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Prominence of Sandalwood (white and red) handicraft in the interiors with respect to aromatherapy

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ABSTRACT

India being the hub for divine wooden handicrafts due to the rare plant species grown here like Santalum album (Sandalwood) and Pterocarpus santalinus (Red sanders) which come under tropical trees are the most valuable and sacred trees associated with the culture, tradition and medicine; Sandalwood's treasured aroma is extracted from tree's heartwood and also it is one of the finest natural materials for carving. Since ancient times the traditional way to extract the sandalwood paste is with the help of sacred rubbing stone and sandalwood smoke is by burning the incense sticks in sacred metal or mud burners for medicine and traditional rituals. Taking the concept from the traditional process of extracting; some of interior elements shall be created to spread the aroma of Santalum album into the interiors from the passages of traditional Jharokhas (stone oriel window) and Mashrabiya (wooden oriel window) on the other side creating interior elements like 3d layered wall murals, side brackets, wall brackets, carved pelmets, etc. with Pterocarpus santalinus. As it is the most costly wood, 3d layered wall murals are designed with ombre effect instead of solid wall murals by using less material for a larger space which makes it cost effective and gives an insight for sustainability and these most exquisite sandalwood carvings are made by skilled craftsman cast in situ to prevent damage due to transport.

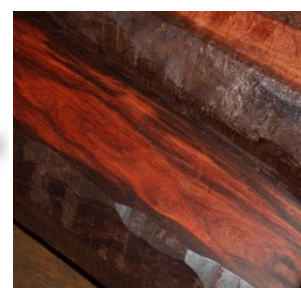
Keywords: Santalum album, Pterocarpus santalinus, aroma, carving, incense, oriel window, craftsman, sustainability.

1. INTRODUCTION

1.1 Brief on Sandalwood (white and red) handicraft in the interiors

India is the hub for divine wooden handicrafts due to the rare plant species grown here like Santalum album (Sandalwood) and Pterocarpus santalinus (Red sanders) which come under tropical trees and these sacred trees are associated with the culture, tradition and medicine in India. The heartwood of the sandalwood tree is treasured for its aroma that lasts for more than 1000 years and it is also one of the finest natural materials for carving which have an even texture due to its close grains and fewer knots.

This environment friendly material adds a positive essence to the indoor atmosphere therefore can be used for designing an interior space (i.e. multipurpose room) of a rehabilitation center with respect to aromatherapy; in its way it makes the craft sustainable and helps a visitor to experience the refreshing fragrance of the wood. A rehabilitation centre is the place which breaks the shackles of addiction. The first step to treat an addicted is to detoxify the body and mind simultaneously. Sandalwood's extraordinary aroma is used in body powders, perfumes, soaps, etc. for one to refresh, activate their mind and body; it complements the multipurpose room interiors with the aroma which helps the person to relieve from his tension and stress.



1.2 Aromatherapy

Aromatherapy is a holistic healing treatment that uses natural plant extracts to promote health and well-being. Aromatherapy uses aromatic essential oils medicinally to improve the health of the body, mind, and spirit. It enhances both physical and emotional health. However, some studies have shown that aromatherapy might have health benefits, including: Relief from anxiety and depression.

Since ancient times the traditional way to extract the sandalwood paste is with the help of sacred rubbing stone and sandalwood smoke is by burning the incense sticks in sacred metal or mud burners for medicine and traditional rituals. Taking the concept from the traditional process of extracting; some of interior elements like hanging bells (rubbing stone bell-lip and sandalwood bell-clapper) and hanging burners shall be designed in the passages of traditional Jharokhas(stone oriel window) and Mashrabiya(wooden oriel window) that help aroma to spread into the interiors along with the fresh air which also helps its legacy fragrance stand out. The aroma once breathed in can make restorative consequences for the body and brain; it can improve the physical health too.

