

A Critical Enquiry of Material Ageing in Interior Architecture

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Abstract

Psychology and architecture are seen in intersections whenever the old buildings and spaces are repurposed. The direct connection seen is through the materiality of those spaces. This raises the curiosity to explore the amalgamation of a material's functionality and aesthetic values with its purpose and enduring existence, even after decay, as seen through historical perspectives. This study aims to blend the material's purpose and idea of existence with its functionality and aesthetic, considering the longevity of its impact. Investigating the value creation of old materials, the research contributes to sustainability and evokes a sense of nostalgia, highlighting the material's unique connection with history. Focused on interior architecture, the study challenges the perception that ageing diminishes a space's value, advocating for positive emotional responses from occupants. By examining global adaptation projects, particularly in Bombay, India, the research underscores the emotional and historical significance of aged materials, emphasising their role in enhancing user experience and well-being. The study contributes valuable insights for designers seeking to leverage the enduring value of ageing and weathering materials, promoting sustainability and preserving historical connections in design approaches.

Keywords: Decay, Weathering, ageing, time, temporality, materiality, value enhancement, history, interior architecture.

1. Introduction to the Study

The Oxford Dictionary defines ageing as the process of growing old and weathering as being worn down by prolonged exposure to the atmosphere. Both these phenomena are intertwined with the concept of decay. Decay, while often viewed negatively, is a natural process, as seen in nature. In the realm of design, however, decay can have a desirable effect by illustrating the temporal quality of materials. Understanding the ageing and weathering of materials is crucial in specifying them for construction and design projects. The properties and applications of materials and the technology used in their construction help us interpret the impermanence of spaces.

Various environmental factors like humidity, moisture, air pollution, wind, and solar exposure impact materials, causing them to change over time. These changes affect material selection and specification, influencing the assembly and detailing of more significant interior components. 'decay' originates from the Latin 'decidere', meaning 'to fall down or off'. According to the Oxford Dictionary, decay means 'to rot or decompose' or, in societal terms, a decline in quality, power, or vigour'. Despite its negative connotations, decay in architecture and design can offer positive outcomes. As a noun, decay signifies degradation or deterioration, but as a verb, it refers to transforming a building or material, which can be leveraged creatively.

The abandonment, decay, and ruins cycle can lead to romanticised reuse (Fein, 2011, pp. 15-16). This transformation is evident in various contexts, from nature to buildings and even in entertainment and science fiction. For instance, video games like "The Last of Us," "Fallout," "Bioshock," and "DayZ" depict urban decay, showcasing how nature reclaims spaces over time. The adaptation of "The Last of Us" into a TV show highlights urban decay as a reflection of a dysfunctional society. The show's creative director points out the struggle to maintain city life against nature's relentless forces (artsculture, 2013). Despite the unlivable conditions depicted, urban decay is often presented appealingly, illustrating decay's artistic value.

This study delves into the intricate relationship between ageing, weathering, decay, and spatial design. Environmental factors cause weathering, while ageing signifies the natural deterioration of materials—buildings and sculptures age and weather over time, influenced by decay in various forms. Designers might use decay and time creatively, considering the philosophical aspects of adaptive reuse. This involves exploring how decay and time can enhance value through emotional experiences and the expressive qualities of ruination.

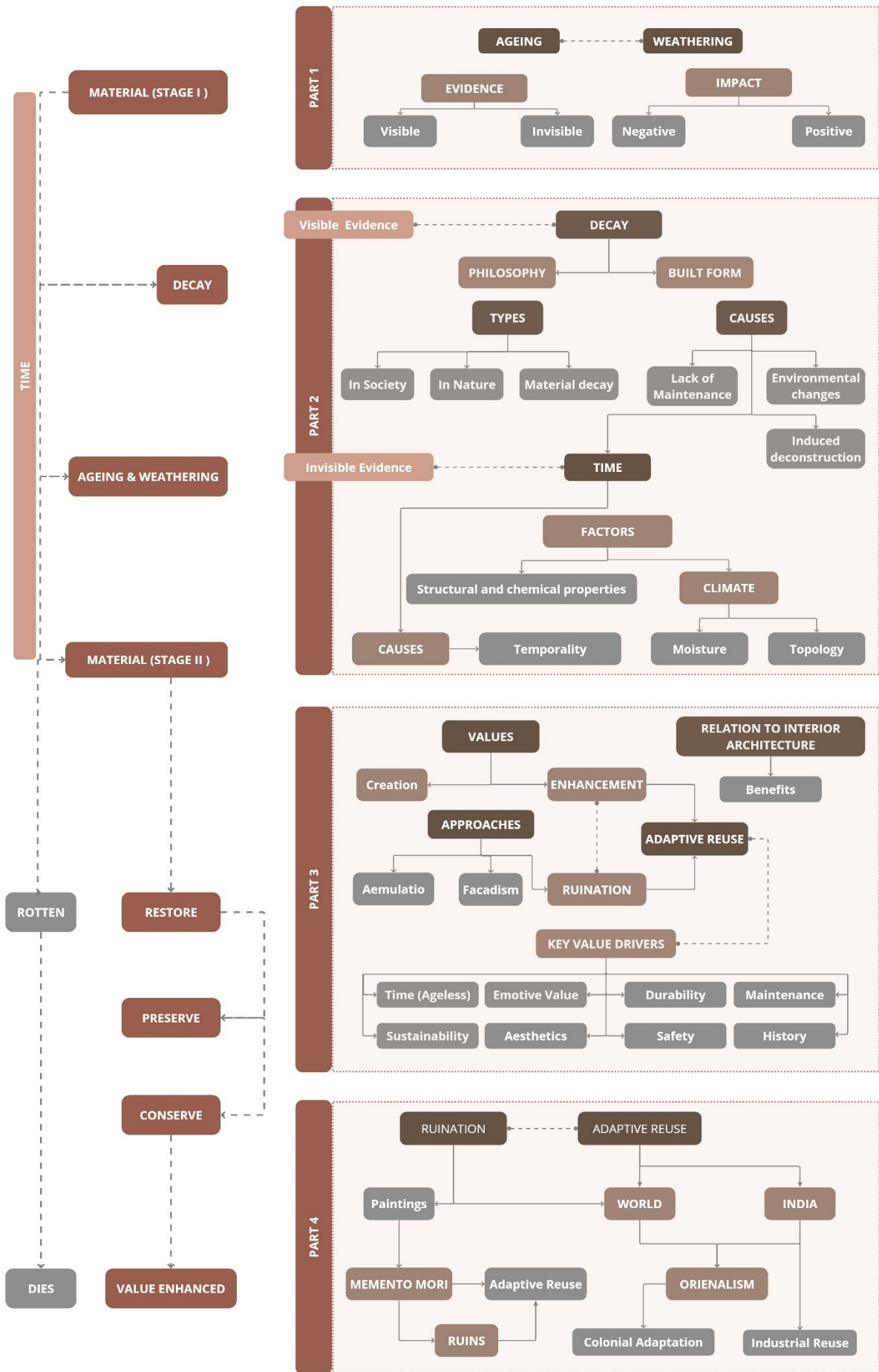


Figure 1. Methodology diagram in sequence

A historical context, such as Mumbai's colonial heritage, adds another layer of value to ageing and weathering materials. This research investigates what makes a colonial space valuable and how its historical context influences design. By understanding these complexities, designers can better appreciate how to value ageing and weathered materials.

