

3D MODELS: NEW CARTOGRAPHIC REPRESENTATION MODE FOR NEW APPLICATION

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In the context of architectural, historical and archaeological research dealing with still existing structures, even partially, cartography plays a fundamental role in particular for locating and understanding of different buildings and their layout. This documentation includes maps and represents an important source of knowledge. The documentation consists in cartography of the external environment and of internal volumes, cross sections and elevations, sketches with or without dimensions. The records are provided by architects, historians and archaeologists or even surveying technicians. The large amount of very diverse cartographic and numeric documentation reflects the huge number of approaches for analyzing a single place. The type and organization of each manuscript depends on the sensitivity of each expert and of the purpose of the drawing.

Ancient documents, now considered as valuable archives were quasi-works of art drawn on paper boards or film.

But since the advent of computers and digital mapping, new versions of maps and plans have become very technical and enable new analysis, design of buildings and sites.

But what about 3D digital models that make their entrance into virtual mapping and GIS world?

What do they bring to new user? Who are they for? Will they replace the traditional mapping and revolutionize map production and representation? Certainly not! But it's undeniable that recent phenomenal advances in acquisition method, including 3D scanning, in 3D modeling and then finally in use and dissemination of data cannot leave any traditional or potential user indifferent. This paper incorporates and demonstrates the contributions of 3D models in the understanding, knowledge, and representation of buildings and sites through various projects aimed 3D modeling of historic sites (Figure 1).

