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Re-Imagining Traditional Crafts and Techniques, To Create New Interior Design Aesthetics

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ABSTRACT

In today's times when the world-over people are talking about sustainability, equity and going back to one's roots - it is crucial to introduce people from all over the globe to the traditional crafts and materials of vernacular, traditional cultures. It is our responsibility as designers to look outside the box and breathe new life into these crafts and artisans, particularly at this time when they are rapidly vanishing. It is challenging to create a luxurious design language using traditional crafts and materials, but doing so will serve as an awareness-raising instrument to inspire more designers and artisans to let their creations stand out above the generally accepted standards of luxurious design around the globe. We as designers, need to investigate various ways to transform these locally produced materials and crafts into an unusually rich environment. Designers should be encouraged to study, understand, document and promote these crafts everywhere in the world, not just in the areas where they originate; it is important to look beyond the boundaries of religions, crafts, and nations - because the ability to create beauty should never be limited to any place or any time. In this context, this study looks at studying a few traditional crafts and hand-finishing techniques used in vernacular built environments of a particular region of India and re-interprets and adapts them in a contemporary interior design scenario to create a luxurious, sustainable, responsible and beautiful design aesthetic. This is represented here in this paper as a research study, documentation and design demonstration.

KEYWORDS : Crafts, Vernacular, Tradition, Re-interpretation, Interior design, design aesthetic, luxury

1. SELECTION OF TRADITIONAL CRAFTS & TECHNIQUES

For the purpose of this study, one has selected five crafts and techniques involved in making of built spaces that have originated or been extensively used in Southern India (specifically the state of Tamil Nadu); however, one could have easily selected different crafts and techniques from other parts of the country as well. This is just a way to demonstrate an approach. The main idea is that craftsmen from across the country are exposed to designers from other parts of the country as well – so that their craft is not restricted to their region only. It is understood that certain materials are available in certain parts of the country only, and their applications are culture and climate dependent – however, with modern tools, techniques and materials – it is possible to use them across different regions of the country also.

The traditional materials and crafts selected here from Tamil Nadu are Athangudi tiles, Swamimalai bronze work, Oxide floor finish and Laterite stone masonry combined with one fabric 'Patola' that is woven in the Western state of Gujarat. However, it has been well documented that historically the patola weaving technique emerged in Southern India. The weaving work, motifs, and silk strands used in Gujarat's patola are remarkably similar to Tamil Nadu-inspired patterns and artwork. This approach reinforces the belief that one should encourage cross-cultural exchanges that go beyond geographical boundaries in promotion of these traditional arts, crafts and techniques.

2. UNDERSTANDING THE SELECTED TRADITIONAL CRAFTS & TECHNIQUES

2.1 ATHANGUDI TILES

History: These handmade, vibrant tiles are from the Athangudi village in Tamil Nadu's Chettinad Region. Prior to India's independence, when wealthy households in Tamil Nadu used to trade with the West, Athangudi tiles first appeared. The merchants and businessmen of southern India are known as "Chettiars," and they used imported tiles to adorn their residences. However, over time, these tiles proved to be both exceedingly costly to repair and difficult to replace in case of damage due to the scarcity of the identical tile. These two factors were the main drivers behind the Chettiar family starting a cottage enterprise to produce these exquisite handmade tiles.

Fig.2.1.1 Map of Tamil Nadu, Chettinad region

Fig.2.1.2 Architecture of typical Chettinad mansions with use of Athangudi tiles

Properties:

These tiles are made from locally available sand hence they are eco-friendly.

They are easy to clean, just a few drops of coconut oil in the mopping water will keep the shine on them.

Since these tiles are made from locally available sand and no machinery is used for baking or firing hence these are very affordable.

These tiles require skilled labour to install.

Athangudi tiles are handmade therefore they do not exhibit extreme precision and accuracy (like all hand-crafted things) and hence they may not appeal to everyone.

Since these are cement made tiles which are not fired they may not be suitable for wet areas like bathrooms.

Making: They are hand-crafted using the age-old traditional techniques without the use of machines. These tiles are made from: (i) locally sourced sand, (ii) white cement (iii) grey cement (iv) naturally available coloring oxides and (v) water. Due to the oxides being sourced from nature these tiles usually come in the colors of red, blue, emerald, mustard, and grey, but they can be made in other colors as well nowadays.

Fig.2.1.3 Metal frame that serves as a boundary box is attached to a base of glass

White Cement	Oxide	Sand	Grey Cement
1	1	1.5	3

Proportions to obtain light colors

White Cement	Oxide	Sand	Grey Cement
1	1	3	6

Proportions to obtain dark colors

Fig.2.1.4 Material mix proportions to achieve different color intensity

These tiles use no ceramics, marble, vitrified components or electricity as they are not burned or baked which makes them very eco-friendly. Since these tiles are entirely handmade, they can take about 12-15 days to make them.

Following are the steps which the artisan does to make these tiles;
Ratios and proportions of the raw elements to produce the desired hues.
A stencil is applied over the glass plate inside the frame in order to print the desired pattern or motif.
Sand and white cement are combined with the appropriate coloured oxides in water to create the various coloured wet combinations in advance.

Fig.2.1.5 Various coloured mixtures are poured into the various stencilled areas with ladles

Fig.2.1.6 The hand making of the tiles

As soon as the stencil is taken out of the frame, a dry sand and cement mixture (3–4mm thick) is applied over the mixture to keep the colours in place.
After that, a layer of cement mortar is added to the tile and compacted using a hand spade.
To create a dry, flat surface, the dry powder is distributed once it has dried. It has a thickness of 10 millimetres.
The tile is then left on the glass plate after the surrounding metal frame has been removed.
After being left to dry for a day, the coloured cement tiles are finished curing by being buried in water for 7-8 days.
Lastly, the cured tiles are sun-dried (24 hours) among husks to soak up excess moisture. The natural oil released from the husks provide a natural sheen to the tiles. The glass plate detaches itself naturally from the tile in this process.
The edges are given a smooth finish by gently rubbing a stone across them.

Dimensions and Motifs: These tiles can be customized according to the design and needs, but they do come in some standard sizes and shapes:
Flooring – Square Tiles (0.75 inch thick) 8 x 8 inches, 10 x 10 inches
Skirting (0.5 inches thick) 8 x 8 inches, 10 x 10 inches
Borders 10 x 5 inches, 8 x 6 inches, 8 x 5 inches
The patterns on the tiles have been influenced by the Victorian tiles used from the 19th century. But since they are entirely handmade, they can be customized according to the client's requirements and a designer's designs. The patterns can be exotic floral motifs of geometric checks. The design entirely depends on either the client or the artisan making it. The personal customization in each tile design creates a totally unique set of tiles.