To grasp the nuances of ageing and weathering, one must examine the contributing factors such as environmental conditions, light and moisture exposure, and chemical reactions. These factors affect a material's durability, strength, and quality visibly and invisibly. Recognising time as a potential value enhancer, this study explores adaptive reuse and ruination as design strategies. Key value drivers in interior architecture include time, aesthetics, durability, safety, maintenance, sustainability, emotive value, and history. The research highlights its significance in interior design by studying ruination as a value-enhancement strategy, particularly in India's rich history.

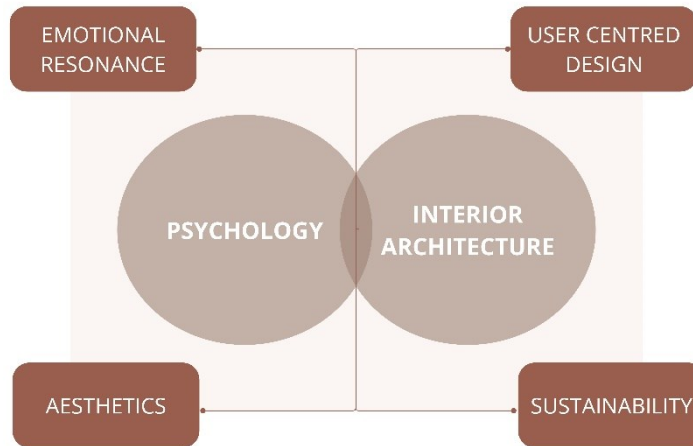


Figure 2. The connection between psychology interior architecture

Integrating psychology and interior architecture prompts how materials' functionality and aesthetics relate to their purpose and longevity. This approach not only promotes sustainability but also evokes a sense of nostalgia. The research investigates factors contributing to ageing and weathering, the impact on material properties, and the concept of value creation and enhancement in interior architecture. Through examples of global ruination, it demonstrates how ruination can be a strategic tool in enhancing the value of interior spaces.

2. AGEING & WEATHERING OF MATERIALS

2.1. Ageing

Ageing is the gradual loss of functional and structural properties due to biological, physical, and chemical changes (Gilbert, 2000). Ageing in interior architecture refers to natural wear and tear on building materials, finishes, furniture, and other decorative elements. Natural ageing processes like sunlight, moisture, air, and wear and tear change materials physically and aesthetically. Colour, texture, surface finish, and physical properties like strength and durability change with exposure (Algreen-Petersen et al., 2014).

These changes shape spaces. Thus, architects and designers must consider ageing when choosing building materials and designing interiors. This includes material durability and resistance to environmental factors that accelerate ageing (ScienceDirect, 2013). The four leading causes of ageing are oxidation, corrosion, wear and tear, and environmental exposure.

2.2. Weathering

Material ageing and weathering, while related, have distinct implications in architecture and design. Weathering specifically refers to the physical and chemical changes materials undergo due to external environmental factors like wind, rain, sunlight, and temperature variations over time. These changes result in gradual decay and breakdown, affecting a material's appearance, texture, and structural integrity. Weathering thus reflects the interplay between time, the environment, and the built environment.

Magnani (2013) noted that weathering can impart a unique patina and character to a space, which cannot be artificially replicated. Materials such as wood, brick, and stone are often valued for their weathered appearance, symbolising history and a connection to the environment. According to Leatherbarrow and Mostafavi (2001), buildings constantly evolve under the influence of various forces that cause weathering and ageing. Visible signs of weathering include cracks, stains, discolouration, and structural changes. While weathering can degrade a material's appearance and function, it can also enhance the aesthetic and historical value of a building.

The perception of weathering and ageing can be positive or negative, depending on the context. Ageing can make a material brittle or weak, posing structural or safety issues. Weathering can lead to fading or discolouration, reducing a material's visual appeal or causing it to clash with other materials (Magnani, 2013). However, in interior

architecture, architects and designers often select materials that weather well over time to imbue buildings with character and texture. For instance, Cor-ten steel and reclaimed wood are prevalent in contemporary design for their ability to develop a rich patina and connect the building to its environment. Weathering is frequently valued in historical or heritage buildings for conveying a sense of time and history. Even derelict buildings, often deemed unsightly, can be appreciated for their weathered appearance and unique character (Nieszczerzewska, 2016, pp. 387-397).

An exemplary case is the Hampi, a UNESCO World Heritage site with numerous ruins and monuments from the 14th and 16th centuries. The structures have weathered over time, creating rough, textured surfaces contributing to the site's aesthetic. According to UNESCO, the "weathered and eroded appearance of the granite monuments is considered an integral part of their historical and cultural significance."

2.3. Evidence of Ageing and Weathering

The expressive value of materials makes ageing and weathering pertinent in interior architecture, enhancing a space's aesthetics. Contemporary interior design values warmth, character, and authenticity, which aged or weathered materials can provide. Studying these processes also informs decisions about material durability and lifespan, ensuring spaces remain aesthetically pleasing and functional. Additionally, using aged or weathered materials supports sustainable design by reducing waste and environmental impact while adding character to the space. Such materials may also aid in biophilic interior design, which seeks to connect occupants to nature through natural elements.

Material ageing and weathering can be classified based on visible and invisible evidence. Understanding how materials change over time is crucial for this classification. Visible evidence includes discolouration, cracking, and deformation, while invisible evidence involves microscopic or molecular changes in chemical composition or physical properties.

Classifying material ageing and weathering is essential for several reasons. First, it aids in determining material durability and lifespan by understanding physical and chemical changes over time. Second, it helps predict material failure or degradation, which is crucial for engineering and architecture. Third, it assists in developing strategies to mitigate ageing and weathering, such as protective coatings and maintenance protocols.

