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Reimagining Vernacular Architecture: Integrating Traditional Design into Contemporary Homes for Sustainable Living

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Abstract

The scope of architecture today extends beyond merely providing shelter and has instead addresses sustainability, local traditions, and cultural identity. Chettinad architecture, originating from the Chettinad region of Tamil Nadu and crafted by the Nattukottai Chettiars, is a unique blend of Indian and European influences. This vernacular style is renowned for its grand, intricately designed mansions in Karaikudi, featuring ornate woodwork, traditional Athangudi tiles, and distinct lime plaster techniques that showcase the artisanship and cultural heritage of the region. This research paper provides a historical overview of Chettinad architecture, examining its origins, stylistic characteristics, and the role of locally sourced materials. It explores how traditional Chettinad design principles-such as the use of natural ventilation, shaded courtyards, and thick walls-are adapted in select contemporary residences to promote sustainability. Insights from three architects highlight the creative reinterpretation of Chettinad elements in modern homes while simultaneously catering to distinct geographical locations. These contemporary residences honor the past while meeting modern needs, exemplifying how vernacular architecture can inspire sustainable, locally rooted designs that respect both environment and heritage.

Keywords: Vernacular, Sustainability, Chettinad, Athangudi, Locally-Sourced, Contemporary

Introduction

Chettinad architecture is a unique expression of the Nattukottai Chettiar community's identity, blending traditional South Indian design with European influences. Known for its spacious halls, open courtyards, intricate teak woodwork, Belgian glass windows, and vibrant Athangudi tiles, this architectural style reflects the community's heritage and cultural values. These homes are a testament to their history as prosperous merchants who brought luxurious materials like Burmese teak, Italian marble, and Dutch tiles from their global trade ventures across Asia.

Spanning 1,550 square kilometers in Tamil Nadu, Chettinad includes towns like Karaikudi, an economic hub, and Kanadukathan, famed for its grand mansions. The architectural layout reflects Tamil traditions, with houses arranged in grid-like patterns that promote ventilation and privacy. Central courtyards, or *mutrams*, anchor the homes,

fostering family gatherings and enhancing natural airflow. High ceilings, lime-plastered walls, and terracotta tiled roofs regulate temperatures, while Belgian glass windows and sloping eaves optimize lighting and cooling.

Chettinad facades marry Tamil and Western styles, featuring dramatic Baroque arches, Classical symmetry, and ornamental colonnades. Saratha Vilas, a heritage property, exemplifies this fusion, combining opulent colonnades with intricate arches. Interiors showcase artistic flourishes like carved wooden beams, painted ceilings, and vibrant Athangudi tiles. Handmade locally, these tiles bring color and character to the floors while reflecting the region's craftsmanship.

The design of Chettinad homes balances grandeur with practicality, accommodating tropical climates and joint family living. The use of high-quality materials, locally and globally sourced, highlights the Chettiars' adaptability and

global outlook. Mansions like Saratha Vilas now serve as heritage landmarks, preserving the region’s architectural legacy and cultural identity. Chettinad architecture stands as a testament to a community that harmonized tradition with innovation, leaving a timeless legacy.



Fig 1: Aerial view of a part of the town, Kanadukathan showing the grid pattern



Fig 2: Exterior view of a palatial mansion in Kanadukathan, Karaikudi, Tamil Nadu

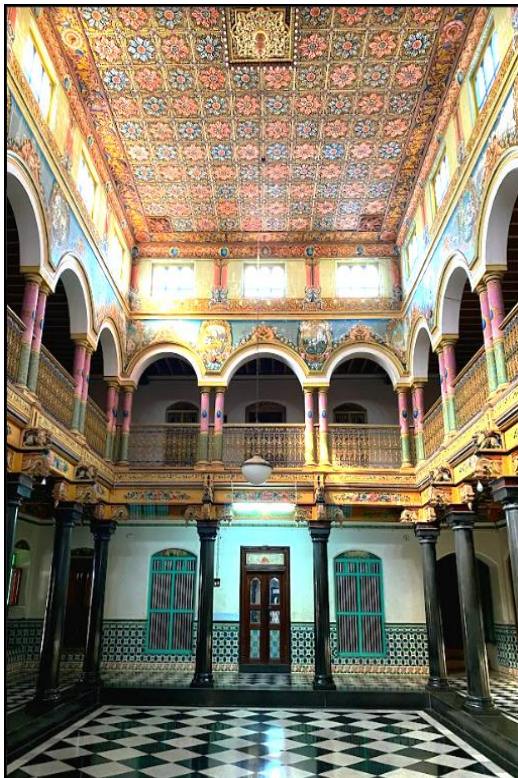


Fig 3: The main hall at Athangudi Mansion, Athangudi, Karaikudi, Tamil Nadu



Fig 4: Burma teak wood ceiling in Athangudi palatial mansion, Athangudi, Karaikudi, Tamil Nadu

