



Institutional Repository - Research Portal

Dépôt Institutionnel - Portail de la Recherche

researchportal.unamur.be

RESEARCH OUTPUTS / RÉSULTATS DE RECHERCHE

Introduction

Piavaux, Mathieu; Charruadas, Paulo; Fraiture, Pascale; Gautier, Patrice; Sosnowska, Philippe

Published in:
Between Carpentry and Joinery

Publication date:
2016

Document Version
le PDF de l'éditeur

[Link to publication](#)

Citation for pulished version (HARVARD):

Piavaux, M, Charruadas, P, Fraiture, P, Gautier, P & Sosnowska, P 2016, Introduction: Wood finishing work, a promising area of research ? Dans P Fraiture, P Charruadas, P Gautier, M Piavaux & P Sosnowska (eds), Between Carpentry and Joinery: Wood finishing Work in European Medieval and Modern Architecture. Scientia artis, VOL. 12, IRPA - Institut royal du Patrimoine artistique (Bruxelles), Bruxelles, p. 7-20.

General rights

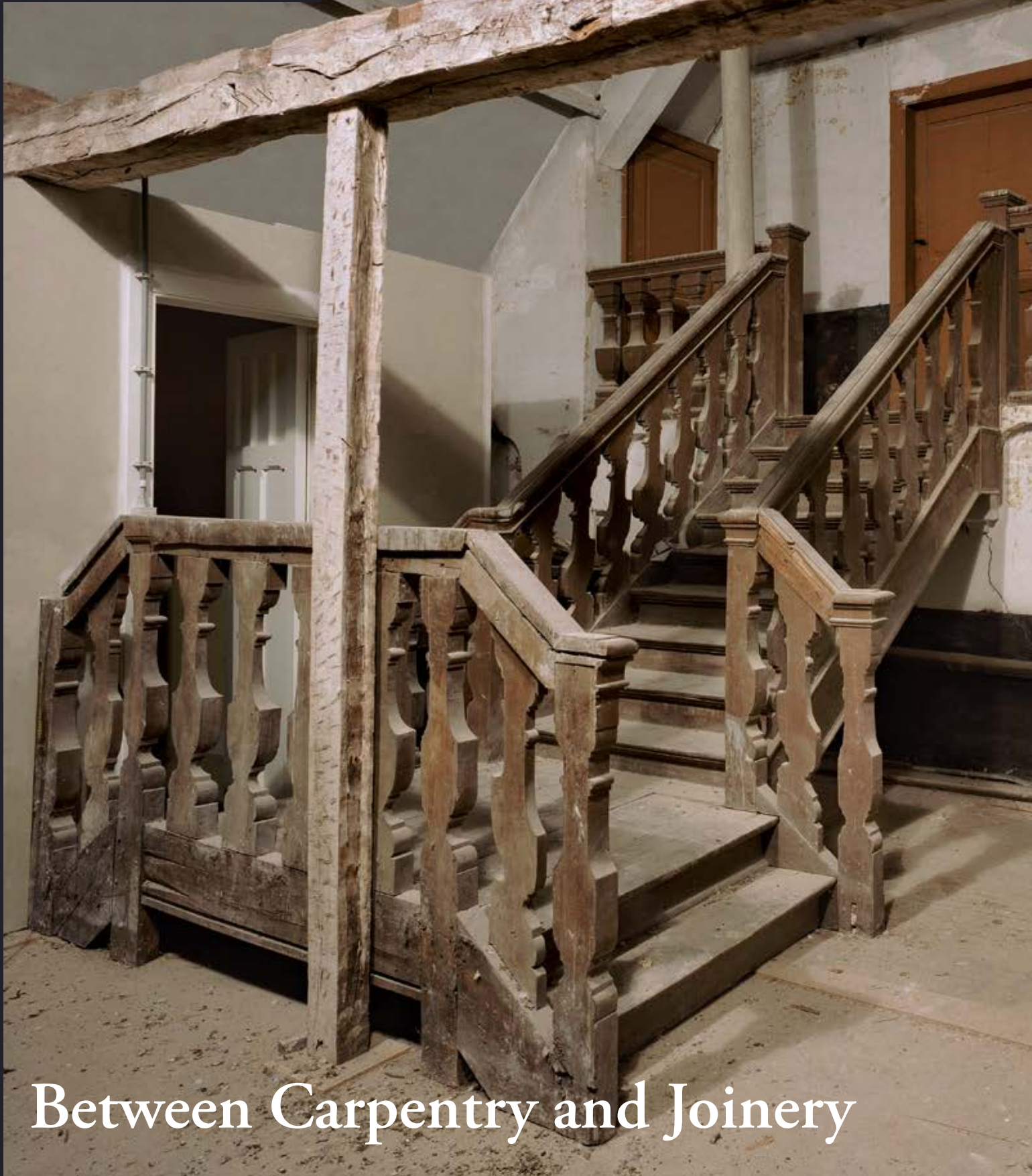
Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal ?

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

SCIENTIA ARTIS 12



Between Carpentry and Joinery

Wood Finishing Work in European Medieval and Modern Architecture

Between Carpentry and Joinery



Published by
Royal Institute for Cultural Heritage (KIK-IRPA) | Institut royal du Patrimoine artistique (IRPA) |
Koninklijk Instituut voor het Kunstpatrimonium (KIK)
Parc du Cinquanteenaire 1 | Jubelpark 1
BE-1000 Brussels
www.kikirpa.be

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, without the prior permission in writing of the publisher, or as expressly permitted by law, or under terms agreed with the appropriate reprographics rights organization.

Editor-in-chief: Christina Ceulemans
Direction and editing: Pascale Fraiture, Paulo Charruadas, Patrice Gautier, Mathieu Piavaux
and Philippe Sosnowska
Translation and revision: Rebecca Miller with the collaboration of Hendrick Louw and Pascale Fraiture
Revision and final editing: Pascale Fraiture
Image processing and layout: Bernard Petit and Emmanuel van der Sloot

Images from the authors unless stated otherwise. Every effort has been made to comply with legal copyright requirements. The publisher will be pleased to rectify any omission brought to their notice at the earliest opportunity. For images © KIK-IRPA, the number in brackets refers to the number of the KIK-IRPA's photo available for free on balat.kikirpa.be, the KIK-IRPA's database.

