substantially improve creative performance, particularly through experience-dependent effects: for novice designers, AI facilitates idea generation; for experienced designers, AI contributes more to elevating the quality and refinement of creative outcomes (Lee & Park, 2025).

Students should learn to:

- Prompt AI for context factor generation while maintaining critical distance
- Use AI for synthetic user research while validating through direct observation
- Generate AI concept variations as stimuli for human refinement
- Distinguish between AI-combinatorial creativity and human-original creativity
- Develop strategies for bias detection and source validation (Rana et al., 2025)

7.3 Preservation of Embodied Practice

Hands-on making, direct user observation, and physical prototyping remain essential not despite AI but because of it. These embodied practices cultivate the tacit knowledge and empathic resonance that differentiate human design from AI generation. Research on designer intuition confirms that intuition plays a pivotal role during early ideation stages, diminishing only as design clarity increases (Zhang & Wang, 2025). Design programs should protect time and space for these activities even as they

integrate AI tools, recognizing that the haptic, sensory, and empathic dimensions of design resist algorithmic capture.

A critical insight from assessment research is that teachers preferred human-assigned scores for empathy and pain point identification, highlighting limitations of AI in capturing contextual nuance and creative insight (Khan et al., 2025). This reinforces the importance of preserving human-led empathic practices rather than ceding them entirely to AI.

7.4 Ethical and Critical AI Literacy

Students need frameworks for critically evaluating AI outputs, recognizing embedded biases, understanding data provenance, and maintaining accountability for AI-influenced design decisions. Studies have shown that GenAI, when pedagogically scaffolded, augments rather than replaces human judgment, with students evolving from passive users to critical evaluators (Rana et al., 2025). However, the same research reveals that concerns about bias and authorship ambiguity remain significant 62% of negative sentiment in student responses related to ethical concerns (Rana et al., 2025).

ViP's values of responsibility and authenticity (Hekkert & van Dijk, 2011) become particularly relevant here. Educators should help students navigate the ethical complexities of AI collaboration, including questions of attribution, the risk of homogenization, and the maintenance of critical distance from AI-generated outputs.

8. Conclusion: Synthesizing Human and Machine Intelligence

ViP and Design Thinking represent sophisticated responses to design challenges that predate the widespread availability of generative AI (Brown, 2009; Hekkert & van Dijk, 2011). Their core insights that context matters, that interaction precedes product, that empathy is essential, that prototyping accelerates learning remain valid. However, their specific procedures and temporal assumptions require reconsideration in light of AI's capabilities.

The AI era does not render these methodologies obsolete but demands their adaptation. ViP's context construction can be augmented by AI-generated factor analyses while preserving designerly judgment in selection and composition. Design Thinking's empathy phase can be accelerated by AI synthesis of existing research while preserving direct human observation for validation and depth. The emerging evidence supports this hybrid approach: AI-assisted classes achieve higher creativity and design quality when AI is integrated within reflective and human-centered pedagogical frameworks (Tan & Lim, 2025).

An important insight from recent research concerns the differential impact across designer experience levels. AI's value is not uniform: novice designers benefit most from AI's ideation support, while experienced designers leverage AI for refinement and quality elevation (Lee & Park, 2025). This suggests that pedagogical integration of AI should be phased and adaptive rather than one-size-fits-all.

Most fundamentally, both methodologies must evolve from teaching how to design to teaching how to orchestrate human–AI design collaboration. The designer of the future is not replaced by AI but elevated to a new role: curator of possibilities, arbiter of values, and steward of the human experiences that remain beyond computation. As one study concludes, AI can serve as a valuable cognitive and

creative partner when integrated within a framework that maintains critical thinking, originality, and ethical responsibility (Tan & Lim, 2025).

9. Contributions of the Study

Theoretical Contribution: This paper advances discourse on design methodology by systematically analyzing how two influential frameworks ViP and Design Thinking are challenged by generative AI, identifying specific points of tension and complementarity. It further integrates recent empirical evidence (2024–2026) to ground these theoretical claims in emerging research.

Practical Contribution: The analysis offers concrete recommendations for design educators seeking to integrate AI tools while preserving human-centric values, including proposed shifts in curriculum emphasis, new competency frameworks (metacognitive orchestration, critical AI literacy), and phased integration strategies tailored to student experience levels.

