

The Environmental Successes and Failures of Modernist Architecture

Introduction

This project is going to critically analyse the environmental successes and failures of modernist architecture looking at Mies Van Der Rohe's Farnsworth House and Frank Lloyd Wright's Falling Water in pursuit of modernism, establishing whether architectural design choices were made during the modernist movement were sustainable. The mechanical and environmental elements of both buildings will provide a focus on the principal elements of the design of both buildings as well as the heating, cooling and ventilation.

Methodology

The main source of data collection for the dissertation research includes a strategic qualitative research methodology.

Case studies, research will examine existing buildings including Mies Van Der Rohe's Farnsworth House (1951) and Falling Water (1935) by Frank Lloyd Wright. Case studies used will investigate the buildings within their real-life context using a multitude of sources of evidence, case studies selected will be concerned about why things happened, allowing for the investigation of what was planned by the architect and client compared to the difference of what occurred during the buildings construction, use and life cycle. Case studies will enable a focus on particular issues of each of the buildings including Mechanical systems, passive design, Heating, Cooling, Ventilation and technical challenges such as Restoration, to understand whether or not modernist architecture is an environmental success or failure, using case studies will allow for each of the buildings to be studied in depth which is appropriate to conclude whether or not modernist design is successful both environmentally and mechanically.

Research Case studies used will be descriptive to enable the successes and failures of each of the buildings to be described. A multiple case study methodology will be employed in the research study this is appropriate as it will give replication, cross-referencing between case studies for each of the buildings will allow results to be compared and replication to be found, if replication is found within the selected case studies then confidence will be provided by the final results, robust findings will be developed by having consistent data drawn over multiple case studies, furthermore, by researching a multitude of case studies accuracy, reliability and validity of the results will increase.

Four case studies for each of the buildings are going to be selected during the analysis stage, this will allow for cross-case analysis to take place from which a conclusion of each of the building's environmental successes and failures will be drawn to give an overall conclusion on 'The Environmental successes and failures of Modernist Architecture.

Case studies

- Farnsworth House, Mies Van Der Rohe
- Falling Water, Frank Lloyd Wright

Aims and Objectives

The overall aim of the research is to explore whether or not the new mechanical and environmental systems that were being introduced in the 1940s and 1950s were successful.

Further specific aims of the project are:

- To understand the Mechanical systems and Passive design systems used in both buildings and understand their uses and the limitations of their design.
- To discover the technical challenges involved in the design and construction of each of the buildings and whether or not the architect and clients' desires, beliefs and goals were sought after.
- To explicate forms of knowledge of the challenges faced environmentally during the design, construction and use of the building including preservation and restoration challenges faced.

The objectives of the research are:

- To infer the relationship between a building and its selected site in terms of the building being mechanically and environmentally successful
- To establish approaches used by the architect to push the values and motivations of Modernism.
- To identify what types of knowledge the architects draw on to develop buildings which were deemed Modernist Architecture.
- To contribute to understanding how elements of a building design can influence the experience of clients and those visiting the building.

Literature Review

Thoreau (1854) described the concept of living harmoniously with nature in his book *Walden or Life in the Woods*. To seek serenity in the wildness without interruption was also explored by Marx (1964) who argued that the ideology is a Promised Land which vanished by Industrialisation between the 19th and 20th centuries. The value of living amongst nature is enticing to the global blanket of society, one planet living look at methods to change our way of living to incorporate sustainability. A question that may arise 'Are Farnsworth House and Falling water just stamps of modernist architecture or are they functional in the natural setting' parallel opposite to the beauty of the natural world surrounding them is the industrial technologies incorporated in the design, how does this create an environment which is sustainable yet comfortable to experience the natural world which wraps around both buildings?

Miesian philosophy

Mies's theory was to construct walls of glass to enable nature to emit inside the home. Christian Norberg-Schulz interviewed Mies in 1958 and he said: "Nature, too, shall have its own life. We must beware not to disrupt it with the colour of our house, and interior fittings. Yet we should attempt to bring nature, houses, and human beings together into a higher unity. If you view nature through the glass walls of the Farnsworth House, it gains a more profound significance than if viewed from the outside." The philosophy used by Mies was also found in the works of Frank Lloyd Wright's Falling Water, the design of the building by Wright was to amplify living in harmony with nature.

The international style

Johnson and Hitchcock co-authored an essay in 1932 called '*The International Style: Architecture since 1922*' this was the foundation of the term International style, and it became a new trend that focuses on three key factors, the first being the disassociation of architecture to historic forms and ornament. The second is the utilisation of new technologies to revolutionise construction methods and materials and finally, the integration of reinforced concrete, glass and steel into Modernist structures allowing the construction phase to quicken and costs to become more affordable.

The Art Story (2017) defines international style as the architecture of the machine age, hosting asymmetrical plans and compositions.

References

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Marx (1964), "The Machine," in The Machine in the Garden: Technology and the Pastoral Ideal in America (London: Oxford University Press, 1964).

Norberg-Schulz (1958), "A Talk with Mies Van Der Rohe," Baukunst und Werkform, no. 11 (1958): p.235