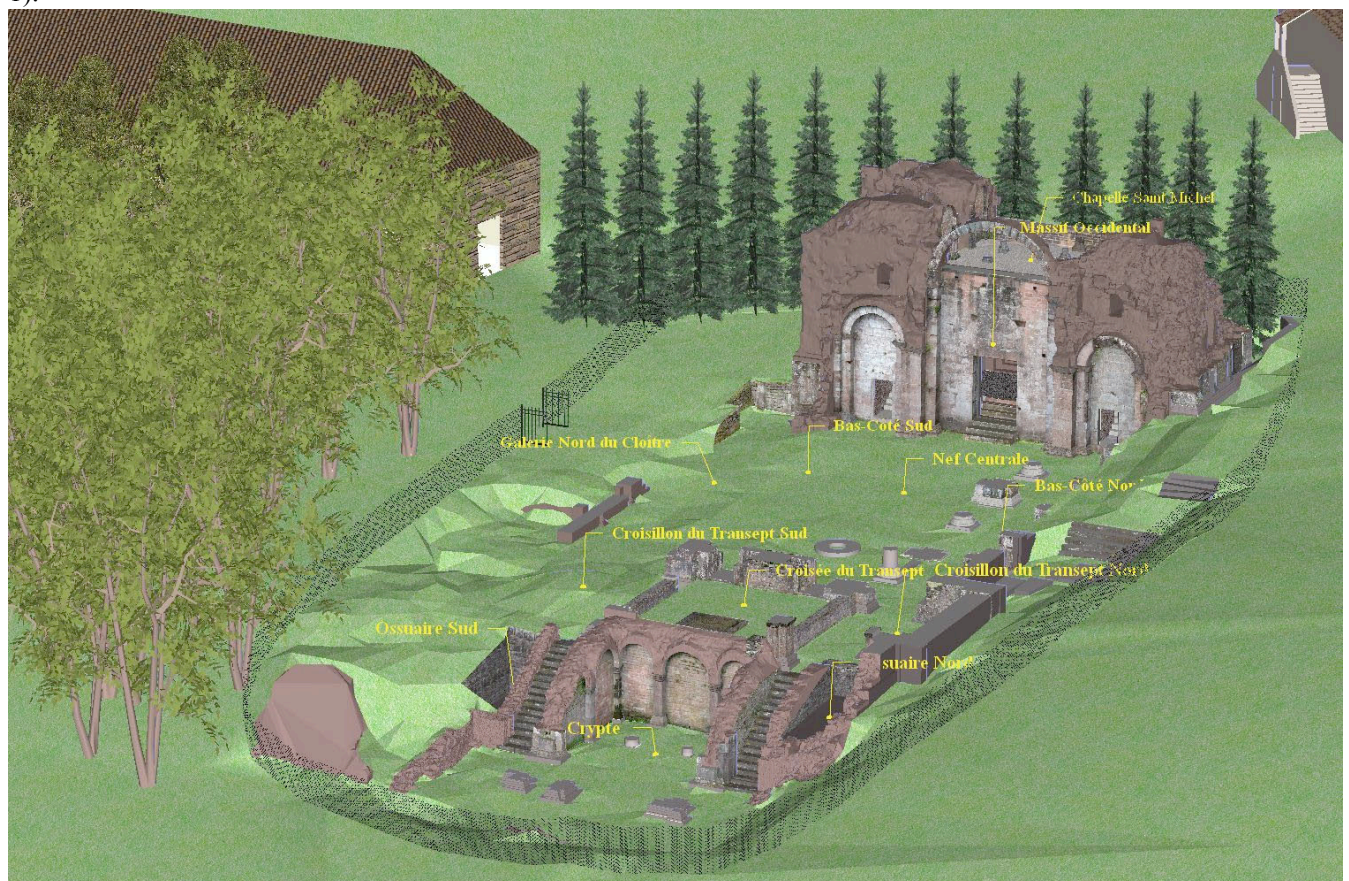


Figure 1: 3D model of Niedermunster's Abbey (France).

3D modeling can have multiple aims. These serve to preserve and disseminate the data to share knowledge on the history of architecture, the relationship between resources by bypassing the language barrier. The computer reconstructions are booming because they can capture the attention of the general public (Figure 2).

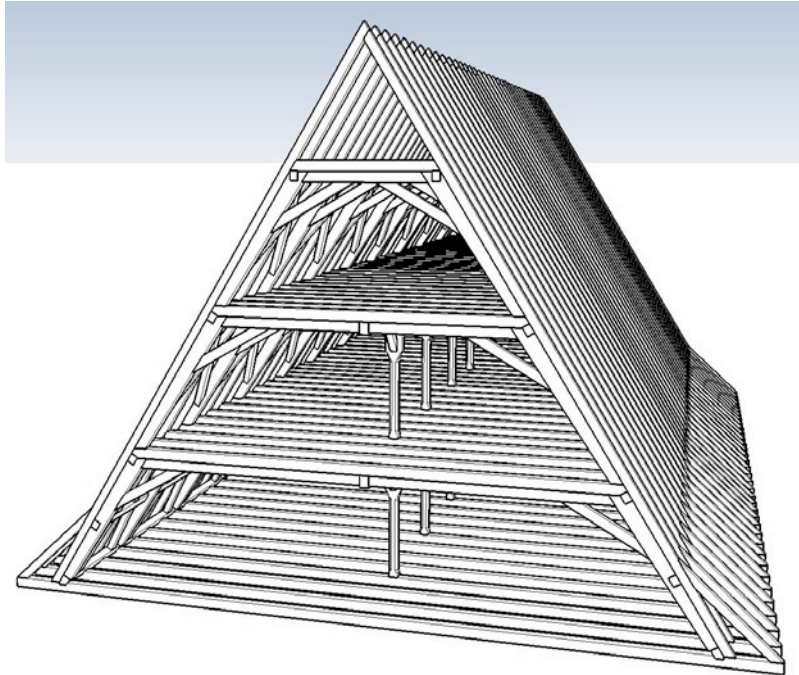


Figure 2: 3D model of historic wooden frame of Andlau's Seigneurie (France).

They facilitate the visualization of structures through virtual environments that allow the user to explore the buildings from all angles (Figure 3).

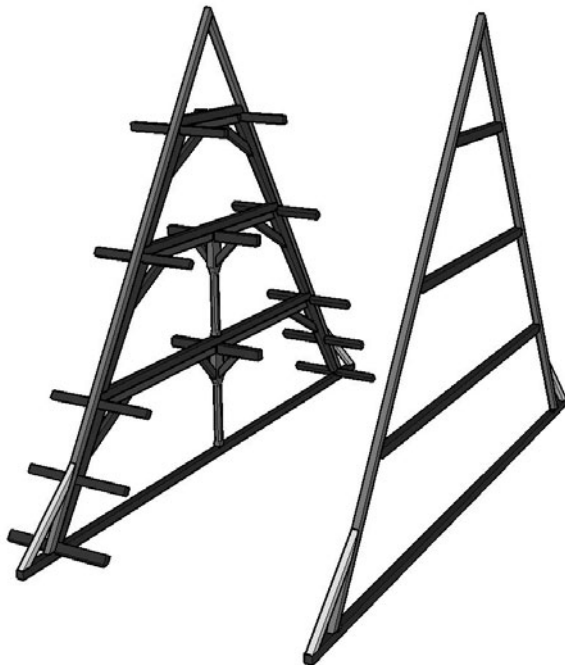


Figure 3: Rendered extract of structural elements of historic wooden frame.

