

Doctoral School
of the
Hungarian University of Fine Arts

**MICROSCOPIC WOOD SPECIES IDENTIFICATION
IN ART OBJECTS**

Relationship between restorers' investigations and other fields of science

Theses of DLA Dissertation

Eszter Tuzson
2014

Supervisor: Dr. Péter Menráth,
DLA habil, University Professor
Consulent: Dr. Sándor Fehér,
PhD, Senior University Lecturer, NYME SKK

Introduction

One of the most important basic materials of our art objects created by fine arts, crafts and folk arts is wood. Knowledge of the wood used is essential for the restoration of these objects and for the most complete and accurate characterization of our heritage of works of art.

The multifaceted character of the work of restorers requires that they be knowledgeable in the history of art and costumes and in iconography as well as in the field of natural sciences. Their work is therefore facilitated by every study that systematizes and elucidates the knowledge available in a given field.

With this in mind, the objective of my doctoral thesis entitled *Microscopic wood species identification in art objects* was to collect and present the range and applications of wood species used as basic material for the art objects preserved in European collections and to describe their properties important for their restoration, with a special emphasis on photographically illustrated wood anatomical characteristics necessary for their classification.

My Master's Dissertation is closely connected with and supplementary to my DLA Theses presented here. It comprises, under the title of *Wood Library*, a collection of macroscopic and microscopic sections of the wood species described in the Theses, and, in a section entitled *Microscopic wood species identification*, my microscopic classification studies on 19 art objects originating from collections and churches in Hungary and abroad.

Theses of the Dissertation

1. The significance of wood species identification in art objects

Knowledge of the tree species whose wood was used for making the given art object is important not only for the selection of the appropriate restoration method, but it may also provide valuable information for restorers, art historians and archaeologists for dating the objects and for the determination of their place of origin. The significance of complex information on the wood material of works of art is similar to that of knowledge about bonding agents, pigments and style elements, and all these parameters together are suitable for the accurate and trustworthy description of art objects.

2. The necessity of wood species identification in art objects

The wood species making up antique art objects is usually impossible or very difficult to determine visually. Macroscopically recognizable anatomical landmarks are often unrecognizable on surfaces that may be discoloured or soiled, or that were earlier coated with layer(s) of protective material. Accurate identification most often requires microscopic classification of the wood species.

3. Objectives of the research and introduction of novel methods

The opportunity to examine what wood an art object is made of most often presents itself in the course of restoration, and would be the task of the restorer.

The multifaceted character of the restorer's work requires the availability of perspicuous, systematic studies in the various fields of research.

With this requirement in mind, I present the microscopic description of the wood species studied in my DLA Theses in a clear fashion, illustrated with microscopic images complete with explanations, supplemented with data collected from the relevant Hungarian and international literature, and also making use of my own experience. I compiled wood classification tables to facilitate determination of the species, and I discuss the microscopic characteristics provided in the descriptions of the individual wood species in a unified system, in the form of a list, to which a summary of diagnostic characteristics is added. In addition to describing the anatomical characteristics of the various wood species studied, I also collected all information (designations in various languages, synonyms, related tree species, phytogeographical data, growth, height, age, dendrochronologically investigated region, physical characteristics, wood defects, durability, field of application) that may be of use in the restoration of art objects and/or helpful for inferences regarding the place or time of the creation of the object in question or the identity and habits of the artist

4. Wood species utilized in European fine arts

I searched the special literature to determine the wood of which tree species was used in panel painting and sculpture in various regions of Europe. The data obtained are summarized in a table in chapter I.2, making possible the comparison of wood usage habits in different regions. The use of the individual tree species in a given time period is also mentioned in the descriptions of the species. For the evaluation of the results, it has to be taken into account that the present state of research on the various geographical regions may be quite different; some regions are less studied, and the number of remaining works of art can also be widely different – in some regions only a small fraction of the original number of art objects survived.

Generally speaking, wood carvers, panel painters and carpenters used the wood of the locally available trees. The use of certain tree species, for example of yellow pine that grows only in the Alps and at higher locations of the Carpathian Mountains, allows determination of the place of origin of the art object in question. The wood of other tree species, e.g. oak was used in panel painting nearly everywhere in Europe; however, dendrochronological research has revealed that in regions poor in forests, such as the Netherlands, a significant amount of imported wood was used rather than locally available wood. It was for the same reason that Rembrandt chose to work on panels of cigar boxes made of real mahogany, discarded in harbours (Klein, 2005).

5. Historical ecology

Wood species identification may not only shed light on the identity of regions, workshops, masters and their habits, but its results may also promote historical ecology, a new field of science. The identity of tree species growing in certain regions, e.g. of those that grew long ago in Sicily can only be inferred from the results of the examination of the remaining art objects (Romagnoli et al. 2007).

6. The role of research in education

I sought to compile my DLA Theses in a way to make it useful in the education of restorers. To help the interpretation of the species descriptions, I summarized the macroscopic and microscopic characteristics of pines and deciduous trees, the characteristics of the components of the xylem, and I also described physical properties affecting the appearance, applicability and restoration of art objects based on concrete examples.

Literature used

Klein 2005

Peter Klein: The use of Wood in Rembrandt's Workshop. Wood Identification and Dendrochronological Analyses. Van den Doen, Marieke – van Eck, Natasja – Korevaar, Gebrand – Tummers, Anna – Weststeijn, Thijs: *The Learned Eye: Regarding Art, Theory and the Artist's Reputation*. [online] Amsterdam, 2005, Amsterdam University Press. 28–37 p.
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Romagnoli et al. 2007

Romagnoli, M. – Sarlatto, M – Terranova, F. – Bizzarri, E. – Cesetti, S.: Wood identification in the Cappella Palatina ceiling (12th) century in Palermo (Sicily, Italy). *IAWA Journal*, Vol. 28 (2), 2007: 109–123. p.

Publication

Eszter Tuzson: A fafaj-meghatározás jelentőségéről (About the significance of wood species identification). In Békési-Gaardánfalvi Magdolna – Kissné Bendeffy Márta – Szatmáriné Bakonyi Eszter, eds.: *Műtárgyvédelem (Protection of art objects) 2011/36*. Budapest, 2013, Hungarian National Museum, pp.139–149.