Fig.2.1.7 Some of the typical patterns, borders, motifs and colours used in Athangudi tiles

Laying the tiles: The Athangudi tiles are handmade hence they are prone to roughened edges and uneven surfaces which makes it difficult to lay the tiles in an even surface and to precisely smoothen the edges with the wall. Therefore, only the masons from Karaikudi have mastered the art of laying the Athangudi tiles and can produce a flawless tile layout with clean, smooth and gapless edges and flat level. Although 100 sq. ft. can be laid out in one day after that these laid out tiles are polished by hand

for 2-3 days by using rice husks. These husks make the floor shiny and smooth. These polished tiles can reflect light like a mirror that too without the use of any machinery to polish it.

Fig.2.1.8 Tile laying process

2.2 PATOLA (Tie & Dye + Weaving)

History: One of the most challenging weaving techniques is 'patola'. The warp and weft yarns are dyed before dyeing using the double ikat (tie and dye) technique in line with the pre-design pattern. The distinctive design of patola contrasts with figurative designs that are tied and coloured until the full pattern is achieved. King Kumarpala moved his capital to Patan, Gujarat in the early 12th century and engaged 700 weavers to establish the Patola weaving tradition. Few of the silk weavers of the Salvi community, who mainly hail from the South Indian regions, chose Gujarat as their home in the 12th century to hone their Patola saree-making skills. Patola's ancestral home is therefore in southern India.

Fig.2.2.1 Map showing the Patan region of Gujarat

Fig.2.2.2 The Salvi family has been engaged in this craft since 900 years and now is the only family of weavers that know this dying craft

Properties: 100% eco-friendly and handcrafted, hence unique.
The dyes on the fabric do not fade.
Takes several months to create one patola saree (traditional wrapped piece of fabric 6 yards (5.48m) length and 48" (1.21m) width worn by Indian women).
Highly skilled labour is required. Very expensive due to it being highly technical, time-consuming and exceptionally rare.

Materials & Tools:

raw silk pattern on graph paper weaver needles & pins hread for tie & dye thread winders loom, coal, dyes

Making:

The first part is the tie & dye process…

Fig.2.2.3 Tie & Dye steps in making of patola

Then comes the weaving …

Fig.2.2.4 Hand weaving of patola

Designs & Motifs: The Patola, also known as the double ikat saree, is known for its geometrical patterns and vibrant colors, which feature floral motifs, jewels, flora and fauna, parrots, elephants, and dancing figures, along with a plain, dark, or colorful border on the pallu and the saree's body. Combination of black, yellow and red are most common color used in Patola saree weaving. The borders are weaved

with Zari thread to give a rich look to the saree. Mentioned below are some patterns and designs which are made: Pan (leaf) Bhat (pattern), Ful (flower) Bhat, FulVali (flower garden) Bhat, Akhrot (walnut) Bhat, Chokdi (Courtyard-square shaped) Bhat, Nari (girl) Kunjar (elephant) Bhat, Nari Kunjar Ful Popat (parrot) Bhat, Vagh (tiger) Barah Kunjar (12 elephants) Bhat, Ras (couple folkdance done in a circle Bhat etc.

Fig.2.2.5 Examples of Patola motifs & patterns

2.3 SWAMIMALAI BRONZE CASTING

History: In the Indian state of Tamil Nadu, Kumbakonam has the Panchayat town of Swamimalai. The skilled workers who create the Swamimalai Bronze sculptures are known as "Sthapathis" and are a part of the Vishwakarma group. Swamimalai is the last location in Tamil Nadu where traditional bronze casting is still done. Numerous Hindu devotees worship these idols, which are gods. The most well-known of these intricately decorated idols is that of Nataraja, Lord Shiva's dancing manifestation. The small town of Swamimalai is located near Thanjavur, on the banks of a Kaveri tributary. Sculptors came to Swamimalai in the Middle Ages after learning that the soil was perfect for the process of casting bronze there. Today, the craft is practiced here by about 500 people. The fine-grained rich alluvial sand with a lot of clay can be found in Swamimalai which is said to allow the molds to accurately produce even the most minute features intended by sculptors.

The Thanjavur region has been using bronze casting techniques for more than a thousand years. The early Pallava era is when the earliest bronze cast idols were created. The most beautiful bronzes, however, came from the Chola era of medieval India (ca. 850–1070). The craft of bronze casting is the result of interactions between the literary and visual arts, which were encouraged by the Bhakti Movement. The sculptures were conceptualized by masters of the metallurgical sciences who had also studied anatomy and religion. The lost wax casting method was used to catch details like hair, draped clothing, and fine jewellery. Idols spanning twelve centuries have been excavated from the Thanjavur belt and are currently displayed in the Thanjavur Palace Museum.

Fig.2.3.1 Map showing the Kumbakonam region

Fig.2.3.2 Examples of Swamimalai bronze artwork; icons of gods and goddesses are made in pairs

Use & Significance: The larger ones are utilised in temples, while the smaller ones are typically manufactured for use at home. These idols are made in a variety of sizes. These idols occasionally also have human and animal figures that are presented in houses as wall art. The divine truths, spiritual tales, and the importance of meditation were also to be recalled by way of these icons. Every component of the emblem, even the minor ornamentation and body parts, had a cultural significance and a connection to stories and legends in India. Additionally, these icons feature figures from the Ramayana and Mahabharata Indian epics. These religious icons are made in pairs, groups as well like Vishnu and Lakshmi, Shiva and Parvati, Ram, Laxman, Sita, and Hanuman etc.

Design:The height of the idols can range from 6 to 12 feet, but they can also be made to the specifications of the purchaser. All deities are seen holding either their vahana or their traditional adornments, including rosaries, conches, and musical instruments. A common portrayal of a god's look or resemblance is an event from their life. Krishna is commonly depicted holding a flute to his lips in the tribhangi stance, but he is also seen dancing over the coils of the deadly Kaaliya serpent or explaining the Geetha to Arjuna while assuming the Kaaliya Mardana pose.

Every symbol is set on a pedestal for stability, and all measurements are made according to the one mentioned in the Shilpa Shastra. The distance between the end of the lower mandible and the hairline is known as the "tala," which is the fundamental unit of measurement. The tala is split into twelve equal pieces called "angula," which are then further subdivided into eight "yava," and so on, down to the smallest unit, "paramanu." These measurements are made using a ribbon made from coconut tree leaf that has been cut to the icon's necessary length and folded at different lengths.

