

## **Carpentry art and the development of secular construction in the Old and New Town of Toruń from the Middle Ages until the end of the 18th century in the light of interdisciplinary research on roof trusses**

Toruń, a city included on the UNESCO World Heritage List, can boast the biggest in Poland number of preserved medieval roof structures of burgher houses, i.e. tenement houses, outbuildings and granaries, which have not been the subject of wider research so far.

The main scientific objective of the project is to identify and examine the historical roof trusses in the Old and New Town in Toruń, which were erected from the Middle Ages to the end of the 18th century. An extensive architectural-historical-dendrochronological analysis aims to determine the characteristics of construction timber (the time of wood felling, the origin and transport of building timber, its quality and type), historic carpentry techniques (woodworking, system of carpenters' marks and the used construction joints), and the typology of structures. The chronological stratification and reconstruction of roof trusses will allow to elaborate the construction history of Toruń burgher houses and, to a larger extent, to verify the typology of the structures with the solutions of the cities of the southern Baltic coast. The in-depth dendrochronological studies will additionally allow to characterize climate change and to determine the quality of forests over the past four hundred years.

The research method includes four main stages. The first one is a historical study consisting of a query of sources at the State Archives in Toruń, and the documentation in the bureaus of monument protection. It will be followed by a preliminary inventory of the field resource, based on which the most important structures will be selected for drawing representation. Detailed architectural research will be carried out on the prepared master drawings, including the analysis of the building timber and its processing (woodworking), the system of carpenters' assembly signs, as well as the signs and traces on the building timber that attest to the fact of its transporting, the process of unfolding and setting the structure. Elements selected on this basis will be subjected to dendrochronological studies for accurate dating. They will also allow to determine the place of the felling of wood, its quality and type. All results of the architectural and dendrochronological studies will allow the chronological stratification and possible reconstruction of the original system of roof trusses, followed by referring this knowledge to the construction history of houses. The last element of the research method is synthesis and comparison. It will be possible to characterize the construction process from the 14th to the end of the 18th centuries, as well as to determine the construction types and their development in the discussed period. The studies of the roof trusses will be referred to the knowledge about the spatial and functional layout of the houses, and, to a wider extent, to the attempt to present the carpentry techniques and construction types against the broader background of European cities. The obtained biological material will allow the characterization of climate change and the quality of forests over the past four hundred years.