Today's 3D rendering software is very sophisticated and provides a high level of realism: it is possible to create effects of light, shadow, mist, dust and so photo-realistic scenes. In the case of a 3D model, specialists must nevertheless focus the user attention of uncertainty: the areas are based on uncertainties and not on actual measurements.

This knowledge together in one of the extensions of 3D models that can be a 3D GIS allow to conduct historical reconstructions, to implement virtually technical assumptions and to animate scenes over periods and known or implicit developments (Figure 4).

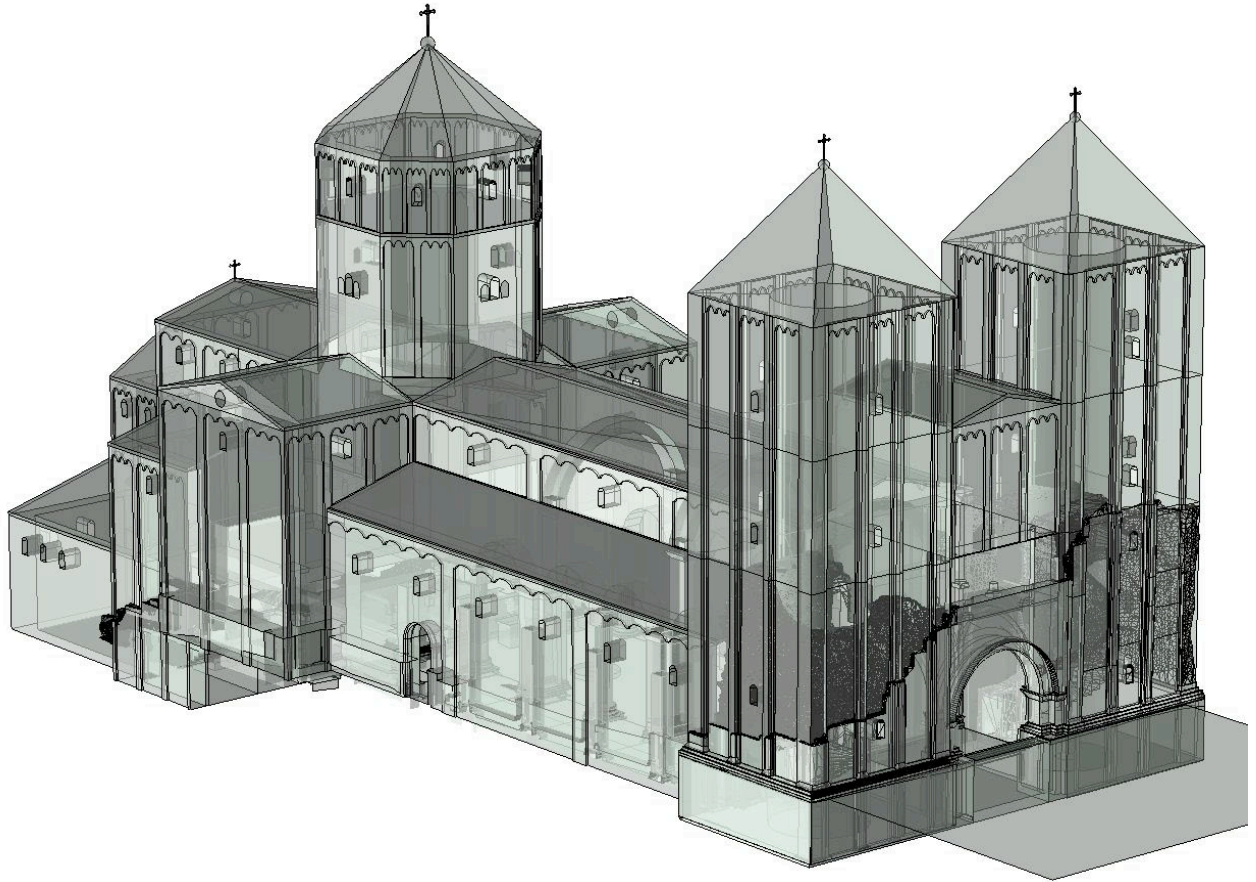


Figure 4: 3D reconstitution of Niedermunster's Abbey – Hybrid 3D model: actual ruins and XIIIth Century hypothetical state.

3D models provide new digital materials, new types of maps and space representations and also new features. But the interest lies in the exploitation of new digital documentation.

The 3D digital model, animated, interactive can be considered as one of the most interesting interaction possibility with modern maps, a way to offer more dynamism even more life to a map? There are even some who take the opportunity to increase the reality through these new data sets and the same will endow an ethics for 3D.