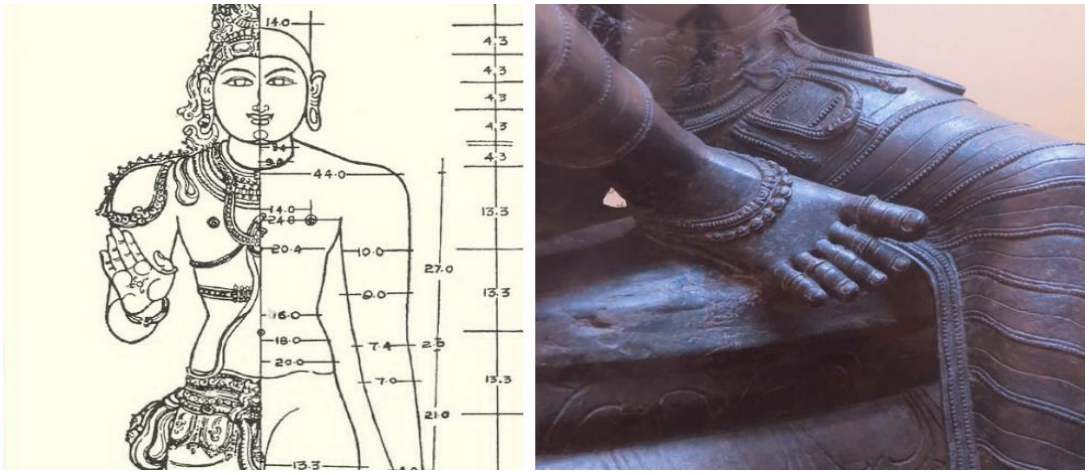


Fig.2.3.3 Details and aesthetic proportions of the figurines

Poetry verses are used as inspiration by sthapathis (artists/creators) to create the idol's aesthetics. For example the eye shall be modeled after a swimming small fish, the eyebrow shall be curved like a neem leaf, the head shall mimic a hen's egg, the edges of a lily bloom outline the ear, a sesame flower shall be the nose, a bow on the upper lip, a ripe tinda (apple gourd) on the lower lip, a small mango pit on the chin, and the flutes of a shell on the neck, the thighs, the lower trunk of a banana plant, the torso, a cow's head, the arm, the fall of an elephant's trunk, the knee a crab, and the leg, a big fish.

Iconology: The study of sacred images and their symbolism is really important in this art, because the Swamimalai bronze icons depict different deities in a variety of stances and locations; understanding the symbolism behind them helps us better understand their history and spiritual message.

• Based on the motivations behind their adoration, icons can be categorised.
• The Supreme Being is shown in various meditational poses in yoga murtis.
• Bhoga murtis—which show the deity in a home setting—are best suited for worship in temples built in cities and other populated areas.
• Vira murtis show the Deity in a valiant stance, such as Shiva as Nataraja, Durga conquering Mahisasura, or Rama slaying Ravana.
• Ugra Murti: employed as a form of defence against adversaries

Raw materials used: The following materials are required;
Wax modelling - Resin, Paraffin Wax, Beeswax, Groundnut Oil
Mould - Clay, Fine Riverside Clay (from river Kaveri), Sand
Baking the mould - Bricks, Coal, Dried Cow Dung, Wood
The Swamimalai bronze icons are often referred to as "panchaloha" (5 metals) icons since they are made of a combination of 5 metals: copper, zinc, tin, silver, and gold. Gold and silver have gradually been removed from this process due to financial restrictions. If they are to be utilised in their personal

worship, many people still give their gold and silver jewellery to be melted and used for the casting metal mix.

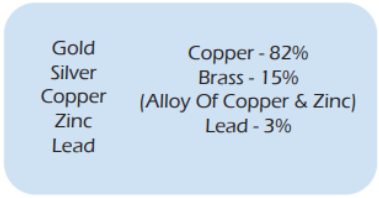


Fig.2.3.4 The usual proportion of metals in use nowadays

Making:

Step 1: Wax Modelling - Groundnut oil, resin, and paraffin are combined to create a molten wax concoction. The combination is then heated and cooled until it reaches the right consistency for modelling and shaping. The wax is then used to make the idol. The idol's torso, legs, hands, and seating pedestal are all made individually and then heated and fixed together. A softer wax is then applied to the idol to add jewellery, accessories, and weaponry. The wax model is weighed after drying because the amount of metal needed for casting should be 10 times that of the wax model.

Step 2: Solid and Hollow Casting - A solid cast is a sculpture that is completely made of metal. Temple sculptures are created using the solid casting technique. A hollow cast is created using a top layer of clay fibre and metal covering. This method is used to create decorative components in order to decrease the sculpture's weight.

Step 3: Making a Mould - On top of a bed of sand, the idol is positioned face-up. All around the wax figurine, fine-grained clay is applied. Alluvial soil and river sand are placed in a ratio of one to three on top of the fine-grained clay layer. The side of the face's mud sheath is allowed to dry for three to four days. Following that, conduits, or "runners," which are oriented around the idol, are attached to the wax shape. These runners act as wax outlets and inlets for molten metal. These runners are placed close together.

Step 4: Wax Removal - In this step, the mould is heated and placed with the runners facing down. Negative space is produced inside the mould as the melted wax drips down the runners.

Step 5: Baking the Mould - A mud coat is applied to any cracks found after a mould examination to seal them. Cow dung cakes, coal, and kindling are used to construct an open furnace around the mould. The sthapathis can tell that something is baking by the intensity of the smoke that is released. Prior to pouring metal into the hole for solid casting, it must have finished cooling. To guarantee smooth casting in hollow casting, the mould is heated to the same temperature as the metal. Ash from the procedure is gathered in a nook. In the past, this ash was used as manure and even for cleaning kitchenware.

Step 6: Melting Metal - The metal is heated in a furnace that is shaped like a rectangular pit with a metal grate over it and an air intake on one side. The two stones are set inside the pit using damp mud. Sand is sprinkled over these stones to prevent the pots from sticking when they are set on top. The hole is filled with two pots. Metals are put to the pot after being weighed: copper (82%), brass (15%), and lead (3%). A few dry cakes of bovine dung are ignited, and coal is shovelled around the pots. The fire is stoked with an electric fan. The metal is then permitted to melt while the pots are covered in stone domes. Metal is constantly added in small quantities to reach the required weight. Near the region where the metal is baked and melted, a pit is created. The mould is the same size as this hole. The hole is then filled with mud. When the metal is poured inside, these moulds have a tendency to slightly enlarge. By

burying the mould, you can stop the growth, and the dense mud packing will stop fissures and stop leaks.