Conventions adopted in this volume: the letter 'd' following a year indicates that the date has been provided by dendrochronology.

ISBN 978-2-930054-28-5

SCIENTIA ARTIS 12

Between Carpentry and Joinery.

Wood Finishing Work in European Medieval and Modern Architecture

Edited by Pascale Fraiture, Paulo Charruadas, Patrice Gautier, Mathieu Piavaux, Philippe Sosnowska

Royal Institute for Cultural Heritage

Brussels 2016

Contents

Introduction: Wood finishing work, a promising area of research?	7
Paulo Charruadas, Pascale Fraiture, Patrice Gautier, Mathieu Piavaux, Philippe Sosnowska	

Between carpentry and joinery: Constructing flooring, ceilings and roofing

1 Constructing ceilings: The floors of the Rhone region in the south of France at the end of the Middle Ages	24
Émilien Bouticourt	
2 Structural timber in 15th- and 16th-century town houses in 's-Hertogenbosch (The Netherlands): Recent research on supporting structures	46
Maarten W. Enderman	
3 Ceilings and floorings in Austria: Types, dating and wood species	66
Michael Grabner, Andrea Klein, Sebastian Nemestothy, Erwin Salzger	
4 Contribution to the history of Brussels floorings, Belgium (16th-19th centuries): Initial results of an archaeological and dendrochronological investigation	78
Philippe Sosnowska, Pascale Fraiture, Sarah Crémer	
5 Panelled frames, modes of use: A technological and typological study of several roof frames in the Hainaut (Belgium)	112
Jean-Louis Vanden Eynde	
6 Wood shingles of medieval roofs: A first approach in France	128
Pierre Mille	

Organising light and space: Doors, windows, stairs and panelling

7 Wooden witnesses: Romanesque joinery and other wooden elements or their negatives divulging historical secrets of the St Martin's Church, Zaventem (Belgium)	150
Karin Keutgens, Bernard Delmotte, Charles Indekeu	
8 Wooden nailed doors in western France: An Armorican model inherited from the Middle Ages?	166
Vincent Bernard, Bruno Béthencourt, Yannick Le Digol, David Nicolas-Mery, Pierre Mille	

9	Analyses of wooden front doors in rural buildings from Austria Sebastian Nemestothy, Andrea Klein, Michael Grabner	182
10	The watertight integrity of window sills in western France: A simple system with a complex development history Arnaud Tiercelin	198
11	Window frame inventory number 3079 in the collections of the Royal Museums of Art and History, Brussels (Belgium): Results of archaeological, historical and dendrochronological studies Patrice Gautier, Pascale Fraiture, Valérie Montens	222
12	Grand staircase and joinery work on the Lange Vijverberg, The Hague (The Netherlands) in light of documents Ada de Wit	240
13	Indoor joinery and furniture made for 18th-century houses in Liège (Belgium) Isabelle Gilles	254

Introduction:

Wood finishing work, a promising area of research?

Paulo Charruadas¹, Pascale Fraiture², Patrice Gautier³,
Mathieu Piavaux⁴, Philippe Sosnowska⁵

Translation from French: Rebecca Miller

First and foremost, we would like to make it clear that this introduction is not intended to be an exhaustive portrait and a complete historiographic overview of the question. As will be shown, the very partial exploration of this area of research to date prevents such an endeavour. We have therefore deliberately chosen to focus on the regions that are less poorly known for us: the former Low Countries (the Netherlands and Belgium), France and Italy. The aim of this introduction is thus to prepare the ground for discussion of the question of wood finishing work, that future research will necessarily complement and improve.

From finishing work, early architectural treatises and joinery...

Finishing work using wood has a very minor place in architectural treatises of the 15th and 16th centuries. The well-known works of Alberti, Palladio and Delorme, who perpetuated the Vitruvian concept of architecture, thus focus in particular on the orders and ratios of proportions as well as on building functions. More technical considerations reserved for the different kinds of materials and their use are not uncommon, however, especially in the work of Alberti

¹ Historian, archaeologist, Université libre de Bruxelles (ULB) Research Centre for Archaeology and Heritage (RCAH) and Research Group for Construction Histories Brussels (CHsB)
pcharrua@ulb.ac.be

² Archaeologist, dendrochronologist, art historian, Royal Institute for Cultural Heritage, Brussels (KIK-IRPA)
pascale.fraiture@kikirpa.be

³ Archaeologist, Royal Museums of Art and History, Brussels (RMAH)
p.gautier@kmg-mrah.be

⁴ Archaeologist, University of Namur (UNamur)
mathieu.piavaux@unamur.be

⁵ Archaeologist, ULB, RCAH, CHsB
philippe.sosnowska@ulb.ac.be

and Delorme, but are more concerned with construction work; for finishing work only Classical techniques are mentioned. When wood is addressed, it is to describe the material (quality and selection of different species) and to specify strategies of felling (identification of areas suitable for exploitation, period of felling and precautions to observe) and use (notably drying). Strongly inspired by Classical theories – considerations of wood material stemming most often from the Hippocratic theory of humours, the cardinal points conditioning the quality of the trees, and the seasons, like the moon, the period of felling –, such technical requirements generally deviate from recent observations by archaeologists and dendrochronologists (Touzé, 2011).

The drying time before wood could be used is one of the rare technical elements linked to finishing work. At least three years were needed before processing wood for ‘planks, doors and windows’,¹ according to Alberti, Palladio and Delorme. This period would often be extended by another two years in publications from the late 17th and 18th centuries (Bullet, 1691; Blondel, 1737-1738 Diderot and d’Alembert, vol. 10, 1765).

Delorme, whose theoretical work gives wood working in architecture an atypically important role for the period, focuses almost exclusively on carpentry, rarely discussing finishing work except to mention ornaments ‘made of small pieces’² or, in the great tradition of Vitruvianism, the ratios of the proportions to respect for doors and windows based on their placement in a building (Delorme, 1561). In the early 17th century, the work of Jousse confirms the importance of carpentry in architectural theory in France (Jousse, 1627). Doors, frames, planks and panelling – as the work of joiners – are logically not discussed.