1.3 Key points of Sandalwood

- Sandalwood has special place in Indian tradition
- It is used from cradle to cremation
- Sandalwood has high commercial value
- It is used in Cosmetics, soap industry and perfumery
- It is considered as an Ayurvedic medicinal herb
- It is also used in pharmaceutical and aroma therapy

2. BACKGROUND

2.1 Sandalwood

2.1.1 Sandalwood History: Sandalwood is one of the most important and precious trees on the planet and also the second most expensive wood. It is a valued endowment of the plant realm woven into the way of life and legacy of India. The natural distribution of sandalwood reaches out from 30°N to 40°S from Indonesia in the east to Juan Fernandez Islands (Chile) in the west and from Hawaiian Archipelago in the north to New Zealand in the south. It is a little to medium-sized hemi parasitic tree, dispersed rather broadly in India. Indian Sandalwood (*Santalum collection L.*) commonly known as Srigandha or Chandan belongs to the family Santalaceae. The sort *Santalum*, comprises of 16 species, among them Indian Sandalwood i.e., *S. collection* contains most elevated 4 - 6% of oil. The heartwood of the tree and the oil is in extraordinary interest universally for its high financial worth.

The sandalwood tree is highly regarded in the Vedic texts. Sandalwood is also mentioned in one of the oldest pieces of Indian literature, the ancient epic Ramayana (around 2000 B.C.). For more than 5000 years, India has been the conventional pioneer of sandalwood oil creation for perfumery and drugs. It is customary in certain communities among the Hindus to put a piece of sandalwood in the funeral pyre. The paste of sandalwood is applied on the forehead and other body parts, especially by devotees of God Krishna (Vaishnavites) and for ritual bathing of Hindu gods. The old Egyptians imported the wood and utilized it in medication, for treating the dead and in ritual burning to worship the divine beings.

2.1.2 Famous writing by the great Bengali poet Rabindranath Tagore on Sandalwood: "A sandal tree as it prove how sweet to conquer hate by love" RABINDRANATH TAGORE, the great Indian poet was also a profound student of Ayurvedic medicine; the ancient holistic art that Indians have been practicing instead of Western medicine for thousands of years (Rashkow, 2014). One of his favorite ingredients was Indian sandalwood oil and wrote about it "as if to prove that love would conquer hate, the sandalwood perfumes the very axe that lays it low". Tagore called this essential oil as "heartbalm." In his voluminous writings he once penned: "The oil from the sandalwood tree has been known for centuries as an elevator of noble emotions and the basis for a mature health that is proof against many of the diseases that stem from the filth and stench that surround us, especially in the great cities of the world, where plagues begin before spreading to the countryside. Sandalwood should be burned to purify the air; the oil should be rubbed on the skin for protection against the elements and skin lesions; and it can be imbibed, suitably diluted, for digestive health and to clear the head of all untoward thoughts."

2.1.3 Facts about the tree: Sandalwood tree will in general be cold, thus sandal is much cooler than the surrounding environment. Snakes are wrapped around the sandalwood tree to keep themselves cool but not because of the fragrance. Indeed In summer these creatures need to keep their bodies cool. This is the motivation behind why snakes want to live in cool spots like the waterway, lake, well.

2.2 Oriel Window – Jharokha and Mashrabiya

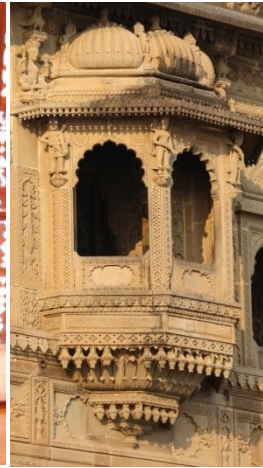
Environmental factors are considered and thermal comfort in the interior is created by using Jharokhas(stone oriel window) and Mashrabiya(wooden oriel window). A Mashrabiya is a traditional architectural component in the Islamic world. It is a kind of anticipating oriel window encased with cut wood latticework situated on the upper floors of a structure, at times improved with stained glass. It was traditionally used to get and passively cool the breeze; containers and bowls of water were set in it to cause evaporative cooling. Likewise, Jharokha(or jharoka) is a kind of overhanging encased gallery utilized in the design of Rajasthan. It was likewise utilized in indo-islamic engineering. The jharokha is a stone window anticipating from the divider face of a structure, in an upper story, sitting above a road, market, court or some other open space.



