Preservation | Sustainability | Modernism

The Qualitative Analysis of Valuing Modern Architecture through Preservation and Sustainability

Abstract

As sustainability becomes increasingly important, it has transformed design, construction, and operation of new buildings. Preservation has become a common sustainability strategy; however, it is much easier to argue the historical value of a hundred year old wood-framed house than a modern glass structure.

Many buildings constructed with modernist ideals have more currently become a topic of debate for sustainable preservation. The tension stems between preserving embodied energy of existing buildings and reducing the operational energy with new construction. Originating from the counteracting beliefs in authenticity and modifications, the current need for better energy performance is best improved by integrating new sustainable technologies, materials and systems.

As the reasons to preserving the past continue to increase, sustainability has become yet another key value to preserving the existing building stock, but determining which structures to save and the degree of change needed to increase energy performance varies for each building depending on historical significance, materials, previous and current uses, and cultural values.

Two key factors separate the preservation of Modern architecture from 'traditional' buildings, or those constructed over 100 years ago. First, the need to create more sustainable buildings as a response to environmental issues now plays a significant role. Second, most modern-era buildings were constructed using innovative materials of their time and many of these materials had no previous research or methods established for maintenance and repair (Elefante, 2008).

Preservation

Maintain Authenticity
Preservation aims to maintain the originiality and authenticity of the built environment.

Cultural Values
Cultural values are derived from both social values and significant local context.

Historical Significance
The historical significance of a building is typically marked by its age, where fifty years is noted by the United States Secretary of the Interior Standards for considering a building 'historic.'

Sentimental Value
Preservation stems from the desire to maintian artifacts and buildings which may contain personal or collective memories.

Scientific Value
The goal to preserve buildings, as a scientific value, aims to provide places of educational learning through physical connection to the past.

Social Value
Social values and cultural values are similar, but aspects of social influence also include the consideration for future generations while mainting a sense of place and identity.

Sustainability
"Sustainability is broader in its reach, addressing the long-term impacts of the built environment on future generations and demanding an examination of the relationship between ecology, economics, and social well-being"

Preservation in the United States has been been theorized to be an invention of modern architecture linked to the 1960s; however, now many of these pieces of architecture have come into question of being preserved themselves. (Falsetto, Page & Mason)

Sustainability

Better Energy Performance
Better energy performance in buildings helps reduce environmental impact by using less energy to operate.

Lower Operational Costs
By reducing energy use, the annual operating cost of buildings is generally lower from using sustainable strategies.

Modifications to enhance energy performance
As new technologies continue to develop, systems and materials in existing structures are not always as sustainable as new construction.

Enclosure
Enclosure and facade systems have increased, as well as innovative materials, as a design strategy to improve thermal comfort.

System Integration
Sustainability should approach building design and construction as an integrative network of systems.

Energy Codes and Standards
With the increased need for sustainable structures and more environmentally concious buildings, enery codes and standards now require buildings to minimize their environmental impact.

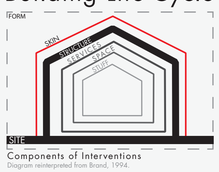
Passive Design
Sustainability provides another aspect to interlink architecture within its local context by considering natural elements, such as wind and daylight, in the integrative design of the building.

Social well-being
The social well-being of a community promotes sustainability "by protecting social diversity and maintaining our sense of place." (Hays, 2009)

Embodied Energy
Operating energy was once the primary focus of energy studies, but with new materials and technologies including more effective insulative materials, the emphasis has shifted to include the embodied energy in buildings. Embodied energy provides an addtional arguement for maintaining the existing environment.

'Sustain'
"The greenest building is…one that is already built." (Elefante, 2007). The root word of sustainability, 'sustain,' refers to the long terms affects and awareness fo maintain a structure over time with a heightened amount of awareness for the impact and values passed on to future generations.

Building Life-Cycle



Components of Interventions
Diagram reinterpreted from Brand, 1994.