Step 7: Metal Pouring - After the metal has liquefied, the heating pots are raised, and red-hot metal is poured through one of the channels. Through the other conduit, air is permitted to erupt. Until the cavity inside is full, the metal is continued to be poured. After allowing the cast metal to cool, the mould is ultimately destroyed.

Step 8: Breaking the mould - The brass bindings are clipped and the mould is uncovered. At the location of the idol's head, the baked clay casing splits open. The remaining mould is then broken open after which it is cleansed with a brush. The figure is cleaned and the channels are sawed off.

Step 9: Detailing - The finer elements are reviewed using a chisel. When the idol is chiselled while being supported by the feet, about 10% of the metal bulk is chipped away. These broken pieces are gathered for use in moulds in the future. The face is detailed at the very end to protect it.

Step 10: Polishing - The statues are scrubbed with charcoal and cleaned with tamarind water and soap nut stones. They are then buff with the aid of electrostatic polishing equipment. To add a patina, some items receive chemical treatment.

Fig.2.3.5 Various steps involved in the making process

2.4 OXIDE FLOOR FINISH

History: Oxide is a natural substance that provides any desired surface an earthy, shiny, and vibrant finish. Through commerce, the Portuguese and Italians introduced the method to the nation. Local craftspeople continued to experiment with the material to develop methodologies that were appropriate for the geographical setting. This practice of oxide flooring was common in the southern regions of India. Oxide floors were once a prevalent sight in Indian homes of the modern era. A modern version of this is more prevalent nowadays - more commonly referred to as Indian Patent Stone (IPS), which are basically cement-concrete floors that have a layer of cement mortar on top and are painted with coloured

cement slurry at the end. The initial slow-setting cement, when combined with oxides, sets more quickly and is certain to produce a different coloration from the old floors.

Materials, Properties & Use: The naturally occurring mineral oxide is found in powdered form, similar to the iron oxide that is most frequently thought of as having a red tint (and which itself has 20–25 variations), as well as other metal oxides that come in black, blue, green, and other colors, among others. When texture refinement is understood, oxide mixture lumps can also assume the form of clearly defined tiles.

The most popular reason for choosing oxide flooring is the desire to have continuous (seamless) surfaces in various shades of glossy finishes. Oxide is also used on walls for this harmonious reason to create a clear, simple, and glossy final product.

Many architects finish surfaces in oxide as well as ledges, counters, shelves, and the like. It is also used on walls instead of paint in many homes in Tamil Nadu, a choice that was also made due to financial considerations. These oxide flooring are eco-friendly and very cheap compared to other options. Along with this they do not require any maintenance, only mopping the floor regularly (with10-12 drops of coconut oil once a week) will keep on increasing the sheen and shine of these floors.

Fig.2.4.1 Various colours and hues in oxide

Fig.2.4.2 Example of red oxide polished floor

Oxide	Grey/White Cement	Water
1	3	According to the consistency required

For Darker Red

Oxide	Grey/White Cement	Water
1	More than 3, according to the shade required	According to the consistency required

For Lighter Red

Oxide (Different colored oxide powder)	Grey/White Cement	Water
1	More than 3, according to the shade required	According to the consistency required

For Other Colours

Fig.2.4.3 Different proportions of ingredients to achieve different colours / shades

Process of laying oxide flooring:

Step 1: Laying the PCC - A solid base bed is the first prerequisite for getting a head start on the oxide flooring. The best surface is a concrete floor because it guarantees a strong bond with the oxide coating. A bed of plain cement concrete (PCC), which is a mixture of aggregate, cement, and sand in the proportions 1:2:4 and water in the necessary amount for workability, is placed, with a thickness of 100–150mm. If the flooring is already in place and the oxide is to be applied on top of it, the surface must be scrubbed and cleaned to get rid of any substantial dust or debris and create a plain, clear foundation.

Step 2: Flooring Laying Preparation - After cleaning, the flooring depth is measured by placing cement lumps or fake level dots every one or two meters to level the flooring to the necessary slope. The floor is divided into different panels for laying the mixture if the plan requires it. The primary reason for these divisions is to make it simpler to work in groups of areas. Additionally, these divides aid in preventing the minor shrinkage cracks that can develop on long spans. The glass, aluminium or brass strips are fixed in cement mortar at a depth determined by the grid size for the design layout, with all of their tops levelled in accordance with the slope, and then permitted to set. One receives separate panels to start laying cement mixture in once they are securely embedded.

Step 3: Laying the Cement Mix - Then, using the amount of water necessary to make the slurry easy to pour, a 1:4 mixture of cement and sand is distributed in these panels up to a height of 20mm. After applying and pressing a second coating of the mix that is in thick lump consistency, the surface is levelled with a straight-edge trowel known as a “karni.” The thin oxide layer will be placed on top of this layer, providing the ultimate floor level. With the help of an electric rotary cutter, the panel strip margins are cleaned up to create sharp ends and a depth of 1-2 millimeters.

Step 4: Preparing the Oxide Mixture – In order to achieve the required fineness of composition, the dry oxide mixture is now manually prepared by hand. This specific requirement sets most of the oxide floors apart in their quality of precise shade. The mixture is made up of oxide powder, the granules of which are manually crushed to allow for uniform mixing and avoid lump development until very fine powdered form is achieved. Depending on whether a dark or bright shade is required, it is then blended with white or grey cement in a general ratio mentioned above, with some variation up and down by the on-site assessment to achieve the desired shade. By passing it through the sieving tray, one unit of marble powder (or lime, a less expensive alternative), is added to this mixture. A better blend can be achieved without developing cracks due to the heat released during the quick chemical reaction of the components thanks to the addition of lime, which also delays the setting process of the mixture. Water is added to the prepared oxide composition to create a slurry-like mixture, which is then poured on top of the cement foundation.

