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Introduction

Through the collaboration between three different architectural disciplines – architectural history, BIM (building information modeling) and structural design – a project was launched at the Università Iuav di Venezia that aims to reconstruct a remarkable Adler & Sullivan skyscraper, built in Chicago in 1891 and demolished in 1961. The initial investigation of this laboratory’s work took the form of a contribution to the exhibition “Romanticism to Ruin: Two Lost Works of Sullivan and Wright”, which opened on September 24, 2021 in Chicago (Gallery 659 W. Wrightwood, Chicago). The exhibition in Chicago was created around John Vinci’s re-examination of the building whereby he meticulously began re-drawing it in 2018, almost 60 years after it was demolished. Starting from these drawings and other historic materials, the laboratory continued Mr. Vinci’s work by re-drawing all the most notable elements of the building structure. Large-scale tables, axonometric cross-sections obtained from the BIM model and two videos document the result of these studies, which will be complemented by a selection of full-scale decorative ornaments from the building. These elements offer the public a direct connection to the materiality and rich color palette of the delicate surfaces designed by Louis Sullivan.

The Building

During the winter of 1961 in the city of Chicago, one of the most significant buildings created by the office of Adler & Sullivan was demolished: the Schiller Building. The building, located inside the Loop, which was and still is the financial center of the city, was built in 1891 on behalf of the large and influential German community in Chicago. They wanted to erect a theater where they could present the works of their own dramatic and musical traditions (from which the naming of the theater after the German poet Schiller is also derived). The Schiller Building, which housed a 1000-seat theater, accessible from the street and preceded by a sumptuous vestibule, stood on a lot of 25 x 55 m. The building was divided into three elements: an 18-story tower 62 meters high at the street front; a 14-story central wing which included the 6-story theater volume; and a rear section of 13 floors (which also contained the scenic tower). The theater, for safety reasons, was built in a traditional way with thick masonry walls that reached up to the sixth floor. The tower and the upper volumes, on the other hand, were constructed of steel columns and beams designed and engineered by the Binder & Seifert engineering office in Chicago. The successive studies of the building relied on three important documentary sources after initial analyses of Mr. Vinci’s drawings: the drawings by Adler & Sullivan (The Art Institute of Chicago / Burnham & Ryerson Library), the engineering drawings and shop drawings of the metal structure by Binder & Seifert (The Art Institute of Chicago / The Chicago History Museum) and finally, the photographs taken by Richard Nickel during the demolition of the building (The Richard Nickel Committee and Photographic Archive at The Art Institute of Chicago). We also owe the extensive recovery campaign to Richard Nickel and John Vinci, among others, which made it possible to save the building’s most notable terracotta, plaster and two-dimensional decorative elements (columns, friezes, cornices, sculpture, stencils), some of which were presented or recreated in the Chicago exhibition.

The Exhibition

The purpose of the exhibition is to reconstruct the architectural organism conceived by Adler & Sullivan by investigating, through detailed drawings and digital information modeling (BIM), the constituent elements of the building: the metal structure, the brick and terracotta walls with their anchoring systems, the structure of the floors made of “tile arches” and the internal construction which is not only part of the elaborate decorative scheme, but also of the mechanical system (heating and cooling systems). The construction of the Schiller Building contributed significantly to the definition of a new architectural type: the American skyscraper, in its version developed in Chicago after the devastating fire of 1871. The metal structure used in the tower and in the main parts of the building presented pioneering solutions which constitute some of the first and most important examples of the application of steel in the construction of tall buildings. The metal structure consisted of box-shaped beams and columns formed by bolting together both steel sheets and profiles. The use of structural steel profiles was used only for the secondary structural elements (beams and joists).

These members had been calculated following the principles of graphic statics, taking into account the plastic behavior of the metal - an approach that allowed for the easy calculation of very complex systems as demonstrated by the best-known case - the Eiffel Tower. The patient work of reconstructing and redrawing the structure, the masonry and the decorative elements of the building which was carried out by a group of master’s degree students from the Università Iuav di Venezia and led by three instructors - Prof. Mario De Miranda (metal structure), Prof. Paolo Borin (BIM modeling) and Prof. Marco Pogacnik (historical research) - will be presented in this exhibition. The idea that animates the project is to question the linear conception of technical and structural innovation and to reveal the concrete and vivid presence of the building through an in-depth historical investigation. Large drawings will be exhibited to illustrate building sections and important details and to highlight the structural elements and the exterior envelope. Large 1:10 scale sections and a video, developed from the BIM model, will make it possible to explore the building again, utilizing digital precision to return to the actual material and chromatic qualities of the lost building. The exhibition intends to enhance and disseminate, thanks to the work of tomorrow’s designers, the study of the historic roots of modern metal construction, highlighting the ingenuity and audacity of yesterday’s designers.

With this approach in mind we hope that there will be an opportunity for a closer collaboration between the Università Iuav di Venezia, the Venetian museum system and the world of design and construction, which is made up of companies and designers whose presence in our territory is rich, prestigious and unique.