The concept of a high degree of 'replaceability' and structural durability leads in the right direction of sustaining a building incrementally over time. If the structure is designed to achieve maximum 'survivability,' a building has a higher potential to continue its existence,even it requires adapting it for new uses.

Materiality
The glass of modernist structures is commonly the most debated element of modern buildings battling between sustainability and preservation due to issues of energy use and thermal comfort. With new innovations in sustainable materials, the design intentions remains similar to modernist ideals, but counteract values of authenticty and preservation.

"We cannot build our way to sustainability; we must conserve our way to it" (Elefante, 2007).

"The fundamental task facing the next generation of architects and preservation professional is to capture the value of energy, material resources, and environmental impacts embodied in these modern-era buildings. Transformation, rather than preservation per se, is the appropriate objective" (Elefante, 2008).

Modern Architecture

Architectural Significance
Several modernist structures have been preserved based on their architectural significance as a unique movement with ideals now being historically valued.

Efficiency
Buildings of the past fifty years were constructed during a time of relatively cheap energy and introduction of mechanical systems to control the indoor environment (Elefante, 2008). The modernist idea of effciency relates to more to design simplicity, rather than bulding performance.

Emphasis on Volume
With many modernist buildings, the ideal of large volumes of space, particularly for public areas, has lent modern structures to suffer from high operational costs and low energy performance.

Adaptable
Another key characteristic regarding modernist buildings is they were primarily designed to be adaptable and focused on durability in structural framing allowing other elements to become expendable.

Structural Durability
With adaptiblity in mind, many modern buildings emphasized technologies and durability in the structural systems by creating structures designed to outlast all other components.

Innovative
The materials and construction techniques used were innovative for their time; however, little research was performed prior to construction and use. This has led to modernist buildings and their construction materials not to age well (Giuliani, 2000)

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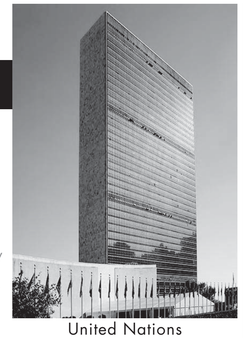
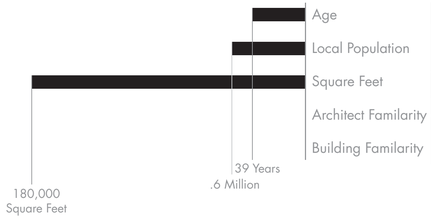


United Nations
Wallace Harrison

AIA Headquarters
TAC



Lever House
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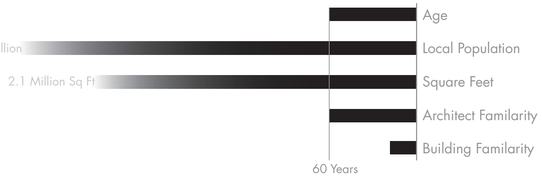
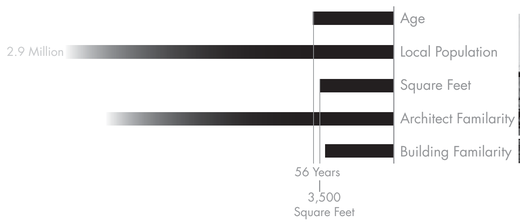
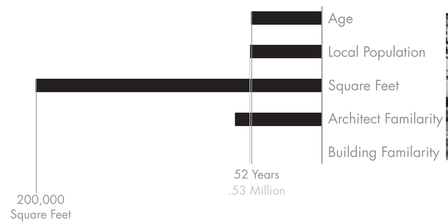


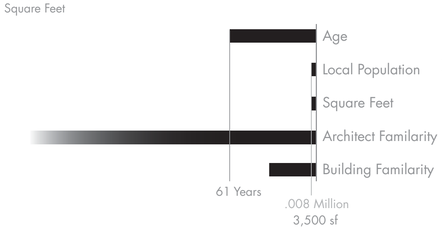
Crown Hall
Mies Van der Rohe



Memorial Coliseum
SOM



Farnsworth House
Mies Van der Rohe



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