Step 5: Pouring and Laying the Oxide Mix - Two layers of oxide are applied; the second layer of oxide has water added in proportion to maintain the application thick so that it can be levelled with a flat trowel. While the front portion starts to dry up by spreading out sheets of newspaper to soak up the moisture, this is applied by the mason moving backward. (As locally practiced). The flooring will display any lumps that develop in the mixture. Trowelling is necessary to get rid of them, and hand polishing makes the tiny undulations disappear. After this coating has completely dried, the floor area is filled with water up to one inch by sealing off the area, and curing is carried out over the course of 24 hours to achieve the reactive strength. When the surface has thoroughly dried, any white patches that may have appeared on top are removed with a cloth, and the region is then cured once more to remove

any remaining mineral. Oxide floors must be completed in a single, uninterrupted session without breaks, which, based on the area to be covered, can take all day and night.

Step 6: Finishing the Floor - The oxide floor is prepared for polishing to a smooth, acid-stain-resistant sheen. To smooth and level the surface in preparation for polish application, the surface is rubbed with 400 grit sandpaper. One part wax-based polish is combined with two to three droplets of turpentine. This mixture is spread with a soft towel on the floor and scrubbed in two circular motions with rice husk or coconut pith until the wax is removed, the seams are hidden, and any potential pores are blocked. Some practitioners also use rice flour, coconut oil, and egg white when stone-scrubbing the floor. After the entire floor area has been polished, the room is sealed off for two to three days to allow the wax to completely absorb and give the floor a radiant sheen.

Design: This material allows for the creation of any design, though the colour choices are constrained if one chooses to use only naturally occurring materials. However, adding chemical powder colours allows for the creation of a wide range of colours, despite the fact that chemical hues could never match the subtlety of naturally occurring colours.

Fig.2.4.4 Examples of oxide finish in traditional and contemporary houses

2.5 LATERITE STONE

Geology & Composition: Laterite is a residual ferruginous rock, commonly found in tropical regions and has close genetic association with bauxite. The term ‘laterite’ was originally used for highly ferruginous deposits first observed in Malabar Region of coastal Kerala and Dakshin Kannad and other parts of Karnataka. It is a highly weathered material, rich in secondary oxides of iron, aluminium or both. It is either hard or capable of hardening on exposure to moisture and drying. Laterites are formed from the leaching of parent sedimentary rocks. They belong to Non-transported sedimentary rock category. They are formed in in-situ conditions. The mechanism of leaching involves acid dissolving the host mineral lattice, followed by hydrolysis and precipitation of insoluble oxides and sulphates of iron, aluminium and silica under the high temperature conditions of a humid subtropical monsoon climate.

Laterite is found in the region of mean annual temperature of 23 to 26- degree C and rainfall 1200 to 4000 mm and with the number of rainy months 8 to 10. Laterite can occur at every altitude from sea level to about 2500 m. A considerable area of the former cultivated land is covered by laterite.

Laterites vary in colour, but are usually bright. The shades most frequently encountered are pink, ochre, red and brown, but some occurrence mottled and streaked with violet, and others exhibit green marbling.

A single sample may exhibit a whole range of colours merging more or less perceptibly into one another in variety of patterns and forms. Laterites owe their colours to iron oxides in various states of hydration and sometimes also to manganese. Iron compound yields a greyblack colour and manganese compound a velvety black in a reducing medium, while in an oxidizing medium iron yields ochre, red or black, and manganese violet.

Use in Construction: Lateritic soils have served for a long time as major and sub-base materials for the construction of most highways and walls of residential houses in tropical and sub-tropical countries of the world. Laterite is a building material which can be used in construction from flooring to roof construction. It's name is also derived from the Latin word 'later' which means brick, as this rock can be easily cut into brick shaped blocks.

Fig.2.5.1 Colours, patterns in laterite and their use as masonry blocks – cut in different sizes

After being quarried as large slabs, laterite is cut into blocks and used for construction of walls and houses. There are two types of methods observed in this process: those are totally manual and those that have limited mechanization. The former use pickaxes, pickaxes are modified with a flat blade, spades and metal baskets. The overburden is removed manually too. In a limited mechanical quarry, same tools are used but they are supplemented by motorized hand ploughs to which a wheel cutter is attached. Laterite blocks are available in different sizes of: 390 x 190 x 190mm 490 x 190 x 190mm 590 x 190 x 190mm.

Laterite stone is ground and filtered using a sieve, which is then mixed with 5% cement mixture and a chemical setting agent. This mixture is then machine compressed to form high density interlocking bricks. They are manufactured in two widths of 6 inches and 8 inches; and are also available in varying lengths. Each interlocking brick has grooves and locks on its sides which can be fitted with each other to form a block wall that does not need cement mortar for bonding. They have lower embodied energy due to use of natural locally available materials- stone and wood. The only energy spent is in transportation of materials. The high recyclability factor – especially in case of interlocking blocks which don't use connecting mortar is a bonus.

Following are some properties of laterite, when used in construction;

The use of laterite is cost effective as compared to concrete blocks.

- Reduces cost of plastering and painting.
- Reduces heat within the house.
- Soft when quarried hardens on exposure.
- Requires skilled workmanship.
- Porosity of laterite stones is more than bricks. Thus load bearing structure of laterite masonry cannot be more than double storey.

• The darker the laterite, the harder, heavier and more resistant to moisture it
(Source - Study of Laterite Stone as Building Material Nisha Maklur, Dr. Parag Narkhede; published in International Journal of Engineering Research ISSN:2319-6890 (online),2347-5013(print) Volume No.7, Issue Special 3, 2018)

Fig.2.5.2 A house that extensively uses laterite in different applications

3 RE-INTERPRETING THESE CRAFTS TO CREATE A CONTEMPORARY & LUXURIOOUS DESIGN AESTHETIC – A demonstration

Several designers frequently use such art and craft pieces in their projects – but more often than not they are used as artefacts that enhance the ambience, beauty and meaning of the space. Rarely do we see these traditional techniques, crafts, finishes and elements being actively used as 'space-making' elements that define the very aesthetics of that space. The second part of this study aims to do exactly that – by choosing to design a hospitality project (boutique hotel) in an existing building located in Chennai, Tamil Nadu – a design that celebrates and re-interprets the use of these finishes, crafts and techniques in a luxurious, contemporary setting.

3.1 Understanding Boutique Hotels

Boutique hotels offer a more intimate personalized experience	Boutique hotels are much smaller	Boutique hotels are unique and not standardised like other hotels
Boutique hotels often bring in traditionality and city's culture in its design	Boutique hotels are usually in a upscale or fashionable neighbourhood	Boutique hotels offer personalised services
Boutique hotels have much lesser number of rooms	Boutique hotels usually are rooted in the historical/vernacular setting	Boutique hotels offer more functions like a library, gallery, cafe etc.