Materials and Methods

This research paper aims to look at the traditional elements in Chettinad architecture and analyze how they are incorporated into contemporary residences of today. For this purpose, research was conducted at Kanadukathan and Kottaiyur in the Sivagangai district, Tamil Nadu, in order to study the various features of the vernacular Chettinad architecture. Kanadukathan and Kottaiyur are two of the more populated villages among the village clusters that make up Chettinad. Visits to Athangudi tiles manufacturing factories in Athangudi, wood workshops, and antique stores were undertaken to ensure a wider knowledge of the subject. Additionally, house-turned-hotels in Karaikudi were visited—such as Visalam in Kanadukathan and Saratha Vilas in Kothamangalam. This has also helped in understanding how architects have incorporated stylistic characteristics from Chettinad heritage mansions into contemporary bungalows, apartments and cottages. The main study focused on select contemporary houses designed by architects. Telephone interviews were carried out to obtain and present the architects’ ideas, process and observations on their work. Information on the houses was sourced from the websites of the architects’ firms. Five contemporary residences were chosen for study. Out of which, three residences in Chennai—Vishram By the Sea and Selva Seetharaman House and Taisha House were designed by Benny Kuriakose. The House in a Grove in Tirupattur, Tamil Nadu was designed by the STO.M.P Architects; and the Anubhuti Residence in Gurugram, Delhi, by Envisage Projects. Benny Kuriakose is a prominent architect who has worked with vernacular architectural styles. The House in a Grove by STO.M.P Architects is a contemporary residence situated at the heart of Chettinad among the masses of heritage homes whereas Anubhuti residence in Delhi by Envisage is an example of a residence designed in South Indian, Chettinad style located in North India. These houses were studied to examine how the architecture of Chettinad has adapted itself into these different scenarios. Visits to all the residences mentioned were not possible due to time and other constraint.



Fig 5: Craftsmen at Chettinad Tiles, Athangudi, Karaikudi, Tamil Nadu.



Fig 6: Athangudi tiles in VVR House, Kanadukathan, Karaikudi, Tamil Nadu

Results and Discussion

Vernacular architecture of Chettinad

The façade of Saratha Vilas combines Tamil and Baroque architectural styles, highlighting the grandeur of Chettinad mansions. The entrance, or *mugappu*, is adorned with intricate wooden doors, relief sculptures of deities like Gajalakshmi, and detailed stucco work, symbolizing prosperity. Adjacent to the entrance are raised platforms called *thinmai*, used for receiving guests and conducting business. The interiors feature vast halls with teakwood pillars and follow an east-west axis per *Vastu Shastra*. These spaces are divided into private and communal areas, with courtyards (*kattu*) serving as central hubs for light, ventilation, and social activities. The smaller courtyards toward the back, such as the *rendam kattu* and *moonam kattu*, were reserved for women and domestic tasks, offering privacy from the street.

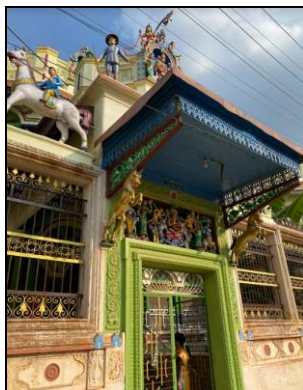


Fig 7: Facade of the VVR House, Kanadukathan, Karaikudi, Tamil Nadu



Fig 8: Thinnai in Ms. Visalakshi Ramaswamy’s House in Kottaiyur, Karaikudi, Tamil Nadu



Fig 9: The Rendam Kattu at Ms. Visalakshi Ramaswamy’s House, Kottaiyur, Karaikudi, Tamil Nadu



Fig 10: The main hall at VVR House, Kanadukathan, Karaikudi, Tamil Nadu

The construction incorporated sustainable materials like Athangudi tiles for flooring, known for their vibrant patterns and cooling properties, and sloping clay-tile roofs designed for rainwater harvesting. Walls were plastered with chunnam, a lime mixture, for a polished, heat-reflecting finish. Ornamented granite or wooden pillars supported the roofs, often inspired by Tamil temple architecture. Large halls, such as the *kalyana kottagai* for weddings and *panthai kattu* for banquets, reflected the social customs of the community. The mansions also emphasized functional storage areas for food and utensils, showcasing the Chettiars' trading prosperity. These homes were not just residences but cultural symbols, blending tradition, aesthetics, and functionality.



