## Representing Controversy

### Using 3D Models as the *Locus* of Debate for 3D Restitution Hypothesis of Built Heritage

The hypotheses for 3D reconstructions of past states of heritage buildings stem from collaborative research in which contradictory debates take place. At the end of the research, the 3D model captures a hypothetical state of knowledge without necessarily documenting the debates that led to this hypothesis, or the ongoing questions that could promote future research. Based on a couple of case studies our laboratory worked on (such as Victor Horta's Maison du Peuple and Joseph Hoffmann's Palais Stoclet), this paper will expose the development of a methodological workflow implemented through a simple software solution to convey the dialogue among researchers, external experts, and heritage management institutions, with the aim of promoting further studies.

Nowadays, it is common to rely on 3D digitization of built heritage to centralise heterogeneous information about it, such as archive documents, technical information, and so on. While these "digital twins" can be used primarily to address heritage management and valorisation matters, they can also be used to synthesise knowledge about the project. These 3D models can describe the structural, the material and the compositional logic, as well as the modifications and alterations over time. The nature of the description relies both on the nature of the information available (archival collections and/or 3D digitization), and on the goals of the documentation project.

These studies focus sometimes on the current state of the surveyed building, sometimes on hypotheses of previous states that have disappeared, in whole or in part. These issues are often addressed in a disparate way, which led to the formulation of the London Charter (*The London Charter*, 2009), which defines a policy of best practices to be adopted in the documentation and digital visualisation of built heritage (Beacham, Denard, & Niccolucci, 2011). With the rapid development of digital technology in the field of heritage management and enhancement, the question of data integrity arises, as well as its visualisation, and the scientific value of 3D models. Although the FAIR (Findable Accessible Interoperable, and Reusable data) principles (*FAIR Principles*, 2024) define a scientific manner to manage and make accessible the data resulting from 3D documentation works, it is also ilmportant to reveal the relative degrees of knowledge embedded in the 3D models.

In addition to these widely shared questions, the recent developments of HBIM (Heritage Building Information Modeling) protocols are inclined to explore the collaborative dimension of 3D representation of built heritage (Jordan-Palomar *et al.*, 2018). Yet, those protocols are based on standardisation logics that tend to freeze a state of knowledge, which may seem contradictory to the collaborative process. Therefore, a question remains open, that of considering the three-dimensional representation of the building, not only as a place for spatial referencing of heterogeneous data, but also as a space for challenging research hypotheses.

Making explicit the hypothetical state of a 3D restitution is a matter that emerged through two large-scale digitization projects that our laboratory has worked on for 8 years: the Maison du Peuple by Victor Horta and the Palais Stoclet by Joseph Hoffmann. These studies shared identical objectives and methods: to propose hypotheses for restoring the original state of architectural objects — one disappeared (the Maison du Peuple) and the other inaccessible and altered (the Palais Stoclet) —

using the 3D model as the core of the study and process, as well as a means of organizing knowledge related to the heritage building. The first 3D restitution, focused on the Maison du Peuple, integrated the degree of certainty of the studied elements, based on the quantity and quality of archival sources describing them, according to various criteria (morphology, materials, colors, etc.). This was done by implementing existing methods (Blaise and Dudek 2006; Favre-Brun 2013), and degrees of certainty were included in the 3D model using color codes (Lo Buglio and De Luca, 2011; Trottet and Derycke, 2020).

The second 3D restitution, the one of the Palais Stoclet, followed the Maison du Peuple's method but brought out the necessity to go one step further. As a total artwork driven by the Vienna Secession, one of the challenges was to digitize the building in its pristine state (1911), with its comprehensive collection of art and furniture, some of which have now disappeared or have been sold. Despite being part of UNESCO's heritage, the Palais Stoclet is a private building. The Stoclet heirs did not grant us access to the edifice. Instead, they took legal action against our research. Therefore, most of the research was based on archival sources, and some hypotheses remained (and remain to this day) unverifiable. Our study started receiving significant media coverage as it had taken a controversial turn involving legal and political issues. Our 3D model became an active operator in this controversy, as it was the locus for discussions of unverifiable hypotheses, as well as a gateway to some knowledge that was prevented from being accessible to the public.

While the methodology of the first project was focusing on making explicit the degrees of certainty in relation to their sources to promote upcoming debate, the second project highlighted the need of making the debate itself visible. Not only the controversy conveyed by the public debate, but also the scientific controversy coming from the interpretation differences between the experts discussing the same archival materials. To sum it up, what is at stake has shifted from *"how archival sources are likely to report on various features of built heritage through a 3D model"* to "*how to give access to the various interpretations of the knowledge conveyed by this 3D model, by using the 3D model itself".* Therefore, our ambition is to set up a methodology based on a simple software development that allows to represent the degrees of certainty and the nature of controversies by using the 3D model as an active operator (Latour and Yaneva, 2008) in the debate. This paper will present an ongoing experiment supporting this approach based on both of our case studies.

## References


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