

Historical roof structures - How to make the forgotten masterpieces visible?

The roof cadastre of Vienna`s City Centre

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Introduction

While wooden roof structures can be found in the overall human history, their role gained importance in the Modern Era pertaining to architectural appearance of buildings. Thereby, a sophisticated craftsmanship has been evolving that was passed from generation to generation resulting in roofs of extraordinary complexity and beauty. Such roof constructions regularly consist of up to 1000 and more different elements, which needed to be put together by craftspeople by hand. Many of these constructions lasted for hundreds of years, thus they are not only characterized by beauty but also durability. In the centre of Vienna, wooden roofs from seven centuries have been preserved. Despite being constituents of the city's roof landscape, the construction itself stayed hidden under the roofing. As such, the knowledge about the historic constructions has faded over the years and is no longer known for many buildings. Given the constant need for roof maintenance and protection, the loss of both construction craftsmanship and lack in documentation about these roofs is problematic. As countermeasure, "The roof cadastre of Vienna`s City Centre" has been started in 2015 and will be presented in the contribution.

Project setup and initial phases

In October 2015, the Austrian Federal Monuments Office together with the City of Vienna started the present project. The purpose was to deliver an in-depth basis for future decisions onto upkeep, conservation and maintenance of Vienna's historically relevant roof landscapes. The project was set up as a multi-year project encompassing different focus phases, and as a collaborative project between the Monuments Office (project lead) and different external partners both from academia and private business, bringing in expertise in relevant domains, such as surveying, documentation, dendrochronology and building construction.

The **first phase of the project** started back in 2015 and encompassed the following aspects: (i) Fine-Tuning of the project contents based on recommendations of the scientific soundness board that was set up at the project start; (ii) Mapping / Cartography of the whole first district of Vienna

based on plans, inventories, literature from publications and archives as well as the utilization of aerial mapping / photography. (iii) Identification of roofs that already did undergo a roof-top extension, and thus not featuring the original state of the roof construction anymore.

The **second project phase started in 2016** and focused onto measurement, photographic documentation, technical description and dendrochronological age determination of selected roof structures. On the basis of the roof mapping of the first phase, different historically relevant objects with widely original roof structures were identified as suitable representatives for different epochs. While buildings of religious purposes (churches) did majorly not face a lot of adaptation, many profane buildings were subjected to changes to their roof top structures. As such, the selection of building was focusing on profane buildings that did not face major changes in the past. The building surveying was conducted by specialized companies after an open tendering process. All together, 180 building documentations were completed already by the end of 2016. Within the surveyed building sample, roof structures dating back until the year 1299 could be confirmed (see Figure 1). This was considered surprising, as only little expectations could be made to find medieval roof constructions based on the previous state of knowledge.

On the basis of the overall mapping and the object documentations, the **third project phase** starting in 2017 was devoted to the typological classification of the roof structures and the deduction of their structural system and development. The data collected in the second phase was enriched with the roof surveys of the religious buildings of the 1st district. This was done due to their widely unchanged and innovative roof structures, which provide an indispensable insight into historic construction technologies. Thus, many of these roofs could be surveyed and dated for the very first time. Thereby the number of assessed objects was raised to 205. As a result, many new and surprising insights onto the age of construction elements of these, sometimes even medieval, churches could be gained.

Project dissemination (final phase)

In the **fourth and final phase** of the project the focus lied on dissemination of the gained findings. The discoveries were presented and discussed with an international expert audience in late 2018 within a scientific symposium (European Year of Cultural Heritage). A set of lectures was initiated for the interested public, as well as different articles were published in periodicals and at conferences. The overall results were condensed to a book publication finalized in 2021 (see references). This book can be considered as an encyclopaedia of Viennese roof constructions for interested audience and peers. Moreover, an overview about building ages of the roofs and their construction typologies was made available not only in the book (see Figure 2) but also via the website of both the City of Vienna and the Federal Monuments Authority Austria. Thereby, the data that was collected and processed now forms a new layer in the City of Vienna GIS system (see Figure 3), and thus can ultimately be used for a wide set of information querying. This successful implementation of the “The roof cadastre of Vienna`s City Centre” is an important contribution to well-founded decision-making in the preservation of historical monuments in Vienna and can help in raising awareness about the value of historic roof structures for planners, owners, and visitors of the city.