These considerations on Italian and French treatises can be extended with caution to those written during the same period in the Low Countries, for example *De Architectura* by Charles De Beste c. 1599 (van den Heuvel, 1993; van den Heuvel, 1995). In contrast, the unfinished (and unfortunately incomplete) work of Simon Stevin, *De Huysbou*, probably written between the late 16th and early 17th centuries, contains a few concrete descriptions related to elements of finishing work (shutters, staircases, ceilings), although these are still imbued with Vitruvian mathematical concepts and the aesthetic vocabulary of the Italian Renaissance (van den Heuvel, 2005). The idea is based on both a high degree of urbanity (relationship of a house to the city and to urbanism) and a strong practical sense (the most convenient means of implementation and the best markets for maintenance, the most resistant to weather, advice to prevent a given kind of wear, etc.). In the chapter discussing shutters, for example, Stevin takes care to describe the different closure systems with the advantages and disadvantages of each (van den Heuvel, 2005: 261-264).

In France, from all evidence the 17th century played a pivotal role in the study of the techniques of wood finishing work. Interest in ‘joinery works’ significantly increased in publications by the end of the century. While the question was not addressed in detail by Savot (1685),³ it grew in importance in works of the next several decades, and in practice, with an increasing focus on finishing work techniques. Bullet (1691), for example, successively envisages doors, casements, panelling, partitions, parquets and chimney fireplaces, all elements composing the ‘principal works of joinery’.⁴ The metier of joinery, however,

is not specifically addressed by this author,⁵ who limits himself to recommendations on the preferred proportions, dimensions (units of measurement) and forms. Félibien (1690) approaches the question from a more technical viewpoint, considering woodworking in terms of metiers. The joiner thus collaborated on a work site with the wood sculptor and engraver, as well as with the painter, a metier that the author associates with marquetry work. It is d'Aviler (1691) who would synthesise the state of knowledge on the question of finishing work in his architectural course, via notices devoted as much to the different elements of wood finishing work in a building as to the associated metiers. The joinery of the assemblage is thus differentiated from that of veneering, while another notice discusses marquetry. Jacques-François Blondel next attempted a synthesis in *De l'assemblage & des différens Profils de Menuiserie à l'usage de la décoration des appartemens* (Blondel, 1737-1738). The technical tone demonstrates a good understanding of the contribution of joinery in architecture at the time and the different aspects of the profession: the quality of the wood, drying time, different kinds of assemblages, profiles of casements and panelling, etc., are all discussed, with plates.⁶ Profiles of the professions were redefined in the *Encyclopédie* (Diderot and d'Alembert, 1765), and then in the famous treatise by Roubo (1769): cabinetmaking/marquetry, 'where one uses wood of different colours, cut into very thin sheets, applied by compartment on ordinary joinery',⁷ is thus clearly differentiated from assemblage joinery 'which has the aim of decoration and covering the apartments, for which knowledge of the design is necessary'⁸ (Diderot and d'Alembert, 1765). These two works would further give a mark of prestige to joiners, whose technical knowledge forms the main theme for the discussion, while earlier architectural works gave precedence to the logic of architecture. Much more synthetic than Roubo's work, the entry in the *Encyclopédie* connects the strategies of selections and conditions for the use of wood – as in earlier works, a drying time of five years minimum is recommended – by providing the reader with a long list of potential defects in the material; it continues with eight different types of assemblages and then addresses the 'art of profiling and joining them together'⁹ in paneling, mouldings and doors. An exposé on joiners' tools accompanies the entry (Diderot and d'Alembert, 1765).

In a monumental work in four parts and six volumes, the third part being divided into three separately published 'sections', André-Jacob Roubo, companion joiner and student of Jacques-François Blondel, presents a detailed and knowledgeable discussion of all of the known aspects of his metier. '*Menuiserie de Bâtiment*' is addressed in the first two parts (Roubo, 1769). The author incorporates the information previously provided by Blondel, d'Aviler and in the *Encyclopédie*, enriching it with his own practical knowledge. The author also played the role of educator when, in the preface, he emphasises the differences between carpenters and joiners: the first 'use only large nearly green wood elements, cut and squared with a loggers' axe and a wood chisel'¹⁰, while the second 'use only seasoned woods of a mediocre thickness, that are shaped with a jointer plane and a smoothing plane'.¹¹ He also focuses on the subtleties of the terminology for professional profiles involved in joinery, emphasising that the 'Assemblage Joiners'¹² (not to be confused with the 'Cabinetmakers')¹³ are

subdivided into two bodies, the 'Building Joiners' and the 'Coach Joiners'.¹⁴ The craft of building joiner is discussed in 25 chapters, each addressing a specific aspect. In the first five chapters, the author successively discusses the geometric knowledge needed, the wood used for joinery, profiles, assemblages and tools. The eight subsequent chapters consider separately the different parts of the finishing work. Casements, 'shutters or pedestrian doors in gates',¹⁵ doors – the theme covered in three successive chapters –,¹⁶ 'parquet floors'¹⁷ and panelling are all described in detail. The author then develops each theme according to the kind of architecture, including living areas, churches, 'sacristies or treasuries',¹⁸ confessionals or organ cases. This is followed by several very technical chapters which address the '*Art du trait*' or stereotomy, how to glue wood in different compositions and ways to shape the wood. The work concludes with an exposé on staircases.

The work of Roubo, by both its quality and relative precision, would considerably influence the bibliography of the 19th century. In 1827, the *Manuel du menuisier en meubles et en bâtiments suivi de l'art de l'ébéniste* (Nosban, 1827) traces the path followed by the master joiner, contributing many nuances, particularly with respect to the use of different species.¹⁹ The *Nouveau manuel du menuisier en bâtiments* by Teyssèdre (1836) is also based in majority on Roubo's writings. Even if the work of Oslet and Jeannin (1898) exposes the technical inventions and development of the kinds of living areas during the 19th century, among others by many examples of woodwork specific to different rooms in a house, it also appears to have been inspired in its structure by Roubo's fundamental technical information and skills.