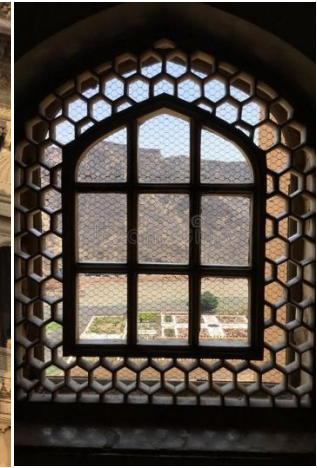
Image: Mashrabiya



Mashrabiya interior



Jharokha



Jharokha interior

The outer facade of the building used to be a layer with this kind of projecting over-hang, jaalis and small openings in it works for ventilation purpose where the outer layer heated in the daytime and radiant heat back to the environment. They both protect the structure from direct sunlight and allow air to enter the main space. The surface exposed to the sun minimized by repetitively using these elements. If there are no layers to protect the building, it heats up because of direct sunlight into space. However, organizing secondary areas adjacent to outer layer it acts as transitional space, keeping the comparative coolness inside the primary spaces.

3. SANDALWOOD CARVING

3.1 Sandalwood artisans

Sandalwood is the symbol of heritage and expensive wood compared to other varieties of wood. From the history, practice of Sandalwood carving is begun to make the embellishing items for the Royal families. Presently the state governments are helping artisans by providing sandalwood for subsidiary price. The craft is traditionally practiced by artisans and carried from their ancestors; it is carefully carved to avoid damages.

3.2 Tools used

- Wooden mallet and chisel for carving.
- Different types of carving chisels.
- Minute carvings are done with sharp tool.
- Automated hand drilling machine to carve minute detailing.
- Scooping tool is used to remove the extra wood while carving.
- Coping saw



3.3 Carving process

- Sandalwood is exceptionally delicate in nature which permits craftsman to create intricate carvings.
- There are two kinds of cutting techniques manual cutting and mechanized cutting which is done utilizing hand drill machine.
- Wooden squares are initial cut into required size.
- Subsequent to cutting, the craftsman draws the plan or theme on white plain paper.
- This plan is glued on wooden square for reference.
- The undesirable segments of wood are taken out and the unpleasant cutting is done dependent on the portrayed diagrams.
- Significant carvings are finished utilizing the wooden mallet and the chisel.
- When the fundamental shape is cut, minute and perplexing plans are cut with sharp edged molding devices.
- In the wake of cutting, the external surface of the item is smoothened.
- Minute elaborated motifs are achieved by drilling and cutting with the help of hand drilling machine.
- The plan is straightforwardly set apart on the outside of the wood.
- Minute motifs are accomplished by drilling and cutting with the assistance of hand drilling machine.
- When cutting is done, the sharp edges are smoothened.
- Completed wood article is fixed to the wooden frame as a last stage.



3.4 Specifications of Sandalwood timber

3.4.1 Tree & Wood Descriptions of Santalum album

Sapwood Color	The sapwood is described as whitish in color and is clearly differentiated from the heartwood.
Heartwood Color	The heartwood is described as light yellowish brown initially. It turns into a darker brown upon exposure and ages eventually to a dark reddish brown. It is reported to make up about a third of the volume of the log.
Grain	Grain is straight, but occasionally curly or wavy, producing a fiddleback figure.
Texture	The texture is very fine and even, with indistinct pores and rays. The wood has an oily, almost sticky feel.
Natural Durability	The heartwood is reported to have exceptional natural resistance to attack by decay organisms and other wood destroying insects. Resistance to Impregnation.
Strength Properties	Bending strength of air-dried wood is high, and maximum crushing strength, or compression strength parallel to grain, is also high. It is very heavy and very dense.