Fig. 1. The traditional roof structures in Vienna go back to the year 1299. These findings from the Middle Ages can be studied during very rare guided tours and they regularly arise enthusiasm and great interest among the public (© Bettina Neubauer-Pregl, Katharina Steudtner, Michal Panáček).

Fig. 2. Excerpt from the roof cadastre. Colours denote the age of the buildings between the 13th and 20th centuries, numbers highlight the surveyed objects (© Hanna A. Liebich).

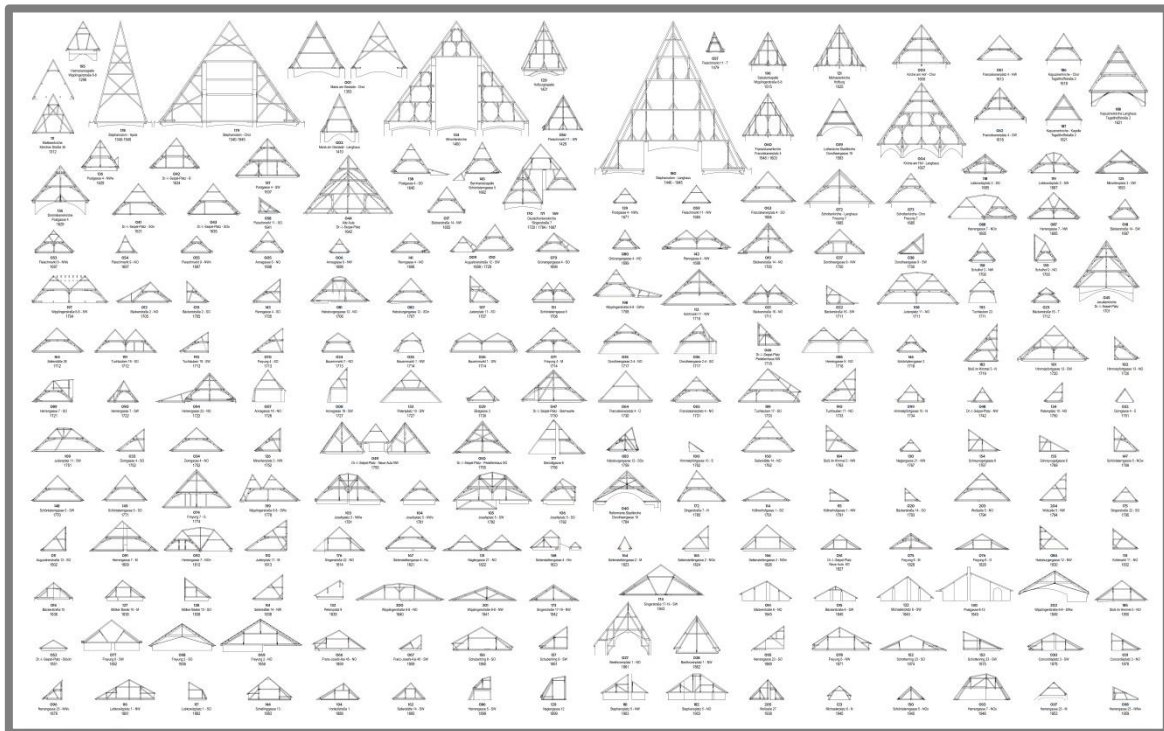


Fig. 3. The photos, dates and drawings show the spectrum of construction methods and the development of roof structures over 700 years. With their help, the development of the typologies can be traced and compared with other Central European cities (© Hanna A. Liebich).

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Conflict of Interests Disclosure

The authors declare no conflict of interest in the framework of project and this contribution.

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During the run of the project, several persons and institutions contributed. A full list of projects collaborators can be found in the final publication of the project (Liebich 2021: 449). Moreover, Ulrich Pont contributed to the language editing of the paper.

Author Contributions

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