... to modern scientific literature

While 18th- and 19th-century technical treatises address the architecture of their times, the first modern scientific research on wood finishing work, in the 19th century, focuses on the medieval period in a context of construction of broad national narratives and their heritage corollaries. In his famous explanatory dictionary, Viollet-le-Duc was a pioneer in the article 'Joinery'²⁰ (Viollet-le-Duc, 1854-1868, vol. 5: 345-386), by studying the technical design of 'Fences, skylights, shutters and panelling'²¹ during the Middle Ages. He also presents examples of known medieval gates in the articles on 'Joinery' and 'Door wings'²² (Viollet-le-Duc, 1854-1868, vol. 9: 346). The wood frame, rare in medieval architecture, is discussed more briefly in the article 'Casement'²³ (Viollet-le-Duc, 1854-1868, vol. 5: 96). In his architectural treatise, the Belgian engineer and architect Louis Cloquet proposes 'archaeological' observations with technical recommendations based on joiners' treatises (Cloquet, 1898-1901).

Such interest is manifested at the same time in museum contexts. A number of institutions enriched their collections of decorative arts with pieces of finishing work. Doors, frames and shutters, medieval and post-medieval, were acquired, primarily for aesthetic reasons – they were considered here as part of the décor –, but also for preservation of an endangered cultural heritage faced with transformations of the landscapes and national territories.

The constructive approach preferred by 19th-century architects and joiners seems to have had little impact on the work of archaeologists and art historians. Manuals on medieval archaeology were not much interested in wood finishing work and discuss it principally in terms of typology and style. Canon Edmond Reusens, for example, devoted several commentaries to doors and hinges, but discusses in more detail wooden fences, inspired here by the data provided by Viollet-le-Duc (Reusens, 1875). Camille Enlart would also be a terse 50 years later, although commenting briefly on ceilings, especially those that were painted, illustrated with plates (Enlart, 1929: 146).

The typological and stylistic approach dominates the bibliography until the 1970s-1980s (e.g., Bruneel-Hye de Crom, 1965; Janse, 1971; Devliegher, 1980) with a few notable exceptions that illustrate the still used book by Robert Salzman. Salzman, an economic historian, published in 1952 a detailed synthesis of all the professions and types of construction materials used in English buildings during the Middle Ages.²⁴

In the 1980s, other approaches gradually began to reopen the question. Like Salzman, historians first examined written archives for information on the commerce of construction materials, especially wood (Fanchamps, 1966; Sosson, 1966; Sosson, 1977; Sosson, 1986; Rackham, 1982) although it was less commonly used than stone and metal. Based on sometimes very explicit documentation, the history of the crafts and corporations would also contribute, in the 1980s, to a better determination of the role of joiners on construction sites and to better understand the relationships between this profession and that of carpenters during the entire *Ancien Régime*.²⁵

Research on urban and rural homes also became fertile ground for studies of finishing work. Such studies proliferated during the last quarter of the 20th century, particularly benefiting of restoration projects and the development of building archaeology (Esquieu, 1995; Morris, 2000; Morriss, 2000). At the same time, interest in wood finishing work is illustrated by the increasing number of studies of frames, doors, floorings and panelling (Genicot, 1987; Arnold and Kleber, 1996; Lewis, 1995). Their study, however, remained unequal, the works cited benefiting from the attention of researchers while others, such as staircases, were more or less neglected apart from a few publications like the volume of *Demeures historiques et jardins* devoted to this question through examples in Benelux (*Maison d'hier et d'aujourd'hui*, 1988). We can only point out here the pioneering two-volume work on technical and aesthetic studies of windows and doors in Ghent houses (Baillieul *et al.*, 1993; Baillieul *et al.*, 1995). The chronological period is broad, covering seven centuries of history. The volume on windows is divided into two parts, the first discussing the materials used (wood, iron and glass) while the second presents historical development using an architectural, archaeological, technical and aesthetic approach to the study of building construction and finishing work. The volume on doors uses the same structure, with an introductory chapter on coaches. Another work of note is the collection *Architecture rurale de Wallonie*, directed by Luc-Francis Genicot (Genicot *et al.*, 1983-1992), which synthesises the observations made during the inventory of building heritage in Wallonia (Belgium). Each volume is dedicated to a region for which the typology of rural buildings is described,

as well as particular attention paid to wooden finishing work, that is recorded and drawn such as structural elements of the buildings.

In Germany, the first summary of research focusing specifically on finishing work appeared in 2004 in volume 50 of the *Jahrbuch für Hausforschung (Historische Ausstattung)*. Wood is well-represented with a section on doors and windows, and several contributions addressing, at least in part, ceilings and panelling. Observations are sometimes complemented by precise drawings and a material and technical analysis of the elements studied (Klos, 2004). In France, the thematic inventories of cultural heritage²⁶ have in the last several years concentrated on wooden finishing work, with volumes on frames (Bontemps, 2000; Bontemps, 2008), floorings and parquets (Togni, 2012), ceilings (Férault, 2014) and panelling (Roman *et al.*, 2015). In Belgium, research on timber-framed buildings in the Meuse Basin has offered substantial insights into finishing work in this kind of construction (Houbrechts, 2008). Several case studies have comprehensively analysed certain elements of finishing work, such as parquets (Buijs and Bergmans, 2010). Other more general publications propose an inventory of the different interior arrangements (panelling, doors, windows, parquets), but essentially from formal and aesthetic perspectives (de Harlez de Deulin, 2003; Carpeaux, 2004; Carpeaux, 2005). Some authors have also examined the spread of different kinds of works, including double-hung windows (Georges, 2002: 25-32). In the Netherlands, syntheses have been published on wood staircases throughout the territory (Janse, 1995), as well as several works on windows (Janse, 1978: 170-176; van Drunen, 1993: 123-136) and an essay on changes in windows from the Netherlands and in north-western Europe (Jehee, 2010). The symposium *Over de vloer*, organised in 2008 by the Rijksdienst voor Archeologie, Cultuurlandschap en Monumenten, propose a consideration of the role of floor coverings in building structures, a theme divided by material type and for which a contribution specifically presents a case study for wooden floor coverings (Viersen, 2008: 116-125). The numerous archaeological and heritage investigations of the Dutch urban house offer a considerable amount of information on finishing work (van Engelenhoven, 2005; Weve, 2013), although a synthesis of the data collected has not yet been presented. We note, also, the important volume devoted to interiors in Groningen during the 16th and 17th centuries, that gives a prominent place to staircases, floorings, doors, wooden chimney, panelling, etc., through examination of written sources and an architectural and art historical analysis (de Haan, 2005). Finally, we point out the study handbook of building heritage, *Inleiding in de Bouwhistorie*, that, via a pedagogical approach, proposes a synthetic view of some finishing work products, principally doors, windows and staircases (Stenvert and van Tussenbroek, 2007). In Great Britain, research on windows and staircases benefits from particular attention through two relatively recent publications (Tutton and Hirst, 2007; Campbell and Tutton, 2013) that include archaeologists, historians, architecture historians, architects, engineers and restorers. These publications thus apply a multidisciplinary approach to the study and include an historical synthesis as well. Windows, for example, are addressed in three chapters: the window and its evolution (Louw, 2007), window frames (Roseman, 2007) and glasswork (Martlew, 2007). Three chapters