Fig 11: The overhanging eaves at Kanadukathan, Karaikudi, Tamil Nadu.



Fig 12: Detail of a pillar in CVCT House, Kanadukathan, Karaikudi, Tamil Nadu.



Fig 13: Tiles display in the Chettinad Tiles Factory

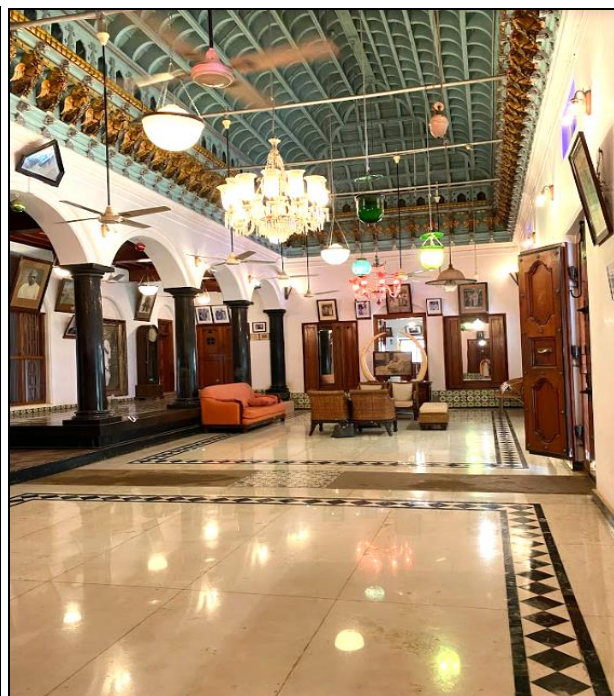


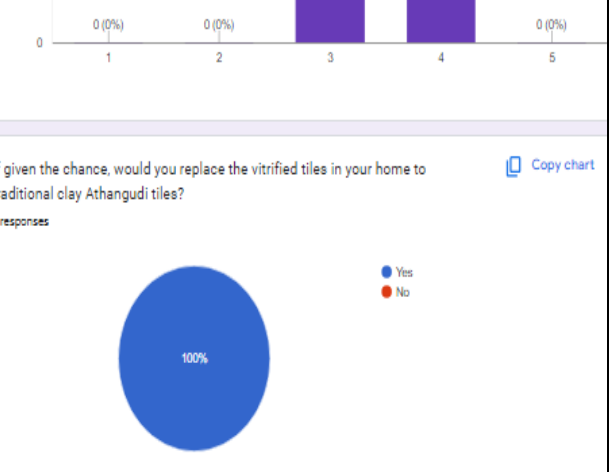
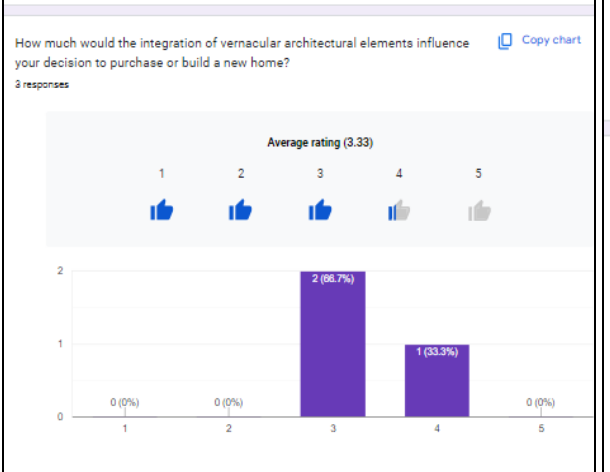