3.2 Site of the project

SITE - Abondoned Building Opposite Ega Theatre, 810, Poonamallee High Rd, Kilpauk, Chennai, Tamil Nadu 600010

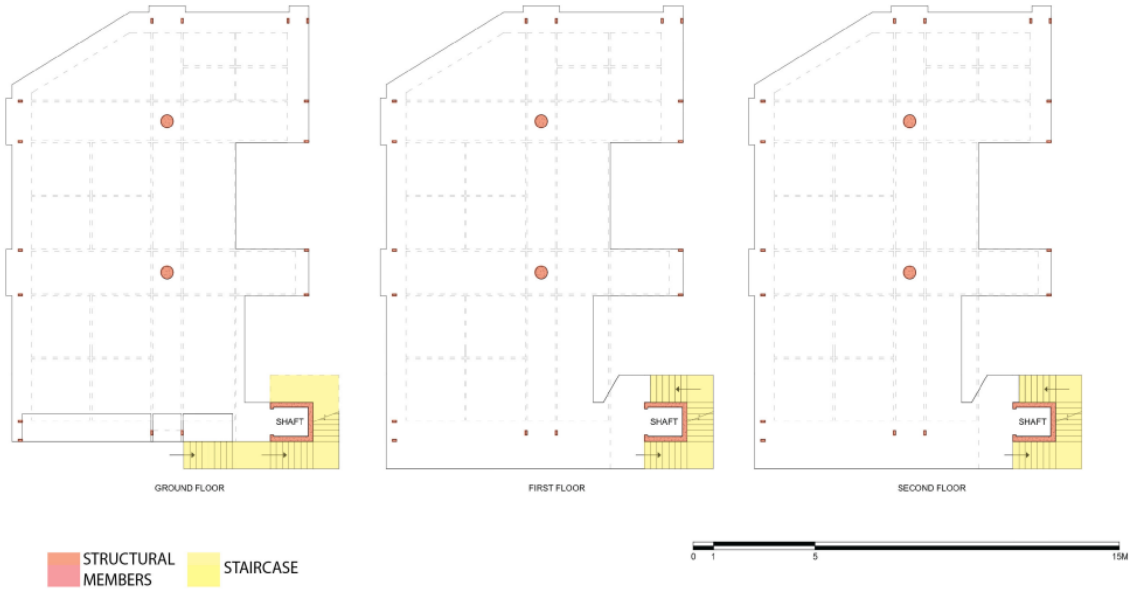
STRENGTH	WEAKNESS	OPPORTUNITY	THREAT
Near Community Hall Nearby public transport Near tourist attractions Mix of residence and commercial buildings in the vicinity	Traffic noise from the cross roads	Since it is on the main road it can attract a lot of customers	Presence of other famous Boutique Hotels nearby may increase the competition

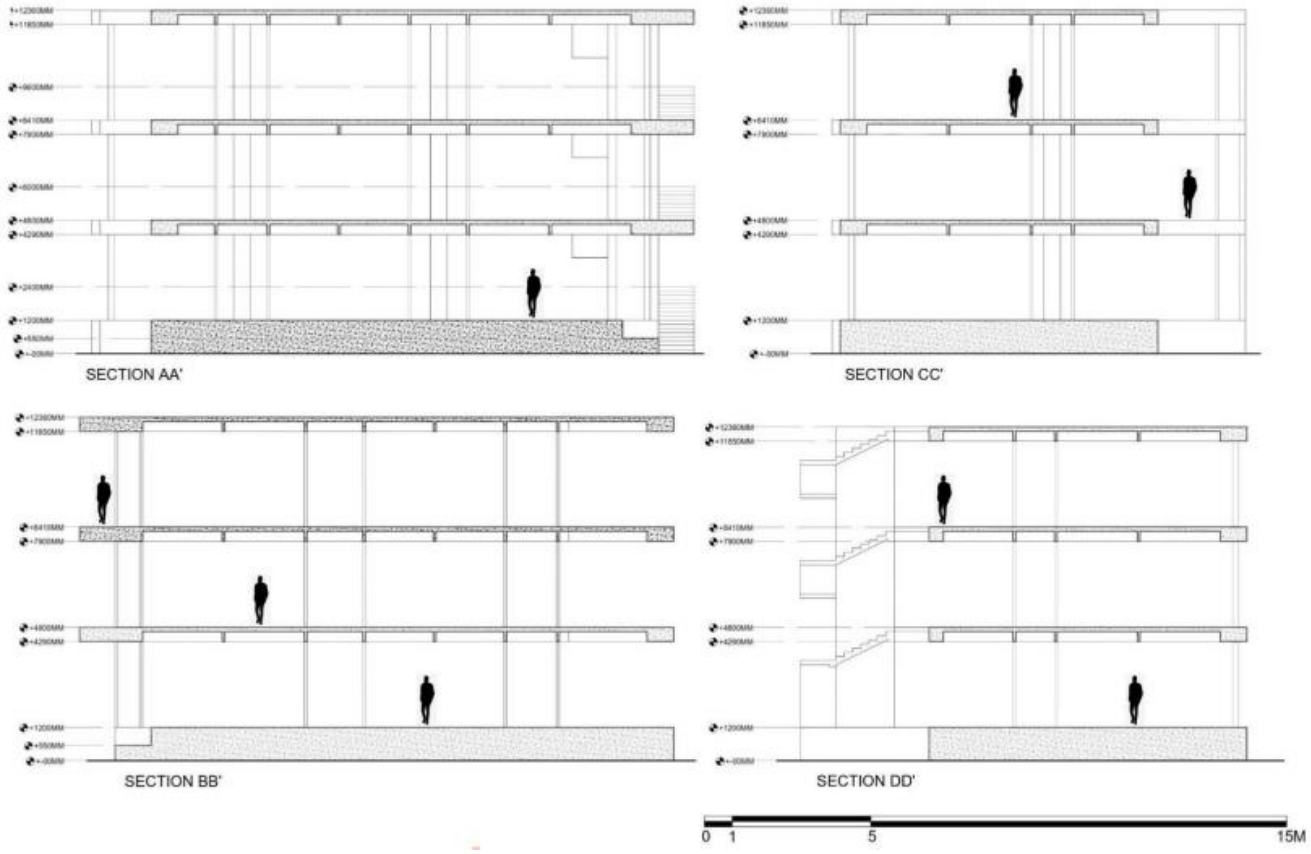
CLIMATE

Tropical wet and Dry Climate

42° C | 18° C | 1500MM

3.3 Building drawings – Plans and Sections

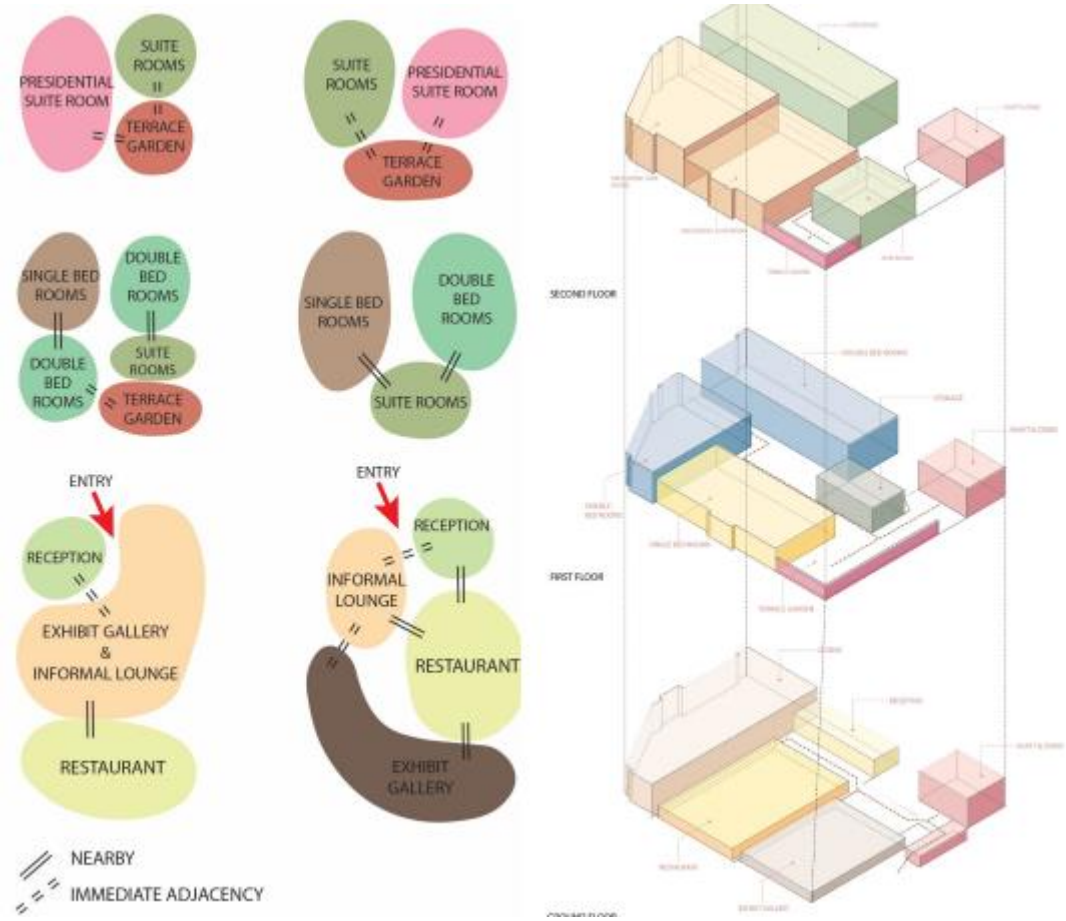




3.4 Project brief (Activities, Areas & Occupancies in boutique hotel)

SR. NO.	FUNCTION	AREA (IN SQ. M.)	OCCUPANCY (PERMANENT + FLOATING)
1	RECEPTION	5	2 RECEPTIONIST
2	INFORMAL LOUNGE	25	7-8 PEOPLE
3	LIBRARY/BUSINESS CENTER	25	5-8 PEOPLE
4	EXHIBIT GALLERY	25	5-8 PEOPLE
5	WASHROOM (FEMALE + MALE)	5	FEMALE - 1 + MALE - 1
6	RESTAURANT	50	30 GUESTS + 7-8 WAITERS
7	SINGLE BED ROOM - 4	160 (40 EACH)	4 GUESTS (1 GUEST IN EACH)
8	DOUBLE BED ROOM - 10	450 (45 EACH)	20 GUESTS (2 GUESTS IN EACH)
9	SUITE ROOM - 4	210 (52.5 EACH)	8 GUESTS (2 GUESTS IN EACH)
10	PRESIDENTIAL SUITE ROOM - 2	420 (210 EACH)	8 GUESTS (4 GUESTS IN EACH)
11	LAUNDRY ROOM	6	2 STAFF
12	STORAGE	5	-
13	RESTAURANT KITCHEN	40	4-5 STAFF
	TOTAL	1426	100-120

3.5 Zoning and Proximity studies



3.6 Design ideas: using the crafts in innovative ways

Fig.3.6.1 Exploring use of Oxide finishing to vertical surfaces, space dividers, furniture – not just flooring

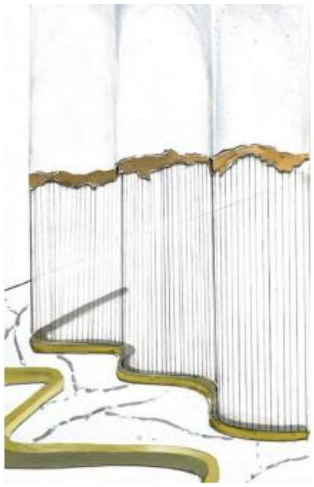


Fig.3.6.2 Conceptual sketch showing combination of threads or fabric with brass work at top and bottom

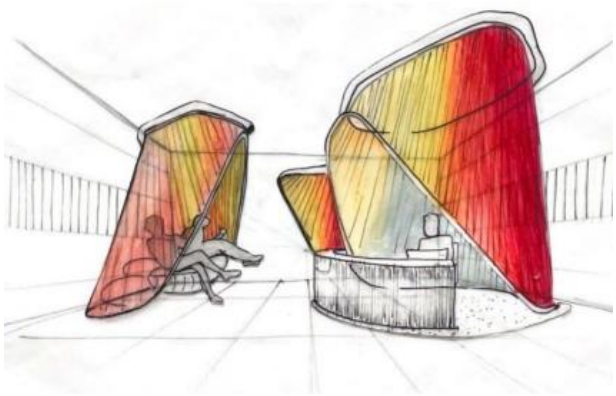


Fig.3.6.3 Colourful waiting pods made of Patola fabric threads at reception lounge

Fig.3.6.4 Using the traditional motif from Athangudi tiles to make this curved table, set within grey oxide walls and floor.

Fig.3.6.5 Combining multiple crafts and techniques: motifs from Patola are re-constructed using Athangudi tiles mounted in bronze framework above polished green oxide as a backdrop, while the reception table is dressed in Laterite

3.7 Developing mood-boards for different interior spaces

Fig.3.7.1 Bar / Restaurant - The use of blue oxide and a bronze lotus motif false ceiling will give the basement restaurant a vintage and dimly lit ambiance. The arched glass opening that looks out over the little blossoming trees will break the oxide walls

Fig.3.7.2 Reception - The focal point of the reception area is the partition made of Athangudi tiles. The bright wall behind the desk will be balanced with a brown Laterite Stone table. The inclusion of the vibrant waiting pods made of patola fabric will further incorporate traditionalism in a unique way

Fig.3.7.3 Guest Rooms - The rooms will have different oxides, which will be contrasted with dark furniture. Patola panels to be used as pop-up elements in combination with Chettinad columns, railings, etc. Iconography from different crafts expressed in bronze wall pieces.

3.8 Design Visualization


RECEPTION - WAITING POD


BAR/RESTAURANT


RECREATIONAL VERANDAH (SECOND FLOOR)


SUITE ROOM (SECOND FLOOR)

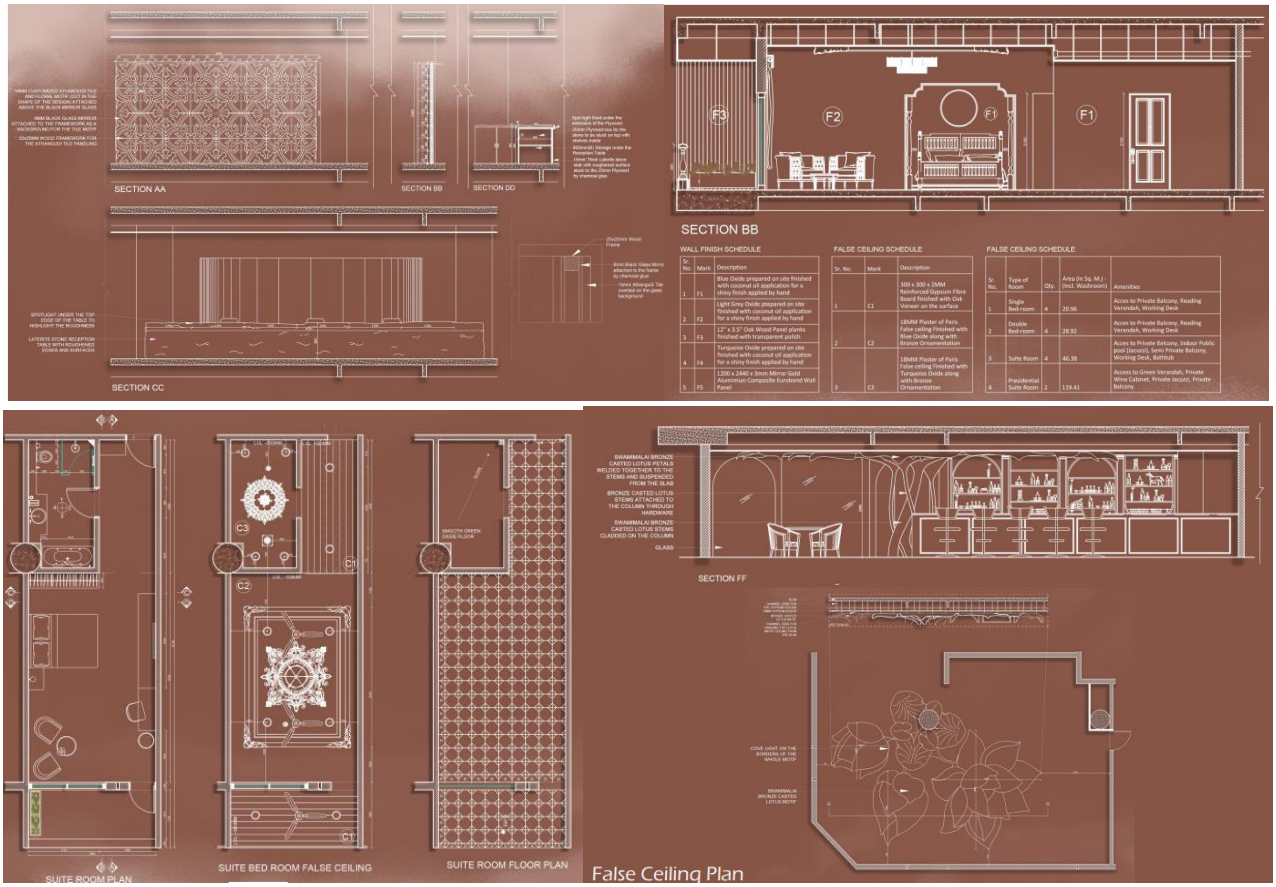

GREEN VERANDAH (THIRD FLOOR)


PRESIDENTIAL SUITE BED ROOM (THIRD FLOOR)


SUITE ROOM BATHROOM (SECOND FLOOR)


PRESIDENTIAL SUITE ROOM LIVING ROOM (THIRD FLOOR)

3.9 Detailed Drawings



4 THE WAY AHEAD

As demonstrated in this study, with a detailed study and understanding of our traditional building techniques and materials, it is possible to not only preserve such dying crafts, but also to reinvigorate them and promote them across the contemporary design and construction scenario. Each country, state, region has its own unique history and built heritage – and there should be no reason why we designers should not engage ourselves in exploring it. It is the duty of design professionals to give the necessary attention, effort and time to these traditional crafts and the skilful craftsmen and their families who keep them alive.

Through this study and follow up design demonstration, the authors wish to emphasise that such an approach is a win-win for all concerned;

The Client will get a design output that is unique and not seen anywhere due to this approach.

The Artisans and Craftsmen get dignity and monetary benefits due to such projects and would see a revival of their crafts – which may be a good incentive for their next generations to keep involved in it.

The Designers are able to do justice to such beautiful, skilful and old crafts of their own culture and at the same time they can generate a design language that is uniquely their own – derived from a combination of these crafts and the designer's aesthetic sensibilities.

One hopes that this approach can be promoted much more and can re-ignite the culture of hand-crafted, sustainable, local and beautiful craftsmanship within our built environments.

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