also discuss staircases: first their use in England (Campbell, 2013), then more specifically in London (Roseman, 2013) and finally changes in their implementation and decoration (Hall, 2013). We also note works on medieval doors (Yeomans and Harrison, 2014). In Italy, this interest in finishing work is shown, for example, in archaeological studies of buildings in urban contexts (Boato, 2005). In addition, a study was recently made on the spread of French-style windows in the Milan region during the 18th century (Landi, 2016).

Since the 1990s, dendrochronology has become a vital method of dating for the timbers used in carpentry. However, it took longer to be applied to the thin planks used in finishing work, as the present volume demonstrates. The obstacles encountered are both technical and methodological. A few pioneering studies proposed dendrochronological dates for a window frame, a ceiling and an alcove (Fletcher and Morgan, 1981; Hoffsummer, 1989; Houbrechts, 1999; Houbrechts, 2008; Tyers and Tyers, 2007; Crone and Sproat, 2011; Crone and Mills, 2012), while the dendrochronology of works of art, particularly panel paintings and sculptures, gradually allowed refinement of the method (Crone *et al.* 2000; Tyers 2001; Fraiture, 2002; Fraiture, 2007). In Belgium, the University of Liège conducted experimental research on finishing work (e.g., Fraiture and Houbrechts, 2004a; Fraiture and Houbrechts, 2004b). At present, the first baseline studies of the potential of this method for a better understanding of joinery elements in buildings are being conducted (Fraiture, 2015). Finally, most recently, research undertaken in France, Italy and Belgium have demonstrated the contribution of an interdisciplinary building archaeology for the study of ceilings (sometimes painted) and floorings (Bouticourt and Guibal, 2008; Guibal and Bouticourt, 2010; Boato and Decri, 2009; Bernardi and Mathon, 2011; Sosnowska, 2013). This research now allows better dating of these elements and better understanding of the wood species utilised and, through this, an in-depth consideration of supply networks. It also contributed to the refinement of the history of techniques by comparing archaeological observations with theoretical recommendations in 17th- and 18th-century treatises.

Contribution of this publication

From reading of this historiographic summary for a long time period, it is clear that wooden finishing work is the poor relation of research in the history and archaeology of construction, carpentry taking priority. The present publication is part of a desire to change this trend of research and work habits of historian and archaeologists specialised in buildings. It shows, on one hand, both a real interest in an approach to finishing work for dating and the study of ancient buildings, and for a better understanding of the material cultures and modes of living. It reminds, on the other hand, that the limit between carpentry and joinery, while not entirely denuded of meaning, appears porous, sometimes artificial. This point underlines most emphatically that a global approach to the wood used is a necessary condition to entirely understand the structure of a house, the logic of its construction and its 'use' and, more generally, the complex history of the building(s) studied. To go further, this suggests that the study of construction

materials should be considered as a whole, beyond the wood addressed in this publication. Awaiting research programmes that go beyond ‘material’ specialities, we take the first step here toward a global approach to wood materials in architecture, from construction to finishing work, from carpentry to joinery.

The articles in this volume were first presented during an international conference held in Brussels on 29-30 November 2013 at the Royal Institute for Cultural Heritage, organised by this institute, the University of Namur, the Université libre de Bruxelles and the Royal Museums of Art and History.²⁷ After this meeting, several authors unable to attend were solicited to enrich this volume and contribute additional insights. This has resulted in a volume exploring the question of finishing work in medieval and modern European architecture in two separate, but complementary, parts.

The first section, entitled *Between carpentry and joinery: Constructing flooring, ceilings and roofing*, addresses the gap, often difficult to classify, between construction and finishing work. Émilien Bouticourt opens the discussion by an in-depth study of floorings and ceilings in the Rhodanian Midi (France) at the end of the Middle Ages. Examining a rich and well-documented corpus, the author demonstrates the high level of knowledge and skills of the carpenters (the *fustiers*) as well as changes in the profession and the organisation of work sites with the appearance and surge in joiners. Maarten Enderman continues this theme by a thorough consideration of wooden structures separating the stories of buildings (beams, joists, floorings) in the houses of ‘s-Hertogenbosh (the Netherlands), mainly after the fire of 1463 that ravaged part of the Brabantine city. The study combines methods (typology and changes in construction patterns, dendrochronology and dendroprovenancing) and suggests new lines of research to understand certain changes in construction. The article by Michael Grabner, Andrea Klein, Sebastian Nemestothy and Erwin Salzger presents the results of a systematic study of ceilings in Austria, based on a dataset of 142 buildings of different types. The authors have established a chrono-typology for ceilings, development in the choice of wood species used, and show the path to follow for this type of cataloguing approach. The study of Philippe Sosnowska, Pascale Fraiture and Sarah Crémer proposes the first multidisciplinary synthesis of floorings and their use in Brussels (Belgium) between the late 16th and 19th centuries. The study is based on detailed archaeological examination conducted over the last ten years during preventive excavations in the Belgian capital, dendrochronological dating and identification of wood species, all of which enable establishment of a preliminary chrono-typology. Still in Belgium, the contribution of Jean-Louis Vanden Eynde addresses the question of pointed panelled barrel vault frames in the province of Hainaut that were studied during restoration projects. This method of covering is attested between the 13th and 17th centuries, in the Gothic style, and demonstrates a chronological progression towards increasing refinement and technical skill. The last article, by Pierre Mille, examines the largely understudied topic of wooden shingles. In addition to an extensive examination of the archaeological material yielded at three sites in France in recent decades, the author presents a salutary clarification of the question, exploiting a rich historical and archaeological bibliography that goes beyond the French borders.