3.4.2 Numerical Values of Santalum album

<u>Category</u>	<u>Green</u>	<u>Dry</u>	<u>Unit</u>
Bending Strength	12300	15600	psi
Max. Crushing Strength	5300	7500	psi
Hardness		1680	lbs
Specific Gravity	0.75		
Weight		58	lbs/cu.ft.
Density (Air-dry)		58	lbs/cu.ft.

3.4.3 Working Properties of Santalum album

Planning	The timber is reported to plane with little difficulty to produce smooth, satiny surfaces.
Turning	Turning properties are rated as very good, and turned surfaces are usually very clean. The wood is reported to be an excellent choice for turning.
Moldings	The timber responds readily to most tools to produce smooth surfaces in moldings operations.
Carving	Carving qualities are rated as excellent, and Sandalwood is reported to be an exceptional wood for carving.
Sanding	Sanding properties are reported to be good. The strong and spicy odor produced during

Polishing

sanding operations is reported to be sometimes overpowering. High oil content is reported to help produce a satiny smooth and slightly lustrous surface in polishing operations.

4. DESIGN INTERPRETIONS

Designing a multipurpose (therapy, meditation, yoga, music, exercise, etc.) room in rehabilitation center which deals with the mind treatment by using interior elements made of Santalum album and Pterocarpus santalinus.

The openings of the multipurpose room would be designed by creating interior elements like proposed bells, proposed hanging drumsticks and wind chimes with respect to aroma, such that aromatic passages of windows help the aroma to spread indoors.

Other interior elements like 3d layered wall murals, side brackets, wall brackets, etc. are proposed with the combination of Santalum album and Pterocarpus santalinus.

Proposed design solutions

4.1 Simple and intricate 3D Layered Wall Murals

- 3d layered wall murals are designed with ombre effect instead of solid wall murals thereby reducing use of material and making it cost effective.
- 3D Wooden frames are handmade and assembled.
- Red, brown and black sandalwoods are preferred.



4.2 Relief carving

- Mini carved panels and mini carved motifs are used as the part of screens/partitions.
- Buddha's mini wall mural to the focal wall
- Sandalwood and red sanders are carved in relief with the voids where ever necessary as per design.



