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, this must not reduce the inherent value of a hundred year old wood-framed house more than a modern glass structure.

Many buildings constructed with modern ideals have become topics 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 modernization, the current need for better energy performance is best improved by integrating new sustainable technologies and materials.

As the need to preserve the past continues to increase, sustainability has become a topic of debate for 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 use, 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, modernist 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.

Sustainability

Better Energy Performance
Better energy performance in buildings helps reduce environmental impacts 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 designed to be sustainable in new construction.

Enclosure
Enclosures and exterior systems have increased, as well as the remaining systems, to improve thermal comfort.

System Integration
Integration with sustainable building design and construction as an integrative network of systems.

Energy Codes and Standards
With the increased need to reduce pollution and more environmentally conscious buildings, every code and standard now require buildings to minimize their environmental impact.

Passive Design
Passive design is another aspect of the new building design. This idea is to use the wind and daylight to the advantage of the building design.

Social well-being
The social wellbeing of a community promotes sustainability, by protecting social diversity and maintaining our sense of place.

Preservation

- Maintain Authenticity
  Preservation aims to maintain the originality 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 is typically measured by its age, where fifty years is noted by the United States while the In-Standard for considering a building ‘historic’.

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

- Scientific Value
  Scientific value seeks to preserve buildings, as a scientific value, 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 maintaining a sense of place and identity.

Sustainability

- Sustainability
  Sustainability is a broader in scope, addressing the long-term impacts of the built environment on future generations.

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 a building.

- ‘Sustain’
  The greenest building is one that is already built. (Futuro, 2005)

Building Life-Cycle

- The concept of a high degree of ‘replaceability’ and structures
  in a building to last a long time in order to maintain its value in today’s society.

Materiality

- Materiality
  The material aspects of modern buildings are another essential element of modern buildings. Material choice is critical to sustainability and preservation due to issues of energy use and thermal comfort.

Modern Architecture

- Architectural Significance
  Modern architecture has been preserved based on its architectural significance as a unique movement with ideals now being historically valuable.

- 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 (Futuro, 2008). The modernist idea of efficiency relates more to design simplicity, rather than building performance.

- Emphasis on Volume
  With many modernist buildings, the idea 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 relating modern buildings is they were primarily designed to be adaptable and focused on durability in structural building elements to become adaptable.

- Innovative
  The materials and construction techniques used were innovative for their time, however, life research was performed post-construction and use. This has led to modernist buildings not being as adaptable as previously thought.