The second part of this publication, entitled *Organising light and space: Doors, windows, stairs and panelling*, resituates chronologically, typographically and architecturally several elements of finishing work in their formal aspects and points out their contribution to the organisation and ornamentation of buildings. The contribution of Karin Keutgens, Bernard Delmotte and Charles Indekeu is the result of an archaeological study of St Martin's Church in Zaventem (Belgium) conducted during its restoration. Among the rich harvest of architectural observations provided by the study, its interest resides in the demonstration of ancient primitive Romanesque bays and elements of the wooden frame found in the grooves within the Gothic masonry, not yet dated by dendrochronology or radiocarbon. Two contributions present an archaeological and technical study of doors. The article by Vincent Bernard, Bruno Béthencourt, Yannick Le Digol, David Nicolas-Mery and Pierre Mille focuses on examination of a very specific kind of door (and more rarely shutters) termed wooden-nailed doors observed in rural context in Brittany and Normandy (historical region of Armorica, France). Dated between the 14th and 18th centuries, behind an apparent simplicity of execution, the examples studied show a high level of mechanical knowledge in the utilisation of wooden material, here primarily oak. The second article, by Sebastian Nemestothy, Andrea Klein and Michael Grabner examines the main entrance doors of rural Austrian buildings. Using a corpus 'artificially' constituted of 51 doors from buildings reassembled in the Austrian Open Air Museum in Stübing, the authors propose a preliminary typology of these structures and clarification of the wood species used. The contribution of Arnaud Tiercelin is next, based on French material, and proposes a technical analysis of the development of processes to ensure the watertightness of windows. The author in particular illustrates how windows of today owe much to a technical mastery progressively elaborated between the 15th and 18th centuries. The contribution of Patrice Gautier, Pascale Fraiture and Valérie Montens proposes an in-depth monographic study of a window frame conserved at the Royal Museums of Art and History in Brussels (Belgium). This element, of a high quality of manufacture, is meticulously described and dated by dendrochronology to the second third of the 16th century. The final two contributions lead us into the domain of monumental staircases and ornamental joinery at the end of the *Ancien Régime*. The article by Ada de Wit, using exceptional accounting documentation, sheds light on the realisation of a grand sculpted staircase today conserved in museum context. The work was ordered from a master carpenter and joiner by a rich officer in the entourage of the *stathouder* and the king of England William III of Orange, for his hotel in The Hague (the Netherlands) at the end of the 17th century. To conclude the volume, Isabelle Gilles introduces us to the heart of the furnishings and woodwork of 18th- century houses in Liège (Belgium), using archival records. This article shows with extreme justice the importance of such finishing work and decoration for the affirmation of social status. This contribution in particular reveals the necessity of taking these elements into account for full comprehension of the functional logistics and social and cultural meanings. The today imperfectly preserved buildings do not always allow reconstruction of these by their contemporary material state.

Perspectives for future research

The contributions included in the present volume altogether cover a relatively broad, but incomplete, chronological and thematic range. The question obviously merits expansion to new territories. Many investigations remain to be done for floorings and ceilings, shutters, doors and windows, domains that are beginning to attract the attention of researchers. In contrast, staircases and panelling, apart from aesthetic considerations, still belong to *terra incognita*. With respect to chronology, it can be asked whether the end of the 18th century is a pertinent *terminus*. The few works devoted to rural vernacular architecture suggest that the 19th century, and even part of the 20th century, could easily be included.

Both due to the novelty of the theme and the personal networks of the editors of this publication, it was not possible to include all countries and all of the broad historical regions. The former Low Countries are dominant in the geographic area covered with seven articles, five in Belgium (Brussels, Hainaut, Liège and Zaventem) and two in the modern Netherlands ('s-Hertogenbosch and The Hague). Four articles are dedicated to France, in a specific region (southern Rhone Valley, Brittany) or not. Finally, two contributions concern Austria. It appears, however, indispensable to expand the geographic coverage: Great Britain and Germany come immediately to mind, with a rich dendro-chronological tradition and a powerful current for the study of buildings that appear entirely designed to produce the first overviews and attempts at synthesis. Others regions should follow: the Mediterranean, Central Europe and Scandinavia.

Also, in this perspective, the question of vocabulary is raised. Several contributions in this volume have shown the lexicographic complexity of finishing work, both in the original languages and in English. The edition of this work, with English proofreading or translation, was a difficult and meticulous exercise and it was a conscious decision to leave the different lists of technical terms associated with the article rather than combined in a general lexicon. However, an objective in the near future should focus on the harmonisation and formalisation of the technical vocabulary, such that the scientific community interested in the question of finishing work can advance on a common basis and communicate efficiently.