Carved panel

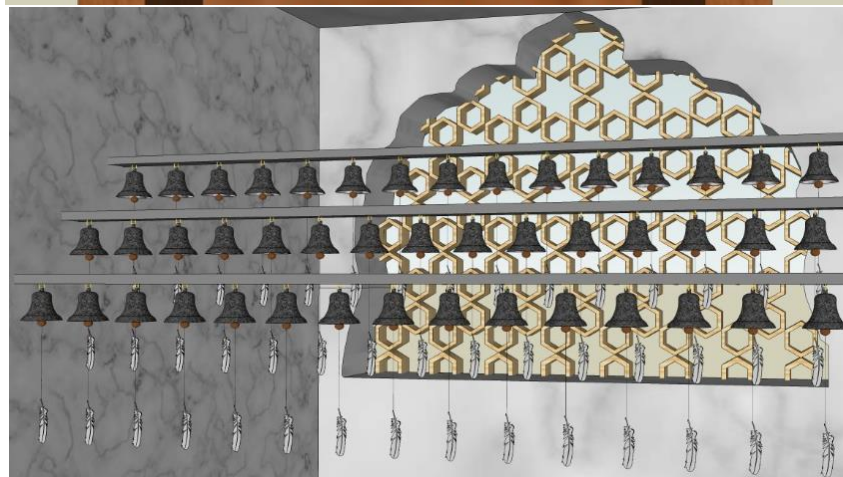
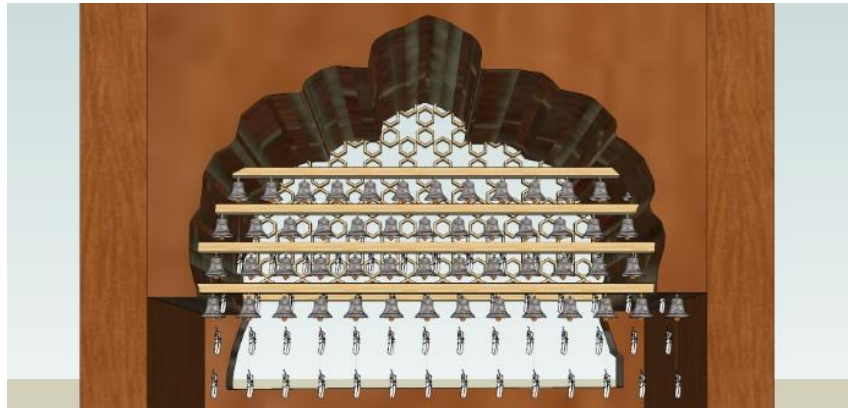
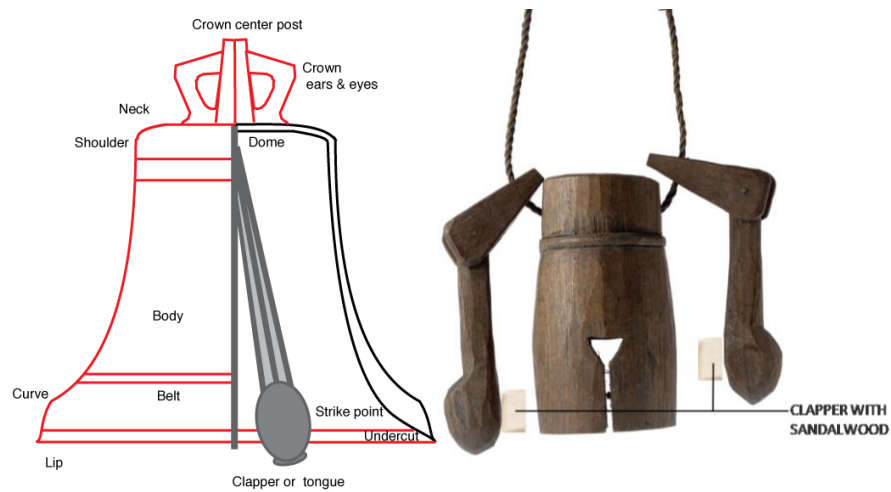
Carved Motif