Visible evidence of ageing and weathering includes surface texture changes, colour changes, corrosion, warping and distortion, surface stains, and wear patterns.

According to Trigg (2006),

"the visible signs of decay and ageing in a space can contribute to a sense of authenticity and add to the overall aesthetic appeal of the design."

Invisible evidence includes microstructural changes, chemical changes, biological growth, wear and tear, and degradation of adhesives and coatings. A commonality among these factors is their occurrence over time, making 'time' the broader umbrella for classification. Time influences visible evidence and drives the impermanence of spaces through its invisible presence.

As Mostafavi and Leatherbarrow (2001, p. 7) state,

"Time is a material fact, just like the materials that architecture is made of."

2.4. Negative Aspects of Ageing and Weathering

While the positive aspects of ageing and weathering are a focus of this research, recognising their negatives is equally essential. Ageing and weathering are natural phenomena, and their occurrence is inevitable. A balanced perspective requires acknowledging both sides.

Material deterioration due to ageing and weathering poses safety and property risks. For instance, the Mumbai Esplanade Mansion, a heritage building, suffers significant deterioration. Built between 1867 and 1869 by architect John Watson, it became known as Watson's Hotel, one of Bombay's best. By the late 1960s, the building declined and became a multi-use office and housing complex. The Mumbai Municipal Corporation eventually declared it unsafe due to its dilapidated state (Zaveri, 2018). In 2005, part of the building collapsed, resulting in a fatality. The wooden beams and pillars have significantly deteriorated, compromising the building's stability. Water damage and erosion have also raised safety concerns. The building's deteriorating condition has led to high financial costs for its owners and its closure due to safety issues.

Ageing and weathering can also impact a community's social aspects. Deteriorating buildings may destroy cultural heritage and community identity, detracting from an area's aesthetics and potentially causing social stigma and disinvestment. Neglected buildings can uninvite an area, complicating efforts to attract new businesses and residents (Leatherbarrow & Mostafavi, 2001). This can lead to a loss of community pride, social exclusion, vandalism, and crime. Conversely, well-maintained buildings promote community pride and cohesion (Nieszczerzewska, 2016, p. 389).

3. CAUSES OF AGEING & WEATHERIN

3.1 Decay

Decaying is often associated with ageing and weathering (as previously mentioned in the introduction to the study), both visible causes of physical deterioration in interior spaces. As buildings and structures age, they are subject to various environmental and human-made factors contributing to their decay. These factors include exposure to moisture, sunlight, wind, temperature fluctuations, and wear and tear from use and maintenance. Over time, these aspects cause physical changes in the materials and surfaces of interior spaces, leading to cracks, discolouration, and other signs of decay.

According to the Oxford Dictionary, ageing is the process of growing old. A much finer definition would be *'The time-related deterioration of the physiological functions necessary for survival and fertility.'* (Gilbert, 2000)

The study's introduction indicates that deterioration in interior spaces is generally linked to ageing and weathering. As buildings age, environmental and human-made elements cause degradation. These include moisture, sunshine, wind, temperature variations, and use and maintenance wear. These factors induce cracks, discolouration, and other degradation in interior materials and surfaces over time.

Sometimes called 'enhancing the decay', a material's natural ageing and weathering is purposely highlighted rather than seen negatively. It entails deliberately regulating the decay process to improve the material's beauty and worth, typically using sentimental or emotional ties from its history or setting. Decay enhancement is becoming popular in interior architecture, whether in ruins or adaption processes, because it creates more significant and impactful spaces and buildings. There are ways to do this.

Patina enhances degradation in space. Metals, stone, and other materials develop a surface coating over time due to air, moisture, and other environmental variables. The coating may offer the material a particular colour and feel that interior architects want. The Karan Grover and Associates-designed Alembic Museum in Vadodara displays this attribute. The building was a rundown factory. Instead of renovating the space, the architects accentuated the building's degradation and wear, creating a raw, industrial environment fit for the artwork.

To highlight brick walls and rough concrete floors' texture and flaws, architects left them alone. They added salvaged machinery and corroded metal pipes for industrial flair. Adding degradation to the gallery's design was functional and aesthetic. The architects could save money and reduce waste by leaving some building components unchanged while creating a beautiful space—reused stuff. Revamped materials degrade space. New construction or rehabilitation of old buildings, structures, or locations can use them.

3.2 Perception of Decay

3.2.1 In Philosophy

Philosophy examines decay about time, mortality, and change. The concept of impermanence can help explain decay in philosophy. Physical objects, mental states, and even the self are impermanent in Buddhist philosophy. Existence is impermanent, and decay is a sign of it. In "In the Buddha's Words: An Anthology of Discourses from the Pali Canon," Bhikkhu Bodhi states, "All compounded things are impermanent... They are subject to decay; they are subject to change" (2005, p. 237). Western philosophy links decay to time, mortality, and aesthetics. In "The Aesthetics of Decay," Dylan Trigg argues that decay is a form of aesthetic appreciation. "Decay always has an association with the transience of existence, the precariousness of life itself, and the fragility of being" (Trigg, 2006, p. 1). Martin Heidegger's "Being and Time" examines the decay of time and being. Heidegger claims that time is intimately linked to decay and dissolution, not a linear progression from past to future. Existence requires decay as part of the cycle of life and death. Humans are "thrownness," Heidegger says, into a world entirely of meaning and significance, much of it inherited from the past. Decades and change erode and transform history and tradition. Heidegger believes humans must decay to understand and appreciate their existence. People realise their limitations and the transience of all things by facing death and decay. This awareness deepens appreciation for the present and recognises life's transience.

3.2.2 In Interior Architecture

Recently, interior architecture has emphasised decay. This design element gives a space character and history. Decay in interior architecture is a recent trend (Cairns, 2017). Deteriorated finishes, raw materials, and exposed structures use decay. However, understanding how different cultures interpret decay is crucial. Specific approaches view decay as something to avoid and associate with ageing and time. Others celebrate decay.

India embraces decay as part of life and death (Hussein, 2015, pp. 10–32). Many ancient Indian buildings have decayed and changed naturally. These buildings are works of art and part of India's cultural heritage. Restoration and conversion of many havelis into hotels and museums preserve their cultural significance. Adding decay to interior architecture requires a delicate balance between preserving the building's history and culture and making it usable (Jones et al., 2016). Before designing with decay, you must understand the building's history and culture.

3.3 Types of Decay

3.3.1 In Society

Society decays metaphorically as social structures, cultural values, and personal morals decline. Sociology, philosophy, and cultural studies have examined this use of 'decay'. Famous sociologist Zygmunt Bauman explains social decay as the breakdown of social bonds and community. According to Bauman (2012), modernity has caused social fragmentation and decay by isolating people. In "The Great Disruption," Francis Fukuyama discusses how technological and economic changes have caused traditional social institutions to collapse, resulting in societal decay (Fukuyama, 1999, p. 23). Society decays metaphorically in terms of cultural values and morals. Dylan Trigg argues that decay symbolises the loss of cultural values and traditions, leading to nihilism and meaninglessness in modern society (Trigg, 2006). In Indian society, 'decay' can mean declining traditional values and culture. It means cultural practices, traditional knowledge, and social and moral values are declining. Modernisation, urbanisation, and globalisation have eroded India's cultural values, according to Sharma and Shukla (2016). They say this decline in traditional values has caused crime, drug abuse, and violence. Some scholars attribute the cultural decline to the colonisation of traditional Indian society. According to Ranganathan (2011), British colonisation changed Indian culture by introducing new values and ideas that undermined traditional practices. Even technology and social media have eroded Indian values. According to Bhatnagar and Srivastava (2016), social media has shaped Indian youth's behaviour and attitudes, often disregarding traditional values and culture.

3.3.2 In Nature

Jones et al. (2016) cite natural material decay as inevitable. All natural materials decay and "die." (Cairns, 2017, p. 27). VOCs contribute to natural material decay. Lafond (2018) defines VOCs as organic chemicals released into the air by building materials and other sources. These compounds can harm health and degrade materials. Physical stress causes decay alongside environmental factors. Weather and other physical forces weaken natural materials like wood, according to Hussein (2015). This exposure can cause cracking, warping, and other damage that breaks down the material. Decay involves a chemical reaction. Hejazi et al. (2020) state that acidic environmental chemicals can damage marble and limestone. These reactions break down the material over time.

3.3.3 Material Decay

Material decay can be accidental or planned. Incidental material decay is the gradual degradation of a material due to weather, moisture, or light. However, architects, designers, and artists intentionally incorporate decay into a project. Incidental material decay can alter buildings, landscapes, and objects' structure and appearance. In old, poorly maintained buildings, moisture can cause rust, corrosion, and rotting of wooden structures, causing damage and collapse (Jones et al., 2016). Sunlight can fade and discolour fabrics, papers, and photographs, affecting appearance and readability (Fein, 2011, pp. 7-8). The Wooden Palace, or Bhagwandas Bagh Pavilion, is a historic building in Hyderabad's Karwan neighbourhood. The pavilion's intricate Burma teak carvings and exquisite architecture date back to the Nizams' early 20th-century reign. However, natural disasters, neglect, and lack of maintenance have caused extensive pavilion decay. Pests and weather have eroded the wooden structure and lost its intricate carvings. However, design and art use curated material decay to convey history, nostalgia, and authenticity. Reclaimed wood, rusted metal, and cracked concrete can give modern architecture and interior design a sense of timelessness and character (Cairns, 2017, p. 5).

3.4 Time & Decay

Time is crucial in buildings' decay, ageing, and weathering. It shapes how buildings are perceived and experienced. As Leatherbarrow and Mostafavi (2001) argue, time is both a measure of duration and a cultural and historical phenomenon that affects the built environment.

Kunawong (2019) emphasises that time is an essential dimension of architecture, influencing a building's lifespan and durability. Materials, construction methods, and environmental conditions determine how a building changes over time. In interior design, time affects how spaces are experienced, with elements like lighting, colour, and texture evolving due to natural wear and tear.

3.4.1 Time Causing Temporality

Temporality refers to time and its representation. Kunawong (2019) defines temporality as a multifaceted dimension of architecture that uses design elements and strategies to depict time in the built environment. This dimension has spatial, temporal, and experiential components. Space and zone organisation in a building create a sense of time. Temporality in the built environment includes using changing materials and finishes. When people experience time in the built environment, lighting, acoustics, and other sensory elements create a sense of duration and rhythm. Leatherbarrow and Mostafavi (2001) argue that weathering and other environmental factors change building structures and materials over time, making time crucial. They advise architects and designers to consider how materials will age and how the building will fit into its environment over time. Jacobs and Cairns (2017) argue that buildings should not last forever and that preserving historical structures can stifle innovation. Their lifespan and

environmental impact are considered when designing buildings, but they also recognise the temporal dimension of architecture.

3.4.2 Time as a Value Enhancer

In philosophy and interior architecture, time enhances value, emphasising context, history, and emotional connections. By accepting time and its effects on objects and spaces, one can create more meaningful and lasting designs that touch people. Time is associated with change, growth, and progress in philosophy, which can increase the value of an object or space. In interior architecture, time's association with history, nostalgia, and emotions can add value. Philosophers use historicity to argue that time and history increase the value of an object or space. Adaptive reuse, such as turning an old factory into a hip loft apartment, creates nostalgia and historical significance in interior architecture (Moe, 2006). Wood, leather, and brass age well and develop a patina or character, adding history and emotion to space (Kim & de Dear, 2013). Philosophers use memory, associated with nostalgia and emotions, to value time. In interior architecture, design elements that reference historical periods or cultural traditions can evoke memories and connect people to the past (Janssens & Steen, 2019).

3.5 Decay & Time Strategy in Design

Interior architecture uses decay and time to create a unique aesthetic and emotional impact. Fein (2011) claims that decay is part of life and can express beauty and poetry. This approach evokes nostalgia, history, and nature. Trigg (2006) says decay's aesthetics are nothingness, nostalgia, and reasonlessness. This style values authenticity and age. Psychology influences interior architecture, including decay and time as design strategies, according to Janssens and Steen (2019). They say natural materials and textures create warmth, comfort, and a connection to nature. Using natural materials and textures in interior design increases environmental satisfaction, according to Kim and de Dear (2013). Behavioural sciences shape built environment understanding (Lang, 2010). Inside architecture uses decay and time to convey authenticity and a connection to nature, satisfying our psychological needs. Moe (2006) emphasises human-environment relations in interior architecture to create functional and emotionally satisfying spaces. Kunawong (2019) argues that decay and time give architecture a sense of timelessness and permanence. This approach emphasises life's cycle and the value of history and tradition. All these perspectives suggest decay and time-based design strategies for interior architects. One of the most common and effective methods is adaptive reuse.

3.5.1 Adaptive Reuse

Adaptive reuse involves reusing a building to increase its value and lifespan. Many authors, architects, and designers have defined it differently. Adaptive reuse can preserve old buildings and reduce the environmental impact of new construction, according to Khalili (2015). Plevoets and Van Cleempoel (2011) suggest adaptive reuse for cultural preservation. Adaptive reuse promotes resource efficiency and waste reduction, according to Abdulameer and Abbas (2020). Adaptive reuse preserves the building's history and character while meeting modern needs, according to Stone (2019). Form and structure in interior architecture adapt to a building's needs, according to Graeme Brooker et al. (2016). Bie Plevoets and Koenraad Van Cleempoel (2019) discuss adaptive reuse, a new field that repurposes and revitalises old buildings.

4. AGEING VALUES THROUGH DESIGN APPROACHES

4.1 Value Creation & Value Enhancement

Interior architecture involves creating attractive and functional spaces to create and enhance value. Donald Norman, author of "Emotional Design: Why We Love (or Hate) Everyday Things," believes that people's emotional connections with objects and spaces create value (Norman, 2004, p. 287). Value creation and enhancement in interior architecture use design, materials, and technology to create spaces that meet user needs and evoke positive emotions. Natural processes like decay and ageing can lower building values. However, adaptive reuse preserves and improves existing buildings and spaces. They use existing buildings or spaces for new purposes while preserving their architecture and features. Repurposing buildings and spaces preserves their historical and cultural value while adding value. Designing functional and attractive spaces creates value in interior architecture. Space planning, lighting, colour, and materials create functional, efficient, attractive spaces. Designers may use lighting, furniture, and materials to create a welcoming and comfortable hotel lobby. However, value enhancement involves upgrading or renovating existing spaces to improve functionality or aesthetic appeal through design, materials, and technology. A restaurant may update its lighting, furniture, and finishes to make it more modern and inviting.

4.2 Adaptive Reuse & Design Approaches

The book "Adaptive Reuse of the Built Heritage: Concepts and Cases of an Emerging Discipline" by Bie Plevoets and Koenraad Van Cleempoel (2019) outlines three design approaches for the adaptive reuse of heritage buildings: 'Aemulatio', 'Facadism', and 'Ruinatio'.

4.2.1 Aemulatio

Aemulatio, according to the authors, refers to a design approach where new elements are added to an existing building to create a harmonious composition between the old and the new. This approach aims to retain the original character of the building while incorporating new functionalities, for instance, carrying the approach to an old church building by adding a new wing for a community centre while keeping the original structure intact.

4.2.2 Facadism

Facadism, on the other hand, involves preserving the exterior facade of a building while demolishing and replacing the interior. This approach is often criticised as a superficial way of preserving heritage, resulting in losing historical integrity and authenticity. However, it can be a practical solution in cases where the building's interior is unsuitable for everyday use and the exterior is the most significant aspect of its heritage value.

4.2.3 Ruination

Ruination is an adaptive reuse method that intentionally degrades a building to create a sense of abandonment. For adaptive reuse, Bie Plevoets and Koenraad Van Cleempoel (2019) suggest "the use of ruins and fragmented elements of buildings, combined with new insertions, to create new spaces and experiences." (p. 63). This approach evokes nostalgia and challenges architectural preservation and conservation. In "Buildings Must Die: A Perverse View of Architecture," Cairns defines ruination as using all buildings' inevitable decay and death to create something new and meaningful. Ruination can involve intentionally deteriorating or partially demolishing a building to create a hybrid structure. It may use materials from other buildings or natural materials like plants and trees to convey decay and overgrowth. Unlike induced deconstruction, Ruination involves intentionally letting a building deteriorate naturally, but it can also create something new and unexpected. It questions architectural preservation and conservation and encourages a more fluid and dynamic built environment. Consider the Escuelas Pías. A 17th-century school for unfortunate children, it is a complex of buildings. The complex changed and expanded over the centuries before being abandoned in the 20th century. Architect José Ignacio Linazasoro transformed the ruined Escuelas Pías building into a library and lecture hall for the National Distance Education University in the early 2000s. Restoring the learning building preserved its historic character. Linazasoro used warm wood, simple bricks, and concrete to integrate new and old structures in a "ruination approach." While preserving the building's architecture, the project transformed it from a sacred space to a modern, inviting educational space.

4.3 Value Enhancement Through Ruination

Ruination's value enhancement strategy uses environmental psychology to study how buildings affect human behaviour, emotions, and well-being. Janssens and Steen (2019) found that adaptive reuse strategies that preserve a building's historic character, such as ruination, foster a sense of place attachment and cultural identity that improves visitors' and residents' mental health. Kim and de Dear (2013) found in a meta-analysis of interior design studies that daylighting, natural materials and visual connections to the outdoors increase satisfaction and well-being. Ruination preserves a building's historical materials and character to create a unique and authentic environment that enhances the user's emotional and psychological response. Architectural theory uses behavioural sciences to design the built environment around human behaviour, cognition, and perception (Lang, 2010).

The value enhancement strategy of ruination preserves a building's historic character and materials and creates a sense of place attachment that boosts the user's emotional and psychological response. Interior architecture research on human-environment relations should consider spatial configuration, sensory experience, and social interaction, according to More (2006). Ruination can enhance value by preserving historic buildings' unique spatial configuration and sensory experience and creating new social interaction opportunities through adaptive reuse. Preserving and restoring decaying historic buildings increases their cultural and economic value. This emphasises the building's unique history and character, creating a sense of authenticity and nostalgia that attracts visitors and investors.

Ruination enhances value by creating a sense of 'romantic decay' that artists and designers seek and can contribute to a city's urban identity and cultural tourism (Plevoets and Van Cleempoel, 2019; Aziz Amen, 2017; Aziz Amen & Nia, 2018; Ho et al., 2023; Amen & Kuzovic, 2018; Amen & Nia, 2021; Abdulla & Abdelmonem, 2023; Afolabi & Adedire, 2023). Ruination's value enhancement strategy involves stabilising the building's structure and preserving its brick walls, wooden beams, and stone arches. Restoration may include lifts, staircases, and lighting to improve accessibility and functionality. Two buildings restored using the value enhancement strategy of ruination are the Escuelas Pías in Lavapiés, Madrid and the Kazerne Dossin in Mechelen, Belgium. Cultural tourism and events have drawn to both buildings' decay to showcase their historical and architectural value.

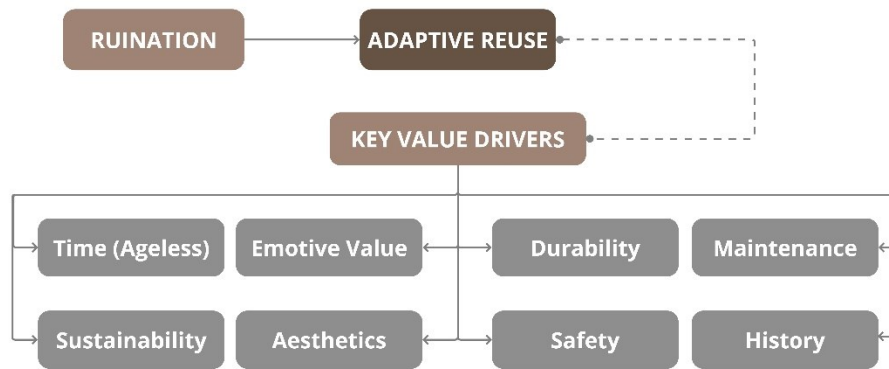


Figure 3. Factors responsible for value enhancement of Ruination as a design strategy

4.4 Key Value Drivers

4.4.1 Time

As read in the previous chapter, time is essential in history, memory, emotions, and ruination. Allowing buildings to weather naturally starts deterioration. Character and patina give buildings unique qualities that new construction cannot replicate. Adaptive reuse preserves old buildings rather than demolishing them, which can destroy their historical, cultural, and architectural value, according to Khalili (2015).

4.4.2 Essence

Ruination's value enhancement strategy also relies on aesthetics. Unique textures from weathering and ageing give buildings character. Natural ageing gives materials an authenticity that new construction cannot match. Stone (2019) states that weathered buildings' ability to evoke timelessness and connection to the past makes them attractive.

4.4.3 Durability

Natural ageing and weathering make buildings more durable than constantly repaired and renovated ones. Age and weathering can protect the building from environmental damage. According to Plevoets and Cleempoel (2011), adaptive reuse of old buildings can prolong their lifespan.

4.4.4 Safety

Buildings that age and weather naturally may develop structural issues that compromise safety. However, adaptive reuse projects can include structural repairs and upgrades to make the building safe. Abdulameer and Abbas (2020) explain that adaptive reuse can be a sustainable, safe way to preserve old buildings' history and architecture.

4.4.5 Maintenance

Weathered buildings may need more maintenance than new ones due to structural issues. Adaptive reuse projects may include maintenance to keep buildings in good condition. Plevoets and Cleempoel (2019) say adaptive reuse projects can address maintenance issues while preserving the building's character.

4.4.6 Durability

Preserving existing resources over new construction makes adaptive reuse a sustainable building design method. Preserving building embodied energy through adaptive reuse reduces construction and demolition carbon emissions. Adaptive reuse can preserve cultural heritage and reduce environmental impact, according to Khalili (2015).

4.4.7 Emotional Worth

Old buildings can evoke nostalgia, a sense of place, and a connection to the past. Stone (2019) says adaptive reuse projects that preserve the character and patina of old buildings create cultural memory and identity that new construction destroys.

4.4.8 History

Adaptive reuse requires preserving the history of old buildings. Adaptive reuse prioritises historic buildings and their significance, according to Plevoets and Cleempoel (2011).

4.5 Need for Value Enhancement

Due to design elements' emotional and psychological effects on humans, interior architecture needs ageing and weathering to add value. Donald Norman (2004) says spaces and objects should consider emotional and functional responses because humans are emotional. Interior materials' age and weathering evoke positive emotions like

nostalgia, which enhance the space's emotional experience. Alain De Botton (2006) emphasises how emotional architecture can increase a space's value. He claims that “architecture is a powerful reminder of our aspirations and values” and that space design can affect mood and behaviour. Philosophy-wise, Martin Heidegger (1962) says architecture's essence is its physical form and relationship with humans. Weathering and ageing give a building a sense of timelessness and connection to the past, increasing its value. Stephen Cairns and Jane Jacobs (2017) argue in “Buildings Must Die: A Perverse View of Architecture” that decay and destruction increase architecture's value. They believe architecture evolves with age and weathering. David Trigg (2006) examines decay's aesthetics and architectural value. He says decay is beautiful because it reminds us of life's transience.

5. RUINATION AND EMOTIONS THROUGH THE PAST

5.1 Memento Mori

Paintings have depicted Memento Mori, which means “remember that you will die.” Time, change, and decay link memento mori and ruin. According to Bie Plevoets and Koenraad Van Cleempoel (2019), ruination is “the gradual disintegration of structures over time” (p. 7), a physical manifestation of time and impermanence. Cairns and Jacobs (2014) discuss how ruins, symbolising the decay of all things, can evoke strong emotions in viewers and link them to Memento Mori. The Renaissance saw the first paintings of ruins, symbolising the destruction of everything. This memento mori concept relates to ruin sentiment. Ruins have emotional power because they symbolise death and decay (p. 44). Ruins evoke sadness, nostalgia, and even horror by reminding viewers of their mortality, connecting the past to the present and making us consider how short our lives are. According to art historian Richard Brilliant (1991), ruins can evoke “pathos,” a “poignant and deeply felt emotion that arises from contemplating the transience of human existence and the ultimate fate of all things” (p. 28). Because they symbolise the past and the inevitable decay of time, ruins can evoke this emotion. Adaptive reuse, which renews buildings rather than demolishing and rebuilding them, relates to memento mori and ruination. According to Bie Plevoets and Koenraad Van Cleempoel (2019), adaptive reuse acknowledges and embraces a building's past uses, changes, and decay. Adaptive reuse repurposes a building to extend its lifespan, add value, and preserve its history and culture.

5.2 Ruination Around the World

Ruination is the decay and abandonment of buildings worldwide. Ruin occurs naturally over time, but human actions like neglect or war can accelerate it. Adaptive reuse—creatively repurposing abandoned buildings—has recently gained popularity. This adaptive reuse approach has changed how people view ruination from negative to positive. Miloš Kosec, an architect, coined the term “Ruincarnation” to describe his project to bring back abandoned buildings in Slovenia. The project sought to reinvent tourism around ruins and adaptive reuse. Kosec reimagined how people could use ruins for creative expression and community building. Kosec called Ruincarnation “a new attitude towards ruins, a new way of thinking about the past, present, and future.”

5.3 Ruination in India (Context of Bombay/ Mumbai, India)

5.3.1 Orientalism

Orientalism is how the West has portrayed the East as exotic, inferior, and backward. A prominent scholar, Edward Said (1978), says orientalism involves complex cultural and political power. Intellectuals and artists have justified and reinforced Western dominance over Eastern societies using their knowledge of the Orient. Orientalism in colonial India created a cultural hierarchy that placed Western culture at the top and Indian culture at the bottom. Education, art, literature, design, and urban planning reinforced this hierarchy. Mumbai's architecture shows colonial orientalism. British colonial builders built grand public buildings and private mansions that reflected their tastes and ideals while ignoring the city's indigenous communities' urban fabric and traditional architecture. Many historic buildings in Bombay, like the Victoria Terminus (now Chhatrapati Shivaji Terminus), were designed to emulate European styles rather than local traditions (Chakrabarti, 2003). Colonial interior architecture also reflected Orientalism. Architectural historian Jyoti Hosagrahar (2012) says the British used interior design to make foreigners feel at home and reinforce their cultural superiority. Combining Georgian and Victorian styles with Indian-inspired decor achieved this goal. Hosagrahar says this fusion of styles created a new colonial interior design that was familiar and exotic and reflected power dynamics. Orientalism in Bombay's architecture reflects colonialism's cultural dominance in India.

5.3.2 Colonial Adaptation

The Fort, or South Bombay, has some of Mumbai's most famous colonial buildings. The grand architecture and ornate detailing characterise these British colonial buildings in India. Many of these buildings have deteriorated due to time and neglect. Many of the city's once-majestic buildings are now in ruins, a testament to its architectural heritage (India Today, 2021). Heritage conservationists worry that these colonial-era buildings may be lost forever if nothing is done to save them. Due to funding and resource constraints, the government neglects many of these heritage buildings. Developers and heritage conservationists often disagree on how to redevelop these buildings (The Indian Express, 2021).

Tianu, (fig. 4 Studio PKA adapted a ground floor space for a furniture store in a Victorian building in Ballard Estate, Mumbai. It had a large double-height open floor plate with boarded arched fenestrations and no street access. Restoring a 200-year-old heritage building allowed decades of neglect. The project design preserved the original structure while adding modern functionality. We carefully selected materials to match the structure's history and complement it. The architecture uses sustainable, low-maintenance, and long-lasting materials. Eco-friendly preservatives prevented decay in the teak wood beams and rafters, and traditional methods restored the cast-iron columns. Adding new materials respects the original design and materials. Simple and transparent, the design respects exposed brick, wood, and metal textures and uses few new materials. Enlivening a desolate corner in the Ballard Estate precinct, which has lost its shine, encourages heritage structure reuse and restoration.

Retained Materials used in the project include teak windows, Burma teak beams, cast-iron columns, and wooden floors. These materials were salvaged from the original building and reused in the project. Using these materials not only helped preserve the historical character of the building but also helped reduce the project's carbon footprint. Inserted materials used in the project include stainless steel, glass, and polished concrete. These materials were chosen for their durability, sustainability, and modern aesthetic. The use of new materials helped to create a contrast between the old and new elements of the project while also providing a functional and contemporary interior.



Figure 4. Collage showing the interplay of retained and new material in the furniture studio Tianu, Mumbai

5.3.3 Industrial Reuse

Mumbai, one of the world's most densely populated cities, has many abandoned industrial buildings. These buildings are ideal for adaptive reuse projects, which preserve the city's heritage and create modern spaces. This trend includes converting old mills and factories into offices. These projects have transformed former industrial spaces into vibrant and functional commercial centres while retaining their historic charm. Repurposed Mumbai mills include the textile mill-turned-mixed-use Phoenix Mills in Lower Parel, Mumbai. It became High Street Phoenix Mall. Phoenix Mills' shopping and entertainment district is famous. Over 600 stores, restaurants, and entertainment venues fill 3.3 million square feet of the mall. Cast-iron columns and exposed brick walls are still visible in the renovated textile mill building that houses the mall. The Todi Mills in Lower Parel, Mumbai, is another textile mill turned mixed-use development. They became the Todi Art District. It is a Todi Mills art and culture hub. Art galleries, creative spaces, and design studios dot the district. New buildings in the district have retained many of the district's textile mill features, such as large

windows and metal beams. Another great example is Ballard Estate, 'IF.BE', the old ice factory now repurposed as a multifunctional event space and café.

Table 1. Interviews taken in March 2023

| CATEGORY | IF.BE | TIANU |
|---------------------------------|---|---|
| Location | Ballard Estate, Mumbai | Fort Mumbai |
| Architect/ Firm | Kamal Malik Malik Architecture | Studio PKA |
| Year of Transformation | 2022 | 2020 |
| Function | A Multifunctional Cultural Space and eat-out spaces. One part of the factory still functions as a cubing space for ice. | Furniture Retail Outlet |
| Historical Significance | An Ice Factory since British India | Victorian Era building used as an office space |
| Old Materials reused | The timber roof with north light openings, brick walls, and the old Burma wood of the roof was restored. | The stone façade, the old brick structure, the timber roof and the mezzanine |
| Reasons for Preservation | The structure was in good condition; the banyan tree elevated the courtyard, and the roof had north-light interventions. | The older office space was a character loss for Victorian architecture with the plaster coat in the interiors. The interior did not justify the Victorian-era building. |
| Adaptive Reuse Approach | The new intervention respects the old but does not mimic it. | The new intervention is minimal and highlights the old, exposing the structure. |
| Innovative Solutions | Light interventions were done, and contrast was brought only in terms of material- using stone, glass and metal as opposed to the old wood and bricks. | Instead of interventions, the old materials were exposed to give more importance to the original building. That also helped to highlight the furniture as a strategy. |
| Interview Insights | Age (history) as a value driver was Uncovered by deliberately removing the brick plaster and exposing the material's imperfections to pay respect to the old. | Sustainability as a key value driver. The new interventions are minimal and not a bold addition. Instead, they follow the language of the existing building. |

6. Emotive Experience & Expressions

6.1 Conclusion

Negatively viewed ageing and weathering processes include neglect, decay, and damage. Recent design fields, including interior architecture, have introduced the concept of beauty through the lens of age. The research examined material ageing and weathering, its causes, value enhancement, and the design approach 'Ruinination' of adaptive reuse to repurpose old structures and spaces. Why do we love old buildings, interiors, and architecture? Old buildings evoke nostalgia and historical continuity, which may draw people. Some find these buildings' decay and weathering charming, emphasising their history and time. Many scholars and cultural theorists, including Michel Foucault, have studied this admiration for the old. Foucault's theory of power and knowledge states that cultural objects like buildings actively shape and maintain power relations. Historical narratives and power structures often give old buildings cultural value.

Old buildings reflect historical power dynamics, adding to their cultural value. The British exoticised traditional Indian interior architecture and examined it as a living museum in colonial India, "freezing" it in time and removing it from its cultural context. This "museumification" turned these buildings into objects of display and consumption for colonial powers and tourists rather than a living cultural tradition. Museumification disconnected India's past from its present

and reduced its cultural heritage to static objects of display, prompting the desire to reclaim and preserve traditional Indian art and architecture (Herwitz, 2004).

People can reclaim ownership of their cultural heritage and resist power dynamics that seek to control and commodify it by embracing old buildings' decay and weathering. Colonial buildings repurposed for local use may evoke different emotions. These buildings are a tangible link to a shared history and cultural heritage, which may inspire pride and connection. With a colonial legacy still felt today, these buildings may cause discomfort or resentment. Architectural historian William J. R. Curtis suggests that adapting and repurposing colonial-era buildings may be “cultural resistance” against colonialism. Reclaiming these buildings and using them for local purposes lets communities assert their cultural identity and resist colonial cultural narratives. However, colonial-era buildings have complex and multifaceted associations. They may be a legacy of oppression and exploitation, but they are also crucial to the region's history and culture. Thus, the future of these buildings will depend on a nuanced and thoughtful approach that balances cultural heritage preservation with colonial legacies.

Sustainable adaptive reuse preserves the building's history and culture while meeting current needs. Adaptive reuse may have given colonial architecture a new identity by transforming negative associations into positive ones. This method preserves and modernises the past. Adaptive reuse may boost the economy by revitalising neglected areas and creating new business and tourism opportunities. It can transform the building. Even though a building's physical form remains the same, its associations and meanings change over time.

During colonial rule, Indian architecture was marginalised and seen as exotic, while British architecture was celebrated and considered superior. Materials carry the history and stories of colonial buildings, making them essential for adaptive reuse. Using original materials and material culture in adaptive reuse preserves the building's authenticity and historical value. Some materials are new. They should match the building's materials and not detract from its character. The Journal of Architectural Conservation states that “juxtaposition* of contrasting materials is often the key to successful visualisation of new interventions, ensuring that the historical and contemporary are understood in their own right and as part of a bigger picture”. The juxtaposition concept shapes society. The time's architecture reflected Indian and British cultures. Indian architecture combined British colonial designs with traditional Indian elements. This approach bridges the past and present by emphasising the historical significance of older materials and the innovative potential of new ones.

Martin Heidegger believed that aged materials have an “earthiness” or “thingliness” related to their natural origins and historical context. According to Heidegger, this earthiness is crucial to how objects reveal themselves. Modern technological devices prioritising efficiency and productivity over authenticity lack it (Heidegger, 1971). Metaphysics holds that materials are more than objects or substances; they have a deeper essence that links them to reality. Our experiences and cultures shape how we value and interpret materials. In adaptive reuse, materials create a sense of continuity and connection with the past, making the building a living part of our cultural heritage. Weathered materials' metaphysics affects history, authenticity, aesthetics, and politics. Understanding how time and context give objects meaning and significance helps us appreciate material culture's role in shaping our worldview.

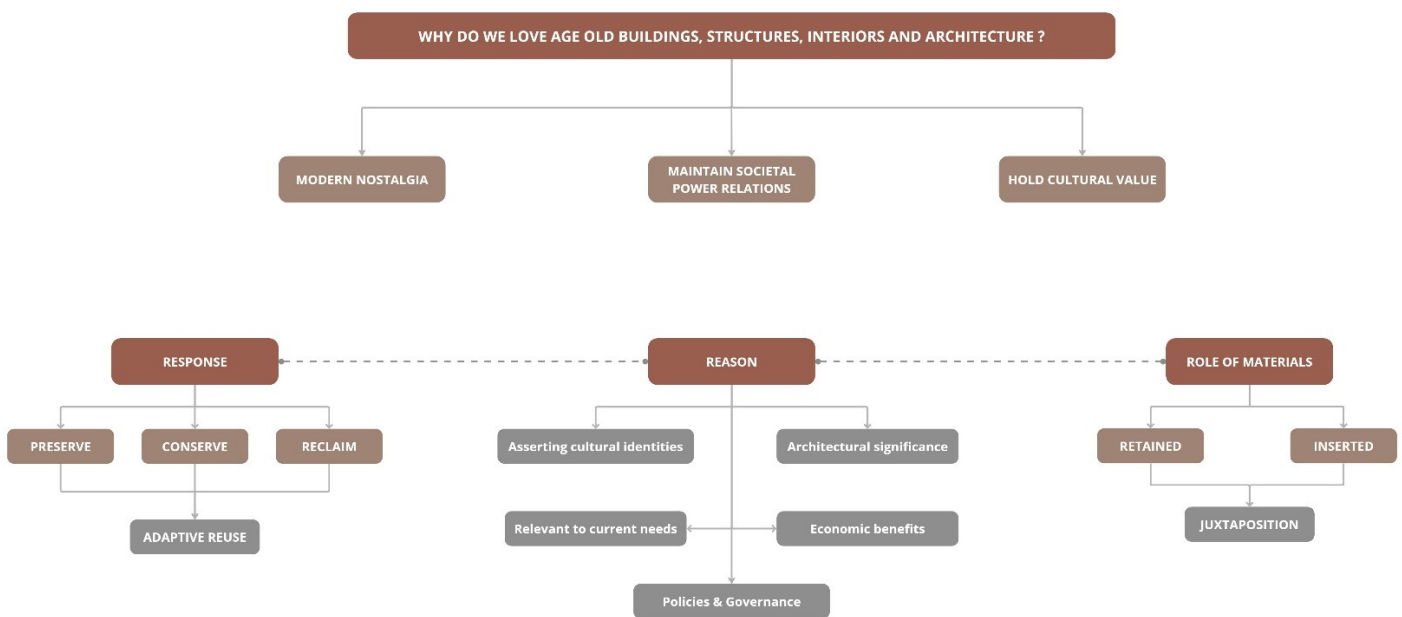


Figure 5. Summary & Conclusion chart of the study

6.2 Future Scope of the Research

The research discusses incidental decay and its desired ageing and weathering effects. This knowledge could expand its use as a carefully curated design piece. Physical properties and psychological implications determine the object's materiality. Knowing how to use those materials will boost profits. According to research, aged and weathered materials can give a space a sense of familiarity, reminiscence, and coherence, eliciting positive emotions. By encouraging reuse and repurposing, these materials may help sustainability. Interior architecture research has recently focused on the beauty of decay, ageing, ruination, and adaptive reuse. Climate change, resource depletion, and urbanisation require sustainable, innovative architecture and design. Using decaying materials or ruins to make something new and valuable is becoming more relevant. According to Miloš Kosec, ruin is the ultimate speculative object, as it is worthless but could have immense future value. (Kosec, 2016)

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