Notes

- 1 Authors' translation in the text of: '*les planchers, portes et fenêtres*'.
- 2 Authors' translation in the text of: '*faits de petites pièces*' (Delorme, 1561).
- 3 Doors and windows are treated from the point of view of their masonry frame and the recommended ratios of proportions; continuing with vaults, the author is particularly interested in the flooring, detailing the dimensions of the joists, sleepers and other elements. The term 'joinery' appears at the end of the volume, when the 'ordinary price of joinery' (authors' translation of: '*le prix ordinaire de la menuiserie*') is presented. The author here discusses only doors and casements (Savot, 1685: 317-319).
- 4 Authors' translation in the text of: '*principaux ouvrages de menuiserie*' (Bullet, 1691).
- 5 Except when the author envisages the necessary qualities of the wood: 'The wood that we use for Joinery should ordinarily be of the highest quality oak, dried at least five years, with a straight grain, that is, without knots or sapwood, and no rotting' (authors' translation of: '*Le bois que l'on emploie pour la Menuiserie doit être ordinairement de chêne de la meilleure qualité, sec au moins de cinq ans, de droit fil, c'est-à-dire, sans nœuds ni aubier, ni aucune pourriture*'); Bullet, 1695: 340).
- 6 The author is also conscious of being a pioneer when he declares: 'Having found nothing on this material that was developed enough, I felt that I should apply myself and give examples of a sensible and distinct grandeur' (authors' translation of: '*N'ayant encore rien trouvé sur cette matière qui fût assez développé, j'ai cru devoir m'y attacher & en donner des exemples d'une grandeur sensible & distincte*'; Blondel, 1732: 152).
- 7 Authors' translation in the text of: '*où l'on emploie les bois de différentes couleurs, débités par feuilles très minces, qu'on applique par compartiment sur de la menuiserie ordinaire*'.
- 8 Authors' translation in the text of: '*qui a pour objet la décoration & les revêtements des appartemens, pour laquelle la connaissance du dessein est nécessaire*'.
- 9 Authors' translation in the text of: '*art de les profiler et de les joindre ensembles*'.
- 10 Authors' translation in the text of: '*n'emploient que des gros bois presque toujours verts, charpentés et équarris avec la coignée et réparés seulement avec la bisaigüe*'.
- 11 Authors' translation in the text of: '*n'emploient que des bois secs et d'une médiocre épaisseur, lesquels sont corroyés avec la varlope et le rabot*'.
- 12 Original text (translated by the authors): '*Menuiserie d'Assemblage*'.
- 13 Original text (translated by the authors): '*Ébénistes*'.
- 14 Original text (translated by the authors): '*Menuisiers de Bâtimens*' and the '*Menuisiers en Carrosses*'.
- 15 Original text (translated by the authors): '*Volets ou guichets*'.
- 16 Chapter IX presents 'Doors in general' (original text, translated by the authors: '*Des portes en général*'), chapter X 'Medium-sized doors in general' (original text, translated by the authors: '*Des moyennes portes en général*') and chapter XI 'Small doors' (original text, translated by the authors: '*Des petites portes*').
- 17 Original text (translated by the authors): '*parquets en plancher*'.
- 18 Original text (translated by the authors): '*sacristies ou trésors*'.
- 19 This work was republished by Nosban in 1843, appearing under the title *Nouveau manuel complet du menuisier en batiments et du layetier-emballeur*.
- 20 Original text (translated by the authors): '*Menuiserie*'.
- 21 Original text (translated by the authors): '*Clôtures, claires-voies, volets et lambris*'.
- 22 Original text (translated by the authors): '*Vantail*'.
- 23 Original text (translated by the authors): '*Dormant*'.
- 24 Note in particular a chapter specifically on finishing work, '*Doors, shutters, panelling, screens*' (Salzman, 1952: 253-261).
- 25 Among others, the well-studied example of wood profession in Brussels (Bonenfant-Feytmans, 1981; Janssens, 1988; Paquay, 1997) and Paris (Roux, 1991).
- 26 The work of the Centre de recherche sur les Monuments Historiques is the topic of a brief presentation in *Forêts alpines & charpentes* (Bernardi, 2007; Mayer, 2007: 165-170).
- 27 International Study Day *From Carpentry to Joinery. Floors and Ceilings, Shutters and Frames, Doors and Panelling in Medieval and Modern Architecture*, 29-30 November 2013.

References

Treatises and dictionary on architecture and joinery

- ALBERTI L.B. [CAYE P. and CHOAY F.], 2004. *L'art d'édifier*, translated from Latin, presented and annotated by Caye P. and Choay F. (Sources du savoir), Paris: 512 p.
- BLONDEL F., 1675. *Cours d'architecture, enseigné dans l'Académie royale d'architecture*, Paris, Pierre Auboin & François Clouzier: 799 p.
- BLONDEL J.-F., 1737-1738. *De la distribution des maisons de plaisance et de la décoration des édifices en général*, 2 vol., Paris, Charles-Antoine Jombert: XVI-198 p., VI-180 p.
- BORGNIS J.-A., 1823. *Traité élémentaire de construction appliquée à l'architecture civile*, Paris: XVI-630 p.
- BRISEUX C.E., 1743. *L'art de bâtir des maisons de campagne où l'on traite de leur distribution, de leur construction & de leur décoration*, 2 vol., Paris, Prault Père: XVI-162 p., XII-195 p.
- BULLET P., 1691. *L'Architecture pratique qui comprend le détail du toisé, & du devis des ouvrages de maçonnerie [maçonnerie], charpenterie, menuiserie, serrurerie, plomberie, vitrerie, ardoise, tuile, pavé de grais & impression. Avec une explication de la coutume sur le titre des servitudes & rapports qui regardent les Bâtimens [bâtimens]. Ouvrage très nécessaire aux Architectes, aux Experts, & à tous ceux qui veulent bâtir*, Paris: 392 p.
- CLOQUET L., 1898-1901. *Traité d'architecture*, 5 vol., Paris.
- D'AVILER A.-C., 1691. *Dictionnaire d'architecture civile et hydraulique et des arts qui en dépendent*, 2 vol., Paris, Nicolas Langlois.
- DE BELIDOR B.F., 1755. *Dictionnaire portatif de l'ingénieur (...)*, Paris: XII-339 p.
- DE FELICE F.B., 1770-1780. *Encyclopédie ou dictionnaire raisonné des connaissances humaines*, 48 vol., s.l.
- DELORME P. [OF DE L'ORME], 1561. *Nouvelles inventions, pour bien bâtir a petit frais*, Paris, Frédéric Morel: VI-61 fol.
- DELORME P. [OF DE L'ORME], 1567. *Le premier tome de l'architecture (...)*, Paris, Frédéric Morel: 283 fol.
- DIDEROT D. and LE ROND D'ALEMBERT J., 1751-1772. *Encyclopédie ou Dictionnaire raisonné des Sciences, des Arts et des Métiers*, 17 vol., Paris.
- FÉLIBIEN A., 1690. *Des principes de l'architecture, de la sculpture, de la peinture, et des autres arts qui en dépendent*, Paris: XXIV-797 p.
- JOUSSE M., 1627. *Le théâtre de l'art du charpentier (...)*, Paris: 176 p.
- MARTIN I., 1547. *Architecture ou art de bien bâtir de Marc Vitruve Pollion (...)*, Paris: 155 fol.
- NOSBAN M., 1827. *Manuel du menuisier en meubles et en bâtiments suivi de l'art de l'ébéniste*, Paris: 373 p.
- NOSBAN M., 1843. *Nouveau manuel complet du menuisier en bâtiments et du layetier-emballleur*, 2 vol., Paris.
- OSLET G. and JEANNIN J., 1898. *Traité de menuiserie*, 2 vol., Paris.
- PALLADIO A., 1570. *I quattro libri dell'architettura di Andrea Palladio. Ne'quali, dopo un breve trattato de'cinque ordini, e di quelli avvertimenti, che sono piu necessari nel fabricare, si tratta delle case private, delle vie, dei ponti, delle piazze, dei xisti e de' tempii*, Venice, Dominico de'Franceschi: 128 p.
- ROUBO A.-J., 1769. *Le menuisier en bâtiment*, 2 vol., Paris.
- SAVOT L., 1685. *L'architecture Française des bastimens particuliers, composée par Me Louis Savot, Medecin du Roy (...)* annotée par François Blondel, professeur et directeur de l'Académie Royale d'Architecture, 4th ed., Paris: 436 p.
- TEYSSÈDRE A., 1836. *Nouveau manuel du menuisier en bâtimens... rédigé d'après les ouvrages de Roubo fils*, Paris: VIII-280 p.
- VAN DEN HEUVEL C., 2005. *'De Huysbou': A reconstruction of an unfinished treatise on architecture, town planning and civil engineering by Simon Stevin*, Koninklijke Nederlandse Akademie van Wetenschappen, Amsterdam: 544 p.
- VIOLLET-LE-DUC E., 1854-1868. *Dictionnaire raisonné de l'architecture française du x^e au xvi^e siècle*, 10 vol., Paris.