Carved Motif

4.3 Jhorakha/ Mashrabiya passages are used as aroma passages as illustrated below

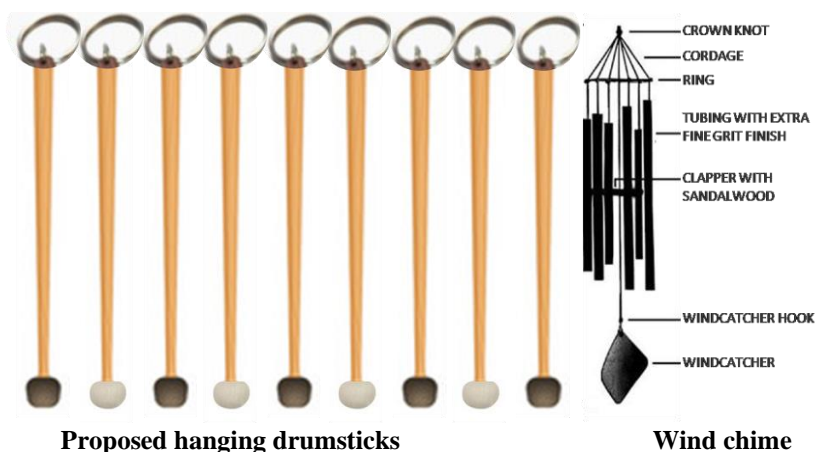
4.3.1 Bells in the passage

- In the passage of Jharokha, stone bells are fixed. Body of bell is made of stone which acts as rubbing stone; lightweight clapper's head is made of sandalwood with attached hanging wind catcher (feather). With reference to image1.
- In the similar way wooden bells are hung in the passage of Mashrabiya; inner surface of the bell body has the extra fine grit finish. With reference to image1.
- Wooden slit bell with pair of articulated external clappers; small sandalwood pieces are fixed as shown in the below image. With reference to image2.



4.3.2 Hanging drum sticks in the passage

- Mini hanging drum sticks with sandalwood heads are hung alternately as illustrated in the image
- The heads of the sticks are made of sandalwood and fixed to the sticks made of red sanders.
- Once melted, they can be replaced easily.
- Collision due to wind helps the sandalwood to produce the dust which gives the aroma and spreads over.



Proposed hanging drumsticks

Wind chime

4.3.2 Wind chimes in the passage

- The clapper of a wind chime is made of sandalwood and the metal tubes with extra fine grit finish.
- Whenever the tubes tap the clapper, aroma spreads into indoors.

4.4 See through partition made with the left over wooden pieces.

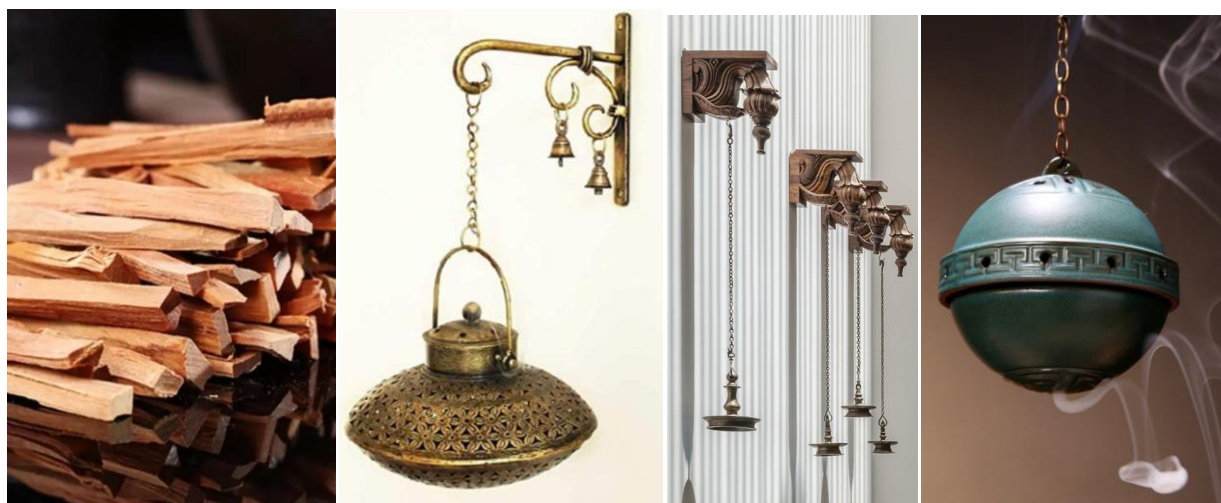
- Sandalwood thin strips are made out of the left over wooden pieces from carving.
- These thin strips are used to make various elements like flowers, murals, spiral framing, etc.
- All the desired elements together are used to make the See through partition in the multipurpose room.



1. Thin strips made out of left over wooden pieces.
2. Sandalwood flowers made out of thin strips.
3. Reference screen wall.
4. Sandalwood garland made of thin strips.

4.5 Hanging Incense burners

Traditional incense burners are hung to the side brackets as shown in the reference images.



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