

Report on the 3D Reconstruction Project of Arc-et-Senans - Pavillon du Directeur

Introduction

This project had many challenges during the process because it was difficult to reproduce an old architectural work in a 3D model. Our references were only hand-drawn sketches from the past, including plans, sections, and elevations. These sketches were not very precise and often did not match each other. The focus of our study was the architectural project by Ledoux, *Arc-et-Senans - Pavillon du Directeur*.

Ground Floor

One challenge was the lack of clarity about whether the ground floor had windows. After analyzing the drawings, we decided that, as seen in the left plan, the ground floor does not have windows.

The sections showed domes that were not visible in the plans. We assumed these domes were in the basement and built them based on the transversal section.

The staircase on the ground floor was not to scale, making it impossible to access the next floor. We redesigned it with proper measurements to ensure functionality.

First Floor

There was a staircase on this floor, but it was unclear in which direction it went. We redesigned it to make it functional and connected to the other floors.

We also noticed some features in the plan that looked like fireplaces. However, we did not have enough information to confirm if they were really fireplaces.

Third Plan

There was a side staircase giving access to a statue, as seen in the sections and old sketches. We decided to connect this staircase to the central staircase, making it more functional and linking all floors of the building.

Fourth Plan

In this plan, Ledoux did not draw the staircase, but the elevation showed an opening that went up to the roof. We used this information from the elevation to include the

staircase in our model.

Roof

The roof was designed with an arch made of wood to support it. This decision was based on the information from the interior sections, as no other details were provided in the original drawings.

Columns

The columns followed the Tuscan order, as described in Palladio's book.

Conclusion

This project taught us how challenging it can be to work with historical architectural designs, especially when the references are limited and unclear. We had to analyze the drawings carefully, interpret missing or inconsistent details, and make logical decisions to complete the 3D model. Each step required creativity and problem-solving, such as redesigning the stairs, connecting floors, and assuming how some elements, like the roof and domes, might have been built.

Despite the difficulties, this project helped us develop important skills, such as interpreting old sketches, understanding architectural elements, and applying them to modern tools like 3D modeling. It also made us appreciate how architecture has evolved and how important precision and documentation are in design. Reconstructing the *Pavillon du Directeur* gave us a deeper connection to historical architecture and showed us how to bring the past to life through modern methods.