Recent publications

- ARNOLD B. and KLEBER G., 1996. Literatur zum Thema Fenster, in: *Das Fenster in Profanbau in Sachsen* (Baukonstruktive Blätter. Schriftenreihe für Baukultur, Architektur, Denkmalpflege 1), Dresden: 58-59.
- BAILLIEUL B., EVERAERT G., LALEMAN M.C. and LIEVOIS D., 1993. *Het venster: zeven eeuwen techniek en esthetiek*, Gent: 126 p.
- BAILLIEUL B., EVERAERT G., LALEMAN M.C. and LIEVOIS D., 1995. *Deuren en poorten: zeven eeuwen techniek en esthetiek*, Gent: 152 p.
- BERNARDI P. (ed.), 2007. *Forêts alpines & charpentes de Méditerranée*, L'Argentière la Bessée: 255 p.
- BERNARDI P. and MATHON J.-B. (eds), 2011. *Aux sources des plafonds peints médiévaux. Provence, Languedoc, Catalogne, Capestang*: 269 p.
- BOATO A., 2005. *Costruire 'alla moderna'. Materiali e tecniche a Genova tra XV e XVI secolo* (Biblioteca di Archeologia dell'Architettura 4), Sesto Fiorentino: 166 p.
- BOATO A. and DECRI A., 2009. Tetti e solai genovesi dal XV al XVIII secolo, in: *Atti del XXV Convegno 'Scienza e beni culturali' Conservare e restaurare il legno. Conoscenze, esperienze, prospettive*, Bressanone, 23-26 juin 2009, Venice: 71-84.
- BOUTICOURT É. and GUIBAL F., 2008. Les origines médiévales d'une technique de charpente: la poutre armée, *Archéologie du Midi médiéval* 26: 145-165.
- BRUNEEL-HYE DE CROM M., 1965. Les portes de demeures privées à Bruxelles des xvii^e et xviii^e siècles: études stylistiques, *Revue belge d'Archéologie et d'Histoire de l'Art* 35: 227-251.
- BUIJS J. and BERGMANS A., 2010. Een belvédère aan de Schelde. Paviljoen De Notelaer in Hingene (1792-1797), in: *Archeologie, Monumenten- en Landschapsonderzoek in Vlaanderen* (Relicta Monografieën 5), Brussel: 574 p.
- CAMPBELL W.P. and TUTTON M. (eds), 2013. *Staircases: History, repair and conservation*, New York: 424 p.

- CAMPBELL W.P., 2013. The British staircase, in: CAMPBELL W.P. and TUTTON M. (eds), *Staircases: History, repair and conservation*, New York: 75-140.
- CARPEAUX C. (ed.), 2004. *Décors intérieurs en Wallonie*, vol. 2, Liège: 286 p.
- CARPEAUX C. (ed.), 2005. *Décors intérieurs en Wallonie*, vol. 3, Liège: 304 p.
- CHARLES L., EVERAERT G., LALEMAN M.C. and LIEVOIS D., 2001. *Erf, huis en mens. Huizenonderzoek in Gent*, Gent: 192 p.
- CRONE A., FAWCETT R. and HALL M., 2000. A group of late medieval carved wooden panels in Perth Museum and Art Gallery. Their provenance and date, *Tayside and Fife Archaeological Journal* 6: 189-199.
- CRONE A. and MILLS C., 2012. Timber in Scottish buildings, 1450-1800: A dendrochronological perspective, *Proceedings of the Society of Antiquaries of Scotland* 142: 329-369.
- CRONE A. and SPROAT D., 2011. *Revealing the history behind the facade: A timber-framed building at no. 302 Lawnmarket, Edinburgh* (Architectural Heritage XXII), Edinburgh University Press: 19-36.
- DECRI A. and BOATO A., 2007. Planchers et plafonds, