



Role of fabrics & textiles in Interior design

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ABSTRACT –

The integration of fabrics and textiles in interior design is a multifaceted exploration, encompassing a spectrum of functions and design considerations. This detailed abstract delves into the nuanced ways in which fabrics play a pivotal role in shaping interior spaces. Beyond their fundamental role in upholstery and drapery, fabrics serve as versatile tools for designers to manipulate the sensory and visual experiences within a space. Moreover, the utilitarian aspects of fabrics are scrutinized, highlighting their impact and acoustics, thermal comfort, and durability.

The abstract also addresses the evolving trends in sustainable and eco friendly textiles reflecting the growing awareness of environmental responsibility in design. Analyzing the intersection of aesthetics and sustainability, the paper explores how designers can make informed choices to create environmentally conscious interiors without compromising on style or performance. The exploration aims to deepen our understanding of the intricate decisions involved in fabric selection, ultimately contributing to the advancement of thoughtful and impactful interior design practices.

Key Words: Upholstery, traditional usage, environmental friendliness, Sustainability factor ,thread count, fibre strength

1. INTRODUCTION

The article opens with a concise summary of its purpose and importance, highlighting the wide-ranging effects textiles have on different facets of culture and society.

Examines the ways in which textiles impact cultural expression and identity. Examine how textiles are used in customs, ceremonies, and rituals to highlight their significance in maintaining and transferring cultural heritage.

Economic Consequences: examines the impact of textiles on the economy, taking into account their contribution to commerce, industry, and employment generation. Examine the ways in which the textile industry influences other industries and the world economy as a whole.

Examines the connection between textiles and fashion in the book Fashion and Style.

Emphasize the importance that textiles have in art and design, both as decorative accents and as means of expression. Talk about the ways in which textile designers and artists utilize materials to express important ideas and make an impression on the viewer.

Impact on Society and Psychology: Examine how textiles affect people's relationships with one another and their own psychological health.

Cross-Cultural Influences: Examines how textiles affect cross-cultural interactions and transcend national boundaries. Talk about the ways that textiles facilitate cross-cultural communication and understanding.

Natural fabrics over synthetic fabrics

The choice of natural over synthetic fibres is centered on the comfort, sustainability factors, durability and aesthetic appeal of various fabrics while keeping in mind the functionality of the materials.

Breathability and Comfort: Natural fabrics like cotton, wool, and silk are often more breathable and comfortable to wear compared to synthetics. They allow air to circulate through the fabric, which can help regulate body temperature and reduce sweating.

Biodegradability and Environmental Impact: Natural fabrics are biodegradable, meaning they break down naturally over time. They are typically more environmentally friendly than synthetic fibers, which can take hundreds of years to decompose and contribute to micro plastic pollution.

Renewable and Sustainable: Many natural fibers come from renewable sources such as plants (cotton, linen) or animals (wool, silk). When harvested responsibly, these sources can be replenished, making them more sustainable in the long term.

Hypoallergenic Properties: Natural fabrics are often hypoallergenic and less likely to cause skin irritations or allergies compared to some synthetic materials, making them a preferred choice for individuals with sensitive skin.

Durability and Aging: Certain natural fibers like wool and silk can be incredibly durable and have good longevity when cared for properly. They can age well and maintain their quality over time.

Aesthetic Appeal: Natural fabrics often have a unique aesthetic and texture that many people find appealing. The look and feel of natural fibers can vary widely and are sometimes preferred for their natural and organic appearance.

Preservation of Traditional Techniques: Artisans play a critical role in preserving traditional methods of working with natural fibers. They pass down ancestral knowledge and techniques, ensuring that these age-old practices are not lost in the face of modernization.

Natural fabric - Cotton

Cotton is a fluffy, soft fiber that grows in tufts around the seeds of cotton plants belonging to the mallow family Malvaceae and commonly known as bolls. In India, cotton production is primarily from Gujarat. In India, cotton is a significant source of fiber and cash crops. The focus of this article is on India's leading cotton producing nations. It can be found in variety of types: like Canvas, a durable thick cloth for making weather resistant items, denim which is a thick robust material done through wefting threads, Flannel a velvety and fluffy fabric used in casual clothes, Gauze for treating wounds, Muslin a lightweight fabric, Poplin a multipurpose robust fabric.

Traditional usage includes the usage of material in day to day life activity materials like making yarns, ropes, wipes, clothes, fibres, slivers etc. Cotton can be utilized almost anyplace because of its versatility. However, upholstery, bed linens, and accent pieces like throw pillows and window treatments are three of the greatest uses for it.

The conventional cotton crop is susceptible to several pests and has a high water need, making its sourcing generally unsustainable. organic cotton helps to mitigate greenhouse gas emissions by avoiding the use of synthetic fertilizers and pesticides, which can contaminate water and soil. Cotton endangers the water quality, the soil quality, the condition of biodiversity in fields and their environment and the well-being of surrounding residents and agricultural labourers.

Silk

A natural protein fabric that can be woven into textiles is called silk. Certain insect larvae create fibroin, which is the primary component of the protein fiber that makes up silk, in order to build cocoons. The cocoon of the silkworm *Bombyx mori* is used to make silk. The most widely used mulberry silk is made by the mulberry silkworm larvae. Rearing silkworms in captivity yields silk. The cloth is therefore made of genuine animal fiber. Different types of silk are produced by different breeds of silkworms. the chemical makeup of silk determines the variation in quality. Moreover, there are two kinds of silk formations: artificial and natural. There are some different types of silk produced: Mulberry Silk, the thickest fabric yet the softest and the toughest one, Eri Silk, which is more robust and heavy and is made without killing the silkworms. Taka Silk, made by green silkworms, Spider Silk, it is one of the priciest silk and is used in making protective jackets, microscopes, Coan Silk, produced through the food source of Oak, pine for silkworms.

Traditional uses includes clothing, surgical sutures, lifestyle products, parachute, bicycle tyre etc. Uses in Interior design typically includes upholstery, rugs, wall covering, drapes & curtains.

Silk is often regarded as a more sustainable fiber. Compared to many other fibers, it requires less energy, water, and chemicals and is a renewable resource that may biodegrade. The manufacture of silk may include the use of toxic chemicals. During the reeling and material processing steps, toxic chemicals may be employed to clean the silk and remove sericin. Silk manufacturing affects communities and workers: Silk production is labor-intensive and often occurs in nations with cheap labor prices.

Linen

The fibers used to make linen come from the stems of the flax plant. The cellulose fibers found inside the stalks of the flax plant, *Linum usitatissimum*, one of the earliest cultivated plants in human history, are used to make linen fabric. of linen's key characteristics is its strength. Twice as sturdy as cotton, linen is a resilient fabric. It is not as strong as silk. It provides comfort comparable to cotton fiber. It is the least elastic fabric. Another characteristic of linen is its ability to absorb moisture and dry faster. It works great for making handkerchiefs and towels. Fabrics have about 200-2000 thread count variations.

Common uses of linen are in manufacturing sewing threads, fabrics for light aviation use, high quality papers, insulation, filtration, reinforce plastics and composite materials.

In Interior design, - Linen sheets and duvet covers are prized for their breathability and softness. - Linen curtains are a popular choice for their natural drape and ability to filter light gently. Linen curtains make a room appear a lot brighter while still offering privacy. Natural fibres like those of a linen are rug can be stain resistant, thanks to their inherent soil repellent properties.

Linen is among the most environmentally friendly textiles. The flax plant can survive in severe situations. It requires less water than cotton and is a fast-growing plant. The biodegradable qualities of linen cloth may be lost when it is bleached or dyed. Because of this, raw linen is more environmentally friendly.

Leather

Almost any animal's skin, including those of pigs, sheep, goats, and crocodiles, may be used to make leather. Nonetheless, cow hide is the most often utilized type of hide. cow leather may be divided into layers, there is a wide range of thicknesses available. Quick evaporation or puddling of cooling sweat can cause the foot to become cold, yet leather has the ability to retain considerable amounts of moisture without feeling damp. The color, feel, fragrance, surface resistance, handling, and texture of leather vary greatly, which adds to the product's exceptional uniqueness and value. heat moves through leather very slowly due to its high air content, which makes it a poor heat conductor.

Traditional uses includes clothing, handbags, belts, footwear, accessories, automotive, gloves etc.

Uses of leather in interior design includes Rugs And Carpets, curtains, wall panels, coffee table, flooring, wall paneling, upholstery.

When it comes to sustainability of leather, huge part of leather industry is the tannery. Today's tanneries clean their liquid waste by running them through wastewater treatment facilities or discharging them there. Government regulations oversee the management of solid waste, and best-in-class tanneries are striving to develop circular waste streams from their solid waste that provide new materials or energy sources. Deforestation is done in large areas- 80% for food and 77% to raise cattle. While there is high emission of greenhouse gases.

Sisal

Sisal is one group of fibres extracted from the leaves of plants belonging to the agave family. It is Extremely low maintenance and durable. Absorbs moisture slowly. Easily dyeable, with a wide selection of colors available. Strands are strong and made up of numerous individual fibers held together by natural gum. Untreated sisal exhibits higher tensile modulus and hardness than the unloaded resin. Sisal is a popular choice for interior design due to its durability, versatility, low cost, and environmental friendliness. It's also resistant to mildew and mold, making it an ideal choice for areas that may be exposed to moisture like bathrooms or kitchens.

Sisal is generally used in buffing cloth, dartboards, mattresses, handicrafts, fibre core of steel wire cables, millinery, brushes and tann & twine.

In Interior design, sisal is a new found material which is used in a variety of new ways. It is already used in carpets, rugs, wallpapers, wall panels, floor covering, furniture.

Sisal is sustainable and 100% biodegradable. Sisal is suitable for allergy sufferers. Only 4% of the approximately 1000 fiber bundles in each leaf are used as fibers. Sisal absorbs more carbon dioxide than it emits, making it a powerful ally in the fight against climate change. Its processing primarily generates organic waste and leaf residues, which can be repurposed for bioenergy, animal feed, fertilizers, and even eco-friendly construction materials.

Hemp, Jute & Ramie

One kind of textile produced from the fibers of the Cannabis sativa plant is hemp cloth. It is known that this plant provides incredibly strong and resilient textile fibers.

Similarly is the Jute fibre which is obtained from the stalks of the jute plant. After harvesting, the stalks of jute plants are bundled together and soaked in water for about 20 days.

Boehmeria nivea and utilisation plants are the sources of these fibers; the former yields white ramie, while the latter yields green ramie. Among the strongest natural fibers is ramie. When damp, it has more strength. It resembles linen. Because it is not as durable as other fibers, it is typically blended with wool or cotton. It is particularly well-known for its capacity to maintain form, lessen wrinkling, and give the look of the cloth a silky sheen.

General uses of these materials are tablecloths, napkins, handkerchiefs, and clothing items like shirts and shorts. ramie is utilized in fire hose, upholstery textiles, fishnets, and straw hats.

Mohair

The process of creating mohair begins with the shearing of an Angora goat. One of the most crucial qualities of mohair is its sheen. This gloss or shine makes colored mohair incredibly durable and helps it withstand fading from the sun and other environmental factors. Mohair burns very little. It will usually shrink into a bead the consistency of ash when it is near or beneath a naked flame. Mohair is flexible enough to be bent or twisted without breaking. Animal natural fibers may both absorb and release moisture from the atmosphere. Where human-made fibers do not, they breathe. Mohair dyes wonderfully and effortlessly. Mohair is quite strong in terms of tensile strength. It is stronger than steel, diameter for diameter.

Traditional uses of mohair are in making sweaters, suits, scarves, winter hats, carpets and home furnishings.

Wool

Shearing the fleece of live animals is the primary method of producing wool, yet occasionally, the fibers in the pelts of dead sheep are treated to loosen them, producing pulled wool, which is a lower quality kind. Wool maintains a perfect equilibrium of moisture due to its moisture-wicking properties. Wool doesn't feel damp even after absorbing up to 30% of its weight in moisture. A single wool fiber has a 20,000 bend-to-break limit before breaking. Before the same thing occurs, the identical cotton fiber can only be bent around 3,000 times. Wool doesn't become brittle over time as other fibers do because of the equilibrium of air moisture that it retains.

Uses of wool are done in clothing, yarns, fertilizers, blankets while in interior design it is used for insulation in partitions or in walling or ceiling panels, upholstery, carpets & rugs, furniture and soft furnishings. It is one of the most recycled fibers in the world and a renewable resource. Producing wool uses a lot less energy and has a lower carbon footprint than many other fabrics. Animal farming necessitates the clearance of large areas of land to allow for grazing, which can occasionally result in overgrazing and deforestation. It is a fabric that emits most greenhouse gases during fiber production.

3. RESEARCH METHODOLOGY:

To identify the multifaceted role of textiles and fabrics in shaping interior spaces by examining various historical and contemporary interior design projects. This includes considerations such as texture, colour, pattern, acoustics, lighting and temperature control. The psychological and sensory impact of textiles and fabrics on occupants of interior spaces will also be explored. This includes the emotional responses, comfort levels, and well-being of individuals in spaces where textiles and fabrics are thoughtfully incorporated. This historical background provides valuable insight into the enduring importance of textiles as an integral part of interior spaces.

Various research papers are being analysed and to study the uses of interior design from ancient to modern applications. Later the parameter identification along with the material analysis is done.

4. FINDINGS AND DISCUSSION:

- From the use of cotton in case studies, cotton is a diverse material which are used nowadays in space making elements and are available in various types of thread counts and can be used in variety of ways based on its opacity.
- Silk has always been a luxury fabric known for its sheen and is used in partitions since historic times in various cultures.
- Different types of fabrics are used in the space other than upholstery, which can set the culture and ambience of the space, as it can serve a variety of ways like acoustic treatments, wall facades etc.
- Strategically combining elements that differ in color, texture, shape, and function to create a dynamic and visually stimulating atmosphere.
- Different properties of fabrics or fibres helps in treating different elements of the space and can innovate new design factors in the field of interior design. Textiles are also being used as art installations.
- Plant based fabrics like hemp, ramie, jute, sisal are now used in new innovative ways like wall cladding, ceiling panels, art sculptures.
- Mohair and wool are the materials which can be used as insulation material and are being used in luxury rugs and carpets.

5. CONCLUSIONS

This research delves into the general properties along with sustainability factors of each growing natural fabric and compared the strengths and weaknesses to get clearer view of each fabric and the role it can play in architecture and interior design. Plant based fabrics take less time in comparison to animal base fabrics with lower carbon footprint, carbon emission is also less in comparison.

Mohair and ramie are not that commonly used in interior design. It is mostly custom made and are slowly gaining popularity.

In this research, we understand the range of natural fabrics available and their varying usage in the interior industry. These products are also being manufactured keeping in mind the sustainability aspect and the resources involved in it.

New plant based fabrics are also being evolved to textiles and other materials (for example, hempcrete) and are used in variety of space making areas. These fabrics are now being manufactured in various companies in variety of ways. Some of the common ways are wall panelling, carpets, upholstery etc.

There are various new companies involved with the use of these materials to form unique panels and decorative elements. For example, when it comes to carpets, hemp is used by companies like *Fibre by Auskin, Armadillo & co.*, while Sisal carpets are being done by *Fibreworks, Stanton carpets*. Some of the companies producing wall panels are *Hempitecture, CMO Paris* for hemp panels, *Phillip Jeffries, Thibaut* for jute panels, *Buzzispace, Filzfelt* for wool panels.

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