Critical Contribution: By avoiding both techno-optimism and techno-pessimism, the paper provides a balanced framework for evaluating AI's role in design education, recognizing both genuine threats (homogenization, empathy erosion, authorship confusion) and genuine opportunities (enhanced creativity, accelerated iteration, democratized prototyping).

10. Limitations and Further Recommendations

Limitations: This paper is theoretical and propositional rather than empirical. It does not evaluate specific AI tools in classroom settings, nor does it measure learning outcomes from AI-augmented design pedagogy. The analysis is also limited to generative AI as it exists at the time of writing; rapid technological change may outpace analysis.

Further Recommendations: Future research should conduct longitudinal studies of design students using AI tools across complete projects, comparing learning outcomes with traditional methodology instruction. Empirical investigations should examine whether AI augmentation enhances or diminishes creative originality, critical thinking, and empathic engagement over extended timeframes. Additionally, design researchers should develop and test specific hybrid methodologies that systematically integrate AI capabilities while preserving human values, building on frameworks such as HAI-CDP (Lee & Park, 2025).

Assessment practices require particular attention. Research indicates that current AI-assisted assessment shows low agreement with human instructors for empathy-related dimensions (Khan et al., 2025), suggesting the need for hybrid assessment models that integrate computational efficiency with human judgment. Finally, the ethical dimensions of AI integration including authorship attribution, bias mitigation, and data provenance require continued scholarly attention and pedagogical development.

11. Broader Context: Cultural and Social Relevance

This study situates design methodology within broader questions about human creativity in an age of increasingly capable machines. The tensions identified between efficiency and reflection, between automation and authenticity, between pattern recognition and judgment extend beyond design to all

creative and knowledge work. How design education resolves these tensions may offer models for other disciplines grappling with similar challenges.

The stakes extend beyond pedagogy to fundamental questions about human agency. If AI can generate plausible contexts, produce competent interactions, and render convincing prototypes, what remains uniquely human? This paper has argued that values freedom, responsibility, authenticity, empathy remain beyond computation. But preserving these values requires intentional pedagogical design, not technological inevitability. As one study concluded, "GenAI, when pedagogically scaffolded, augments rather than replaces human judgment" (Rana et al., 2025), suggesting that the challenge is not to resist AI but to orchestrate its integration in ways that amplify rather than diminish what is distinctly human in design practice.

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Ted Nelson's "10-Minute Rule" and Its Relevance to Contemporary Usability Design: A Positional Paper

ABSTRACT

This paper is an opinion with discussion and suggestive points that re-visit and speculate the 10-Minute Rule by Ted Nelson, which was published in Dream Machines (1974) (Nelson 1974), and its relevance to the present day usability and interface design. This opinion paper claims that the principle concept of Ted Nelson still remains applicable, especially in consumer-facing digital applications. In such cases, the effort required to understand the interface at first instance of usage by users, the ease of further learning by users, and an user engagement which deems intuitive are the determining factors for the adoption and engagement levels of the users. However, this opinion paper also discusses that the 10 minute rule of thumb may not suffice in the case of interfaces that deal with complex professional applications, technical engineering like CAD softwares, and systems that need prerequisite expertise. Such application interfaces may demand higher involvement of users due to more complex functionalities, a higher cognitive load demand, and a steeper learning curve especially for the first time users. To further support this argument, the paper relates the proposal by Nelson to some of the existing concepts of usability such as minimal design, progressive disclosure and reduced cognitive load - namely Hicks Law, Jacob Neilsen 10 usability principles and progressive learning. The rule can be applied in the current software, and it provides examples of the industry. This paper reinterprets Ted Nelson's 10-Minute Rule as a layered usability model, where usability progresses from initial comprehensibility to guided expansion and expert mastery. This reframing positions the rule not as a fixed temporal benchmark, but as part of a broader usability continuum applicable to contemporary interface systems.

Keywords - Usability design, Human–computer interaction (HCI), User interface design, Learnability, Progressive disclosure

1. Introduction

This Usability was an early and provocative Usability benchmarking. The 10-Minute Rule of (Nelson 1974) suggested an early and provocative standard that a user should be able to initiate meaningful interaction with a system in a brief short span of time of maximum 10 minutes.

The relevance of this rule in contemporary systems requires closer examination, particularly across varying levels of system complexity. The further relevance of this rule is a subject of closer consideration in the contemporary design landscape where users are exposed to a broad array of systems, starting with a very simple consumer application and going all the way to the most complex professional platform.

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This paper argues that Nelson's principle remains applicable in systems prioritising rapid adoption, while requiring reinterpretation for complex, professional environments. Nevertheless, that rule does not really slice across all types of systems, particularly those ones that have stratified workflows, additional cognitive load, and gradual learning. That is common in professional software, professional-level tools, and the new AI-assisted and immersive environments we are currently experiencing. When that is the case, then you cannot simply gauge usability based on what a user can do within the initial few minutes. Such a method is too superficial and lacks the entire learning process. This paper reinterprets Nelson's idea by proposing a layered usability framework in which initial interaction, progressive learning, and long-term mastery are understood as distinct but connected phases of usability.

1.1 Background of the "10 Minute Rule"

One of the first practitioners of user-centered design (UCD) in human-computer interaction (HCI) was Ted Nelson with his vision of interfaces that were designed to be easy to use in the first place. According to Nelson, a 10 minutes rule, a user should master the key features of a system in ten minutes (Nelson 1974). This rule was composed by Nelson at a time when computers were extremely hard to operate. Text commands such as early DOS or UNIX were used in computers at that time. They were difficult to comprehend, took a lot of thought, and presented insufficient information. Even such basic interfaces as Apple or Windows produced by Microsoft also never existed at the time. The vision of Nelson is still respected today. His thoughts were well before his era and particularly when we consider the modern issues of simplifying computer data to users. Most computer systems used in the 1970s needed technical knowledge, extensive training and specialized skill. In the case of hypertext itself - Nelson's introduction to hypertext technology was itself a huge leap and a successful progress to make the digital solutions more navigation friendly. This also reflects the importance and value of Nelson's work in the world of digital technology. He emphasized intuitive design as a precursor of later usability movements in graphical user interfaces (GUIs) and current UX/UI development. Although his rule of 10 minutes in user interface systems is still very influential, it seems that its boundary is reached when dealing with complex, professional grade software.

2. Established Laws, Principles and Heuristic Frameworks That Resonate and align with Ted Nelson's '10 Minute Rule'

Does Jakob Nielsen's minimal design principle (Jakob Nielsen 2020), hicks law, and progressive exposure have relation or resonance (align) with Ted Nelson's 10 minute rule? Indeed, Ted Nelson's 10 minute rule is related to and follows Jakob Nielsen's minimal design principles (Dowding and Merrill 2018), Hick's Law, and progressive exposure in that they all lead to less user interaction and better usability.

The principle of a minimalist design, as explained by Jakob Nielsen in his 10 usability principles, simply states that to make something easy to understand by the user, we may eliminate all the information elements that may not actually be needed at that point of time within the user journey. This would support the approach to decrease the overload on the user's brain (Virzi 1990). It is quite similar to the 10-minute rule mentioned by Ted Nelson: is a person cannot complete a meaningful task within 10 minutes, then something is wrong and it means that the system fails to prove as a good user interface design. Both of those concepts have everything to do with a smoother and more efficient user experience. Of course, Hick Law (which states that the time it takes to decide increases logarithmically with the number of choices available at the given point of time to the user) is related

naturally to the 10 minute rule, where again designers are encouraged to maintain a small list of options so that decisions do not take an eternity to be made (Pearson and Van Schaik 2003). This rule surely simplifies it to provide some guidance to the users and at the same time allow them to complete tasks during such a limited 10 minutes. The fact that progressive exposure supports the 10-minute rule, which informs you that you only introduce users to more complex features when they feel comfortable with a system. Modern interaction design increasingly relies on staged exposure of functionality in order to balance learnability with interface complexity (Google 2025). The reason behind its effectiveness is that individuals are capable of doing a basic operation fast as long as the UI presents that which is required and then progressively add more features as they grow more accustomed to it (Pearson and Van Schaik 2003). All these notions combined do bring out the nitty-gritty of making design simple, efficient, and user-friendly as you are constructing interfaces. With these ideas in place a designer can wind up with products that are insanely easy to use when you first get them into your hands and even after you introduce the more complex stuff still has a smooth learning curve.

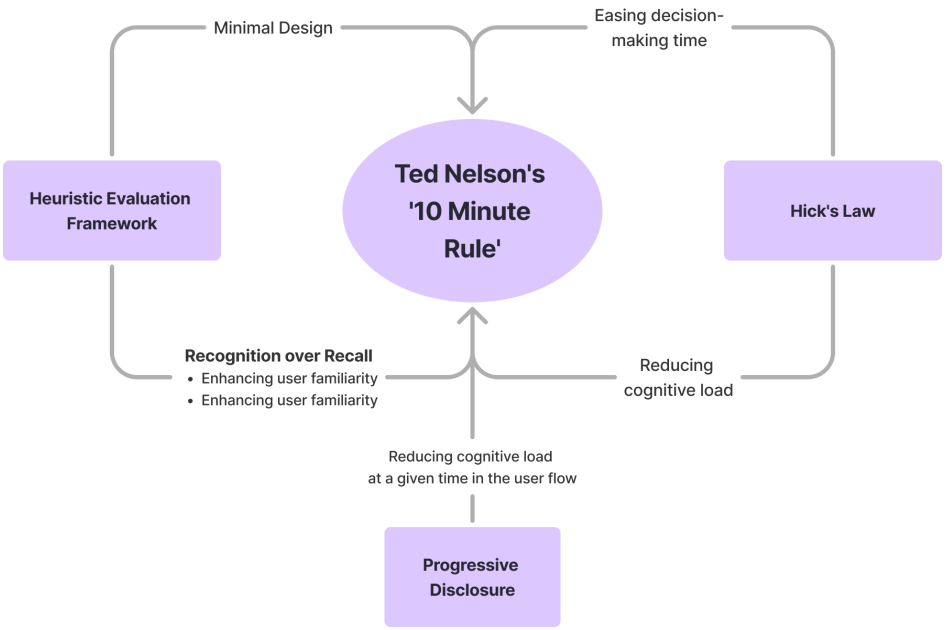


Fig. 1. Conceptual relationship between Hick's Law, Jakob Nielsen's usability principles, progressive disclosure, and Ted Nelson's 10-Minute Rule.

Fig.1. conceptually illustrates the paper's central argument: the relevance of the 10-minute rule depends on the relationship between initial ease of use, required learning effort, and the value a system offers over time. In simple consumer-facing systems, usability is often expected to be immediately accessible. In contrast, expert and professional systems may demand a steeper learning curve, but can still be considered usable if they enable progressively higher value through deeper engagement.

3. Analysis: When The "10-Minute Rule" Actually Works?

In cases where ease of learning makes all the difference in user take up, Ted Nelson's principle is highly relevant. According to some of the available usability rules, user interfaces are supposed to be

easy to learn, simple, and as intuitive as possible. An analysis on mobile learning portals also provided ten important rules of usability that include decision making by the users, their interpretation, interaction and interface design since mobile devices change frequently (Seong 2006). The principles of ease of learning are also applied in these rules since the goal is to develop extremely effective and convenient interfaces. Nevertheless, as other studies have indicated, adherence to usability principles may in fact complicate user decision-making in an interface (Tsopra et al. 2014). It is ironical and also very critical that designers should remember when making their decisions. An example is the study conducted by Tsopra which determined the level of confidence and perceived usability of the system. The paper has examined two interface types in clinical decision support systems. It concluded that the interfaces with the principles of usability helped doctors feel more confident and believe that the system was more friendly (Tsopra et al. 2014). Therefore, simplicity and ease of usage should be prioritised in terms of interfaces since they may raise the number of individuals who use the system and the level of satisfaction they experience.

3.1 Consumer Applications and Mainstream Software

The Convincing examples where the 10-Minute Rule is prolific and successfully applied is in several leading business to consumer applications and softwares. Operating systems (e.g., Apple iOS, Google's Android) affording on minimal onboarding time, as its thoughtfully designed to allow new users to navigate the interface with absolute ease. Several features of the design like natural gestures which are very human-intuitive, guide tours at the start, and useful tooltips, - they make sure that first-time users adapt soon to the their interface.

Examples :

Google material design system principles are focused on usability, predictability, and clarity that aligns well with the usability ideals of Nelson (Google 2025).

