

Theatrical Effects

The imaginary window on architectural surfaces

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ABSTRACT: From antiquity onwards, wall/ceiling paintings frequently expanded the built architectural volume into fictive picture space. This phenomenon gets examined in art and architectural history. Some focus lies on the role of architecture, other on the individual master's oeuvre, or production. However, surprisingly, the relation between these artworks, their fictive space, and the volume underneath stays scarcely examined by digital methods. By combining hands-on methods for 3D capturing space and reversed modeling for the painting's fictive architecture this research attempts to add to this field. The outcome is linked to the contemporary practice of texture mapping.

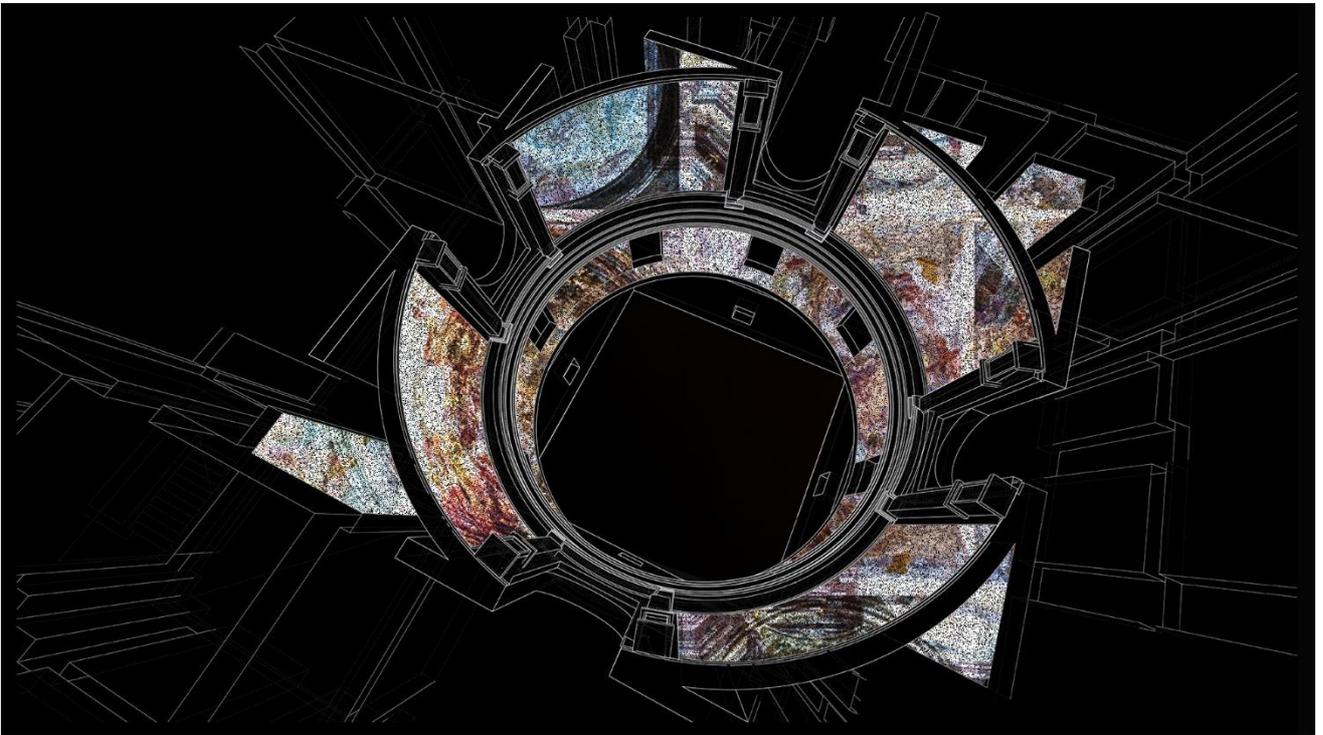
The project UP! exhibits a variety of outcomes produced during the last year. The described research project focuses on ceiling paintings. Their relevance for the overall spatial concept feels present in the Italian Renaissance but especially during the 17th to 18th centuries in Mid Europe. These Baroque worlds of colors were quite architectural and expanded the built volume, particularly

into depth. Architecture worked as a frame, and fictive architectural elements increased the illusionistic effects. The studies shown range from preliminary scanning tests in local churches of Innsbruck, three-dimensionalized works of Andrea Mantegna to Andrea Pozzo's work in Vienna. The latter will form together with the examples provided in Pozzo's treatises "Perspectiva Pictorum et Architectorum Vol. I+II" (1693/1700) the core case study of the research. It is to assume that the outcome provides a new method for spatial analyses alongside more traditional methods. A computer-generated model possesses further possibilities to improve knowledge transfer.

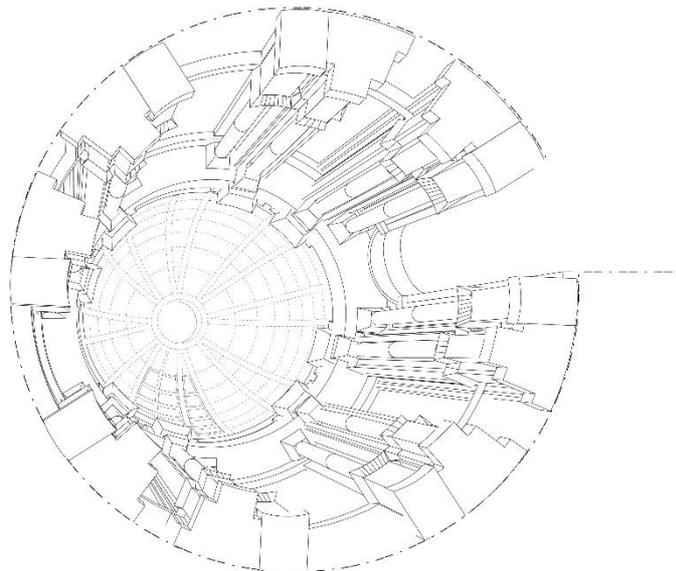
Ceiling paintings are, in their essence, projected images on curved (double curved) architectural surfaces. Their production thus drove the investigations on perspectival rules as well as the scientific understanding of projection for artistic production. Therein the grid plays an essential role. This allows linking the exhibited research to methods of contemporary architectural practice. Cutting edge technology like Augmented Reality texture mapping still refers to the grid as a method for image mapping onto geometry. The free-floating model illustrates these techniques by using structured light scanning for aligned texture mapping. By this, the research investigates the correlation between image and topology, even texture and geometry, and its relevance for space.

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All images by the author. Animations were rendered with the open-source software Mandelbulb 3D.



3D model of Casa Mantegna (Mantova) after plans of Andrea Mantegna, Theresa Uitz 2021



3D reconstruction of the feigned cupola at Jesuitenkirche (Vienna) after drawings of Andrea Pozzo in *Perspectiva Pictorum et Architectorum* Vol. II, figura 51/52 (1700), Theresa Uitz 2021