

RESEARCH ARTICLE

On conservation issues of contemporary architecture: The technical design development and the ageing process of the Jubilee Church in Rome by Richard Meier



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Abstract

A vast amount of iconic buildings distinguished by complex geometries have been constructed in the last two decades in the United Kingdom, Germany, Spain, Portugal, France and Italy. Overall, the construction of these iconic buildings has led to technical innovations. As these buildings are often erected following customised construction details and bespoke technical solutions that are rarely tested in advance, measuring their ageing process has become crucial to understand if these geometries are sustainable in terms of the cost of their maintenance. This study aims to analyse the technical design development and the ageing process of the Jubilee Church in Rome by Richard Meier. Only fourteen years after the opening, this building is affected by extensive decay of construction materials due to both wrong technical design choices and lack of unaffordable maintenance work. This study aims to identify the causes of the premature decay of this building, recording retroactively its technical development and mapping the current state of damages.
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1. Introduction

Over the last twenty years the production of buildings recognisable for their geometrical complexity has risen exponentially in Europe and in the world (Amin, 2000). This increase occurred after the opening of the Guggenheim museum in Bilbao in 1997; following that, the recourse of design narrative producing architecture with complex computer-generated and non-standard geometries became fashionable with more public and private clients requesting such a type of design product (Rybczynski, 2002). A vast amount of iconic buildings distinguished by complex geometries have been constructed in the last two decades in the United Kingdom, Germany, Spain, Portugal, France and Italy (Easterling, 2005; Gospodini, 2002; Jencks, 2005; Saunders, 2005; Sklair, 2006; Sudjic, 2005; Urry, 2007). Overall, the construction of these iconic buildings has led to technical innovations such as the use of new materials, the development of new steel joinery, the design of advanced formwork systems, the tailoring of new assembling procedures, bespoke building components and construction details being mass-customised with hybridised solutions from different companies' catalogues (Piroozfar and Piller, 2013; Erens and Verhulst, 1997).

As these buildings are often erected following customised construction details and bespoke technical solutions are rarely tested in advance, measuring their ageing process has become crucial to understand if these geometries are sustainable in terms of the cost of their maintenance. Several newspapers across Europe have targeted the ageing process of these iconic building reporting failures and technical issues, in some cases directly after the opening of these structures (Moore, 2011; Quah, 2014; Rogers, 2014).

This study aims to analyse the technical design development and the ageing process of a contemporary building designed by well-known American architect in Italy. This study aims to understand the contribution of the technical advisors and the client to the technical development of the design and to assess the quality of the measurement of the ageing process of this case study. This building is the Jubilee Church in Rome by Richard Meier (Meier and Partners, 2008).

This building has been chosen for this study because:

- Fourteen years after the opening, the building shows extensive signs of decay in the materials in its construction;
- the scheme is designed by a foreign architect who had never built anything in Italy before then;
- due to its iconic and innovative appearance, the building required an extensive form-engineering process followed by a series of mock-ups;
- following the form-engineering process, the building was constructed with differences from what was conceived at the competition stage;
- the engineering contribution focused on research on concrete, leading to the application of a new bespoke concrete mix which had never been tested before;
- Due to an increased budget, the building was constructed with a sensible reduction of its original size.

This paper aims to reconstruct retrospectively the technical development of this church and assess qualitatively the ageing process of the building with the following scopes:

- collecting data about the design development of this building and its ageing process in order to understand the causes which led to the decay of the building;
- providing information that can be used by architectural historians for their critical assessment of the relationship between the architect and the construction of his architecture;
- increasing the technical awareness of architectural designers and architectural students aiming to use interpretative solutions borrowed from this case study highlighting how the details of this church could have been improved;
- evaluating critically the outcome of the technical development by analysing qualitatively how the technical solutions have coped over time;
- estimating the cost of the conservation work to bring the building to its original state.

2. Research methodology

During the construction process the author of this paper visited the building site of the case study regularly from 1999 until 2003. During these visits, the author interviewed the professionals involved in the technical development and construction of the building. This direct experience allowed the author to analyse how the technical development of the project was run and, in more detail, to measure how the engineering contribution modified the original scheme. To gather data on the nature of the collaboration between the teams of Richard Meier and his contractor, 'Lamaro Appalti', and his technical advisor during the construction phase, 'Italcementi Group', the archives of these companies were consulted.

In 2016 and 2017, in order to understand the outcome of the technical development, the author of this paper ran a technical survey to map the decay of the materials and details of the building fourteen years after the opening of the church.

3. The technical development of the church

The Jubilee Church was designed by Richard Meier and was completed in 2003. The church was one of several places of worship planned in the outskirts of Rome to celebrate the Roman Catholic Jubilee of the year 2000 with the programme entitled '50 churches for Rome 2000'. The programme was the outcome of an urban strategy put forward by the general authority of Rome together with the Vatican. According to the expectations of the Vatican, a new and more inclusive architectural language for religious buildings was demanded in order to offer more welcoming religious buildings which were more open to the city and had spaces for different social activities. The briefs for these new churches included small theatres, meeting rooms, playgrounds, parish houses and, of course, church halls.

For the Jubilee Church, the Vicariate launched an initial open architectural competition where 534 projects were

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