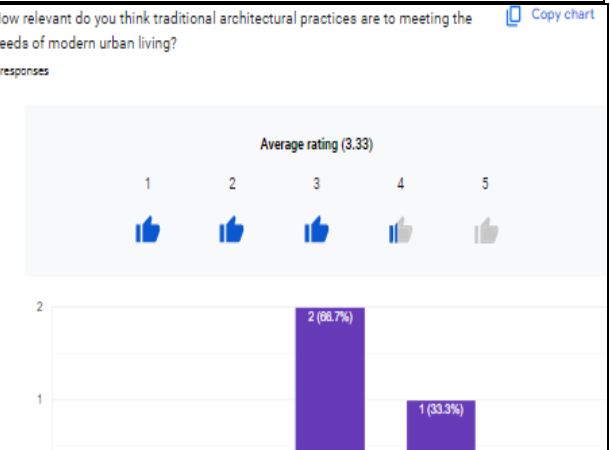
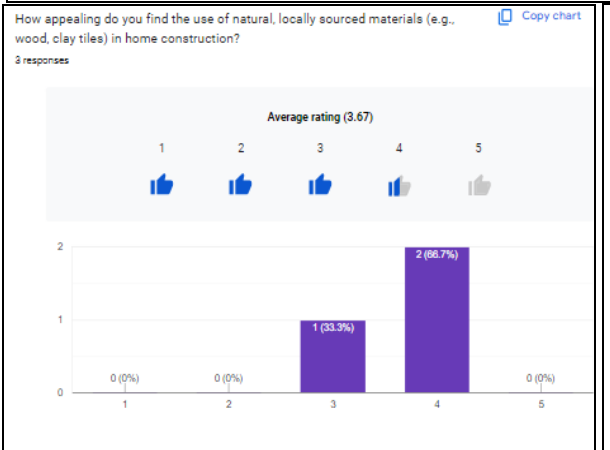
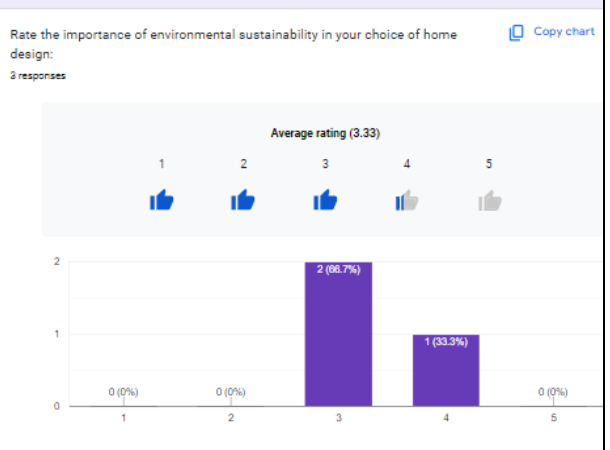
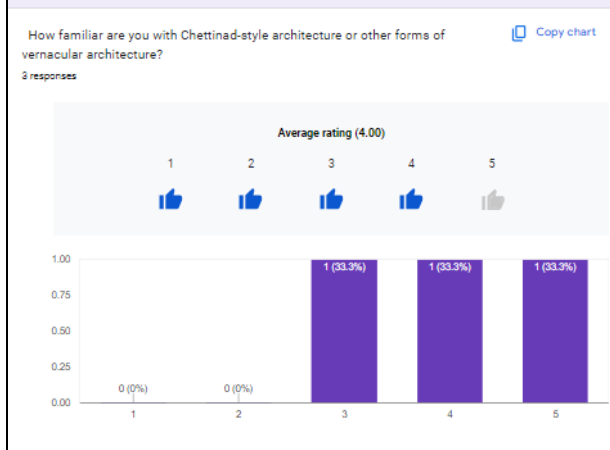
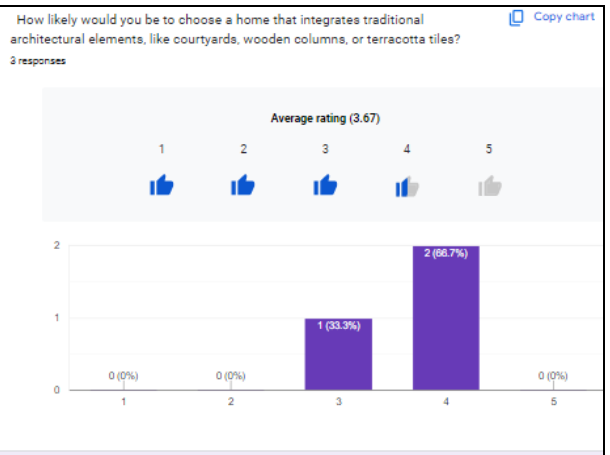
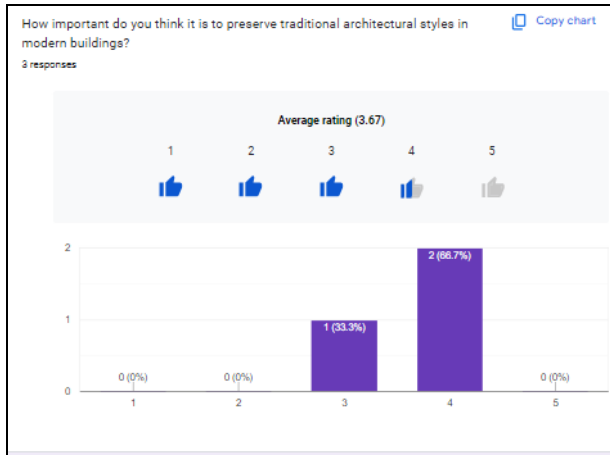
Fig 14: Italian marble flooring at Visalakshi Ramaswamy Residence, Kottaiyur, Karaikudi, Tamil Nadu.

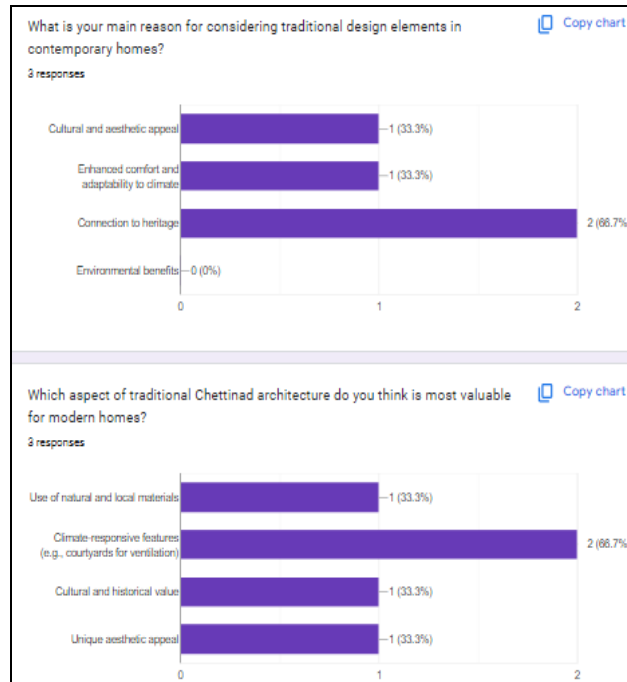
Vernacular Terms and Meanings

1. Mugappu: Entrance foyer with intricate wooden doors and sculptures.
2. Thinnai: Raised platforms for visitors and business.
3. Kattu: Courtyards; onnam kattu, rendam kattu, moonam kattu indicate sequential courtyards.
4. Ullarai: Inner rooms.
5. Velliyarai: Outer rooms.
6. Valavu: Living halls for each family unit.

7. Patta Salai: Main living area.
8. Irattai Veedu: Rooms connecting multiple family spaces.
9. Nadai/Nadai Padhai: Corridors along courtyards.
10. Kalyana Kottagai: Wedding halls.
11. Panthai Kattu: Banquet halls for segregated dining.
12. Athangudi Tiles: Locally made tiles with vibrant patterns.
13. Chunnam (Muthu Poochchu): Lime plaster for walls.

Survey Results





Case Studies

Benny Kuriakose & Associates, Chennai

Benny Kuriakose, a leading Indian architect, is celebrated for integrating vernacular elements into contemporary designs. With a career spanning over three decades, his work reflects a deep commitment to sustainability, cultural heritage, and modern functionality. Starting his career under Laurie Baker, a pioneer in sustainable architecture, Kuriakose was influenced by Baker's philosophy of simple yet impactful designs. Kuriakose later completed his MA in Conservation Studies at the University of York, which deepened his understanding of architectural heritage and conservation. Over the years, he has worked on landmark projects like the Dakshinachitra Cultural Center in Chennai and The Institute of Palliative Medicine in Kochi. His Chennai-based firm, Benny Kuriakose & Associates, established in 1991, emphasizes environmentally sensitive designs deeply rooted in historical and cultural contexts.

Kuriakose's design philosophy centers around the reuse of materials, integration with nature, and the creation of spaces that are both functional and culturally resonant. He advocates for climate-responsive architecture and promotes vernacular designs that seamlessly blend traditional concepts with contemporary needs. His projects exemplify the principles of sustainability while celebrating local craftsmanship and materials, setting an inspiring precedent for modern architectural practices.

Notable Projects

Vishram by the Sea (2001)

Located on the scenic Kovalam Beach in Chennai, Vishram by the Sea is a stunning beach house that embodies the principles of vernacular design and modern sensibility. Designed in collaboration with Visalakshi Ramaswamy, an advocate for Chettinad crafts, the project merges South Indian architectural traditions with Mediterranean aesthetics. The house prominently features natural materials like wood, stone, and brick, with timber being extensively used for columns, brackets, rafters, and eave boards.

The layout revolves around open courtyards, which enhance natural ventilation and create a calming ambiance. Sloping roofs were designed to accommodate the coastal climate, facilitating water drainage and reducing heat retention. A large verandah, adorned with intricately patterned Athangudi tiles, seamlessly connects indoor and outdoor spaces. The verandah's Chettinad stone pillars and Athangudi tile flooring are complemented by antique doors, windows, and fixtures sourced from demolished Chettinad houses. These reclaimed elements lend the house a distinct character, making it both eco-friendly and culturally meaningful.

One of the house's highlights is a Kerala-style bathing pool that offers serene views of the sea, blending luxury with traditional design sensibilities. Kuriakose describes the house as a harmonious blend of tradition and modernity, where the focus is on the essence of traditional architecture rather than replicating older structures. The project is an ode to sustainable design, emphasizing material reuse and climate responsiveness.



Source: Benny Kuriakose & Associates

Figure 15,16,17,18: Vishram By the Sea, East Coast Road, Chennai, Tamil Nadu, 2001.

Selva Seetharaman House (2019)

This Chennai apartment renovation project is a fine example of Chettinad vernacular architecture adapted to contemporary living. The design carefully balances the preservation of traditional elements with modern functionality, resulting in a warm and inviting space. Minimal structural changes were made to retain the original layout, while new functional partitions were introduced to enhance openness.

The interiors are characterized by the extensive use of timber, evoking a sense of traditional warmth. Carved wooden beams were incorporated into the false ceiling, creating a distinct visual identity. Intricately sculpted wooden pillars frame the dining area, adding a touch of grandeur. Vibrant Athangudi tiles, synonymous with Chettinad design, were used throughout the house to introduce color and pattern. A neutral backdrop of marble flooring and white walls ensures that the vibrant tiles and wooden elements take center stage.

The dining area overlooks a verandah that connects the indoors with the lush outdoors, while the study features a serene bench under a window, ideal for reading and reflection. Storage solutions were thoughtfully integrated into the design, making the space both functional and aesthetically pleasing. The house prioritizes natural materials, spaciousness, and ease of maintenance, embodying a perfect blend of traditional aesthetics and contemporary needs.



Fig 19, 20, 21, 22: Selva Seetharaman House, Chennai, Tamil Nadu, 2019.

Taisha House (2019)

Located on the 13th floor of an apartment building in Virugambakkam, Chennai, the Taisha House renovation reflects a vibrant interplay of traditional and modern design. The project begins with an antique entrance door sourced from a demolished Chettinad mansion, leading to a foyer

featuring a wooden statue of Gajalakshmi. This sets the tone for a house steeped in cultural richness and colorful vibrancy.

The living room features bright red Athangudi tiles that create a striking visual impact. An accent wall made of herringbone-patterned brick tiles adds texture and depth, while wooden pillars with decorative cornices frame the space. Oriel windows, strategically placed in the living room and bedrooms, serve as cozy nooks that offer sweeping views of the city skyline.

The pooja room is a serene sanctuary, adorned with restored teak wood doors inlaid with Tanjore paintings. Vibrant depictions of deities are complemented by suspended storage units that maximize space. The verandah features bright yellow Athangudi tiles, a wooden swing with Japanese Majolica tile decor, and stained Belgium glass squares, creating a lively and welcoming space. The master bedroom incorporates patterned jute fabric for wardrobes and light fixtures, while the bathrooms feature large granite slabs for safety and ease of maintenance. The design's vibrant and earthy tones reflect the client's love for effervescent colors and patterns, ensuring a unique blend of aesthetics and functionality.



Fig 23, 24, 25, 26: Taisha residence, Chennai, Tamil Nadu, 2019

STO. M.P Architects: Sustainable modernism

Founded by Vignesh Sekar in Madurai, STO.M.P Architects is known for its emphasis on modern, functional, and sustainable designs that respect the local environment and

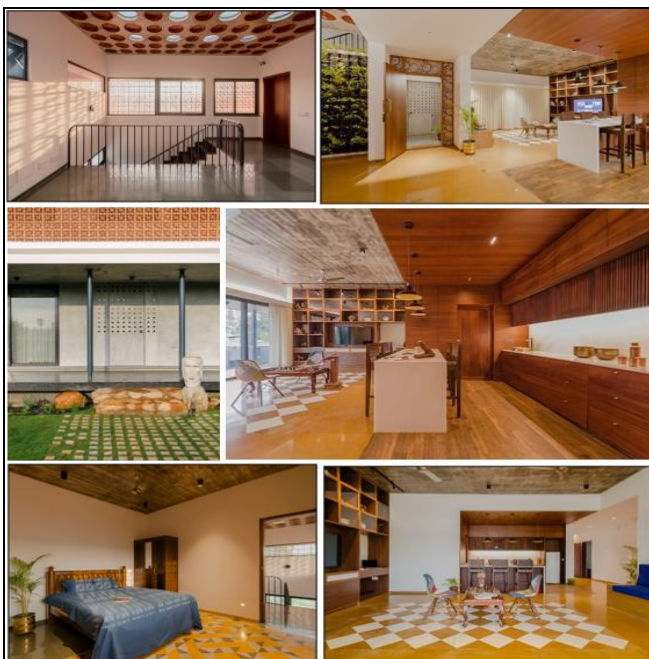
culture. Sekar's projects often bridge the gap between traditional values and contemporary living, demonstrating a deep understanding of sustainability and community needs.

House in a Grove (2018)

This award-winning residence in Tirupathur combines Chettinad architectural principles with modern sensibilities, creating a space that is both culturally rooted and forward-thinking. Sustainability was at the forefront of the design, with local materials like Athangudi tiles, reclaimed wood, and stone rubble sourced within a 50-kilometer radius. Dead trees from the site were utilized for concrete shuttering, while natural wood was used for furniture and doors, minimizing waste and promoting resource efficiency.

The house's design features terracotta jalis and skylights that ensure ample natural ventilation and reduce electricity usage. The interplay of light and shadow, facilitated by the facade and strategically placed light wells, adds a dynamic quality to the interiors. A notable feature is the *thinnai* (a traditional raised platform) carved from on-site boulders, which serves as a welcoming space for relaxation and social interaction.

The open-plan layout seamlessly connects the living, dining, and kitchen areas, fostering a sense of community. This approach breaks away from traditional norms by integrating the kitchen into the heart of the home, making it a shared space for family interaction. The master bedroom is characterized by reclaimed wood elements, exposed concrete walls, and rustic Athangudi tiles. The earthy palette and natural materials create a warm, inviting atmosphere. The terracotta jali facade, which doubles as a substitute for window grills, not only enhances ventilation but also adds an artistic touch to the exterior. This project reimagines Chettinad heritage by adapting its principles to contemporary needs, creating a home that is sustainable, functional, and deeply connected to its cultural roots.



Source: STO.M.P Architects

Fig 27, 28, 29, 30, 31, 32: House in a Grove, Pudukkottai, Tamil Nadu, 2018.



Source: STO.M.P Architects

Fig 33, 34: Plans, House in a Grove, Pudukkottai, Tamil Nadu, 2018.

Envisage Architects, Delhi

Envisage Architects, based in Gurugram, Delhi, is an architecture and interior design firm founded in 2017 by Meena Murthy Kakkar and Vishal Kakkar, graduates of the School of Planning and Architecture, Delhi. Specializing in Design and Build projects, they provide turnkey solutions from conceptualization to execution. Both partners are committed to bridging the gap between academia and practice, actively teaching at their alma mater.

With over 100 completed projects, Envisage has gained recognition in leading publications like *The Times of India*, *Architectural Digest*, and *India Today Home*. Their portfolio reflects a focus on residential, institutional, corporate, and hospitality design, offering tailored, client-centric solutions.