Google's Material Design system (Google 2025).emphasises clarity, predictability, and ease of interaction, which supports rapid user onboarding. This aligns with the first layer of the proposed usability model, where immediate comprehension and low cognitive load enable users to begin meaningful interaction within a short time.

Apple's iOS design principles similarly prioritise intuitive interaction and consistency, enabling users to navigate core functions with minimal learning effort. This reflects the applicability of Nelson's principle in systems designed for immediate accessibility.

Examples such as Google Docs, Spotify, and Instagram demonstrate how interfaces can enable users to quickly access core functions with minimal effort. These systems prioritise initial comprehensibility, supporting the first layer of usability where rapid task initiation is critical for adoption.

Example: Google Doc vs. Microsoft Word. Google Docs exemplifies the applicability of the 10-Minute Rule by allowing users to begin writing immediately within a minimal interface environment. In contrast, Microsoft Word presents a broader feature set that increases initial cognitive load and requires prior familiarity. This comparison illustrates the trade-off between rapid onboarding (Layer 1) and long-term functional depth (Layer 3) within the proposed usability model.

4. Limitations of the 10-Minute Rule

Although Nelson rule can be applied in consumer friendly applications, it faces severe constraints in situations where the complexity of the software is required.

4.1 Professional and Technical Software

The 10-minute barrier is unrealistic because many professional-level applications have a steep learning curve. Such disciplines as graphic design, engineering, data science, and programming demand software that is both powerful and complex in nature.

Examples: Adobe Photoshop and Blender. Adobe Photoshop demonstrates the limitations of the 10-Minute Rule in complex systems. While basic functions may be accessible, the full capabilities of the software require extended learning and practice. This aligns with the higher layers of the usability model, where usability is defined not by immediate ease, but by the system's capacity to support progressive learning and expert performance.

Likewise, 'Blender' presents a similar case, where a steep learning curve is necessary due to the complexity of tasks supported. In such systems, usability is better evaluated in terms of long-term capability and efficiency rather than initial accessibility, reinforcing the need for a layered understanding of usability (Nielsen 1994).

4.2 Programming and Development Environments

Coding languages such as Visual Studio Code, MATLAB and Jupyter Notebook of Python have software development environments that require users to be familiar with the principles of coding, and thus, the 10-minute rule is not feasible. Modern platforms however incorporate learning aids to reduce the learning curve.

4.3 Python vs. Assembly Language

Python illustrates partial alignment with Nelson's principle, as its syntax allows beginners to write simple programs quickly. However, deeper programming competence requires conceptual understanding and problem-solving skills that extend beyond initial interaction, highlighting the limitations of a strictly time-based usability measure.

4.4 Counterpoint: Progressive Learning Models

Many systems have been designed to use a progressive learning model, where users can learn the basics quickly, but acquire more advanced skills as time goes on, instead of trying to learn everything in ten minutes. This adaptation embodies the spirit of the reign of Nelson and real world complications.

5. Speculative discussion: the future of usability and the 10-minute rule.

With the changing technology, what do we say about the rule of Nelson in the contemporary world?

5.1. AI-Driven Interfaces and Automation

The emergence of AI-based interfaces (e.g., ChatGPT, Google Bard, GitHub Copilot) puts the conventional principles of usability to the test. The fact that AI is able to process natural language input means that users do not have to learn complex commands manually. Conventional principles of

usability are broken using AI interfaces such as ChatGPT, Google Bard, and GitHub Copilot. The current users do not have to memorise a difficult syntax of commands, the models learn natural language and can take independent actions. This allows its users to accomplish multiple tasks within ten minutes using features such as DeepSeek or ChatGPT, which would otherwise be difficult due to the absence of AI. Consequently, the ten-minute rule comes in handy in AI environments. New aspects of usability are introduced by Virtual Reality (VR) and Augmented Reality (AR). Spatial interfaces are created by hand-tracking and immersive learning and are usually out of time with Nelson. This gap is still being bridged by more intuitive onboarding by developers such as guided VR tutorials.

Example: ChatGPT as a Low-Barrier Interface

The AI-based interfaces such as ChatGPT reduce barriers to entry by allowing users to perform complex tasks through natural language interaction. Research in human–AI interaction suggests that conversational systems can significantly lower usability barriers by translating complex computational processes into natural language workflows (Amershi et al. 2019). This effectively strengthens Layer 1 (initial comprehensibility), while simultaneously enabling access to advanced functionality, thereby compressing multiple layers of usability into a shorter interaction span.

This suggests that AI-assisted systems may extend the applicability of the 10-Minute Rule by lowering initial cognitive barriers. The growing integration of generative AI into consumer and professional systems demonstrates how intelligent assistance mechanisms can compress learning effort while still enabling advanced functionality (OpenAI 2024; Xu et al. 2023). However, they do not eliminate the need for deeper understanding in complex tasks, reinforcing the layered nature of usability.

5.2 Critique: Where the “10-Minute Rule” Falls Short

Nelson’s rule is well aligned for consumer friendly applications where the user goals are less complex and here, we observe a progressive disclosure approach (i.e. information elements are introduced step wise like a wizard design pattern instead of all information elements shown to user within an interface at the same point of time), However, when it comes to applications where higher complexity is needed, this 10 minute rule may not work well. Heuristics developed for specific domain points that the traditional heuristics (such as Nielsen’s) do not sufficiently assess relevant features of particular applications. (Quiñones and Rusu 2017).

Case Example: Technical and Professional Business Software

In systems requiring intricate and multi-layered functionality, usability cannot be adequately assessed through initial interaction alone. Instead, these systems demonstrate that usability must be evaluated across multiple stages of engagement, supporting the layered model proposed in this paper. The 10-minute rule of Nelson is not easily possible in such a case. Some of the examples are surface-modeling software in industrial design, graphic design software, CAD modeling software, engineering analysis software, programming environments, and data mining and analytics software.

Case Example: AutoCAD, Blender and Adobe Photoshop

Adobe has published a great number of beginner guides and tutorials in recent years.

Advanced skills in the use of these applications cannot be learned without professional training and practice. Likewise, AutoCAD (a 2-D drafting software) and Blender (a 3-D modeling software) are

both extremely difficult to learn, especially as a beginner, attempting to complete even simple functions. But this difficulty is frequently necessary in order to do professional work, and it may aid the work in also accelerating it. The usability should be able to balance between a high functionality and an elegant look.

Progressive learning: Progressive learning is currently employed by many platforms. The initial ten minutes are dedicated to establishing a base, which allows learners to understand the simplest concepts and then proceed to the more complex ones. This approach considers the rule of Nelson and puts it in context of real-life constraints.

6. Proposed Revised Usability Rule

Rather than treating the 10-Minute Rule as a strict temporal constraint, this paper proposes a layered usability model that conceptualises usability as a progression across multiple levels of user engagement.

Proposed Layered Usability Model

Layer 1: Initial Comprehensibility

Within the first 10 minutes, users should be able to understand the purpose of the system and perform at least one meaningful task.

Layer 2: Guided Expansion

As interaction continues, systems should introduce additional functionality through progressive disclosure, tutorials, and contextual guidance. Contemporary usability research continues to emphasise that reducing cognitive effort and simplifying interaction pathways remain central to effective interface learnability (Shneiderman 2022).

Layer 3: Expert Mastery

Over extended use, the system should support efficiency, depth, and customisation for advanced users.

Synthesis: This layered model reframes the 10-Minute Rule as a usability continuum rather than a fixed pass–fail condition.

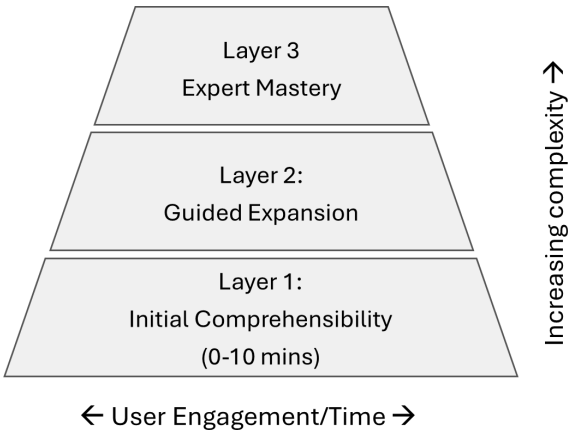


Fig. 2. Layered usability model based on reinterpretation of Nelson's 10-Minute Rule, showing progression from initial comprehensibility to expert mastery.