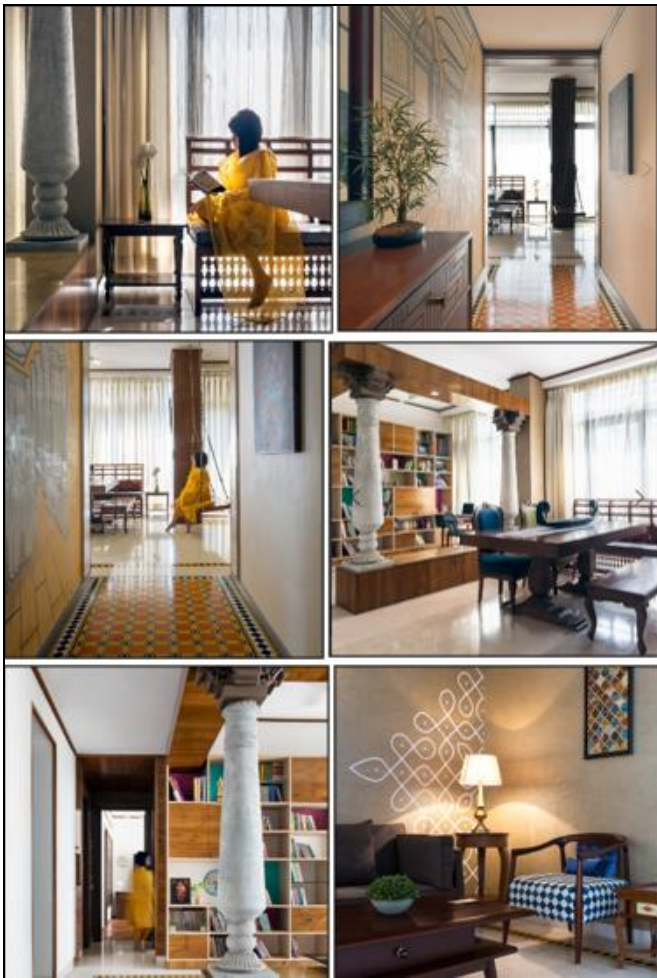
Anubhuti Residence, Delhi (2019)

One of their standout projects is the *Anubhuti Residence* in Gurugram, designed for a senior couple to evoke the nostalgia of their Tamil Nadu roots. Inspired by Chettinad architecture, the 2,600-square-foot house balances vernacular aesthetics with modern functionality. Designed to optimize light, ventilation, and comfort, the south-facing home features earthy tones, natural materials, and open layouts. Glazed windows and varnished surfaces regulate temperature, while large openings and a verandah enhance natural airflow.

The entrance leads to a decluttered hallway with a mural of the Tamil scripture *Kandar Anubhuti*, setting the tone for the house. The living area is divided into zones using traditional Chettinad elements like an *oonjal* (wooden swing) and a *thinnai*-like seating with pillars crafted from MDF. These partitions maintain spatial fluidity while reinforcing cultural identity. The furniture integrates modernity with tradition, like a trellis-back sofa and brass-accented decor. Walls adorned with *kolam* patterns and vibrant Athangudi tiles bring Chettinad heritage alive.

Bedrooms contrast the earthy palette of shared spaces with vibrant hues and intricate designs. The master bedroom features red oak tones, patterned elements, and southeast-facing windows for natural light, while the guest bedroom incorporates Nalukettu-style wooden frames and warm colors. Each space reflects the residents' identity while embracing sustainable materials and cost-effective design. As Kakkar notes, "Vernacular architecture is a huge

repository of knowledge,” and *Anubhuti* exemplifies this philosophy. By blending heritage with contemporary living, the residence offers a personal connection for its inhabitants and stands out as a thoughtful, bespoke creation among modern homes.



Source: Envisage Projects

Fig 35, 36, 37, 38, 39, 40: Anubhuti Residence, Gurugram, Delhi, 2019.

Conclusion

Contemporary lifestyles have shifted dramatically, favoring open plans that foster connection among household members, as nuclear families replace joint ones and traditions yield to fast-paced living. These changes are reflected in architecture, where contemporary homes inspired by vernacular styles balance luxury, comfort, and tradition. Among the five residences studied, only two owners belong to the Chettiar community, yet all clients admired Chettinad architecture and requested its integration into their homes.

Architects like Kuriakose and Sekar, experienced in Chettinad styles, adapt traditional elements like Athangudi tiles, antique pillars, and doors into modern designs. Economical materials like laminates and exposed concrete are combined with traditional aesthetics to meet modern needs. Antique shops offering salvaged pieces from heritage homes have made it easier to recreate Chettinad-inspired designs while retaining their cultural essence. Architects strive to preserve the intent of vernacular architecture,

ensuring homes are symbolic and functional, not just aesthetically pleasing.

Chettinad-inspired contemporary homes emphasize sustainability through adaptive reuse and recycling materials, protecting cultural values and reducing environmental impact. Vernacular architecture supports location-specific designs with energy-efficient, low-carbon techniques. These principles ensure homes remain connected to their heritage while addressing modern needs. This research highlights how traditional Chettinad architecture influences modern residences, blending heritage with sustainability and modernity for meaningful, enduring spaces.

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