Table 1 further elaborates the layered usability model by mapping each layer to user capability, design strategies, and representative systems.

Table 1. Layered usability model showing progression of user capability, design strategies, and example systems

Layer	Timeframe	User Capability	Design Strategy	Example Systems
Layer 1: Initial Comprehensibility	0–10 minutes	Users understand system purpose and perform basic meaningful tasks	Minimal interface, clarity, intuitive controls, low cognitive load	Google Docs, Instagram, basic mobile apps
Layer 2: Guided Expansion	Short-term interaction (hours to days)	Users explore additional features and expand functionality	Progressive disclosure, tooltips, onboarding tutorials, guided workflows	Adobe Photoshop (beginner mode), Figma, mobile OS onboarding
Layer 3: Expert Mastery	Long-term use (weeks to months)	Users achieve efficiency, customization, and advanced performance	Shortcuts, customization, advanced features, automation	AutoCAD, Blender, MATLAB, professional IDEs

7. Influence on interface design practice

The layered usability model proposed in this paper has direct implications for interface design practice. It suggests that usability must be evaluated across multiple stages of interaction rather than at a single moment of first use.

To begin with, designers are advised to remain on track and make design decisions that enable users to get the key point in a short period particularly when the user is dealing with a product that they engage directly with. The speed of mastering the fundamentals by users is a critical test in usability research and designers and researchers rely on it as a powerful benchmark.

Complex systems should be evaluated based on their ability to support progression from initial comprehension to deeper capability, rather than solely on immediate task completion.

Hence, for a complex interface system, rather than expecting the same quick learning adaptability by users , designers may consider to design interfaces in such a way that they can be learned progressively with simple tasks being available early and complex features being introduced as one learns through interaction and exploration. The third aspect is that the usability expectations could be further transformed by new technologies like artificial intelligence features and immersive environments that do both – they reduce barriers at entry level, as well as they expand the capabilities, functional features of the system and also ease cognitive load for first time or regular users as per case. Under these conditions, ease of usability in 10 minutes may not be considered as a temporal empirical standard but as a spectrum between the initial accessibility and the gradual mastery.

8. Conclusion

The 10-Minute Rule is Reconsidered in Modern Interface Design. This thumb rule proposed by Ted Nelson is a highly debated but still persisting tenet in the discipline of usability that has held up its relevance for a number of decades from its origination. The principle represents an essential hope in interaction design - that people will be able to have a meaningful interaction within a short period of time, obviating the need for extensive training or exploration. Such an assumption finds considerable resonance across the vast majority of contemporary consumer-facing artifacts - mobile applications, streaming platforms, and everyday productivity tools - all of which witness the adoption of users tightly coupled with streamlined onboarding and immediate operability of the product.

The main argument presented in this paper, however, states that this rule cannot be considered a general axiom that can be applied to all digital systems. It behooves us to look at the matter from a more nuanced and contextual perspective. Professional grade and expert centric software systems such as design frameworks, engineering suites, and advanced analysis systems are pre-disposed to have layered functional strata, therefore they are inherently more complex to master. In these contexts, usability cannot be measured in terms of short-term accessibility metrics but instead needs to be measured in terms of the system's ability to support richer, longer-term interactions and support progressive productivity over longer periods of time.

This paper suggests utilization and redefinition of Nelson in the contemporary design practice rather than casting it off as an old concept. This paper extends Nelson’s insight by framing usability as a layered progression from initial comprehension to expert mastery, thereby repositioning the 10-Minute Rule within a broader and more flexible usability framework. In that regard, usability should therefore be understood not as a single moment of interaction, but as a structured progression across multiple levels of user engagement. As digital systems continue to evolve, as AI-assisted interfaces and immersive interaction environments are created, designers are no longer expected to make system immediately usable, but to create learning paths that allow users to gradually move between basic interaction to more advanced interaction. Current discourse in human-centred computing increasingly frames usability as an adaptive relationship between users, intelligent systems, and contextual assistance mechanisms (Shneiderman 2022; Brdnik, Heričko, and Šumak 2022). This concept of Nelson can therefore be seen to apply to the modern day not as a time imperative but as a principle benchmarking of what good design must avoid when it comes to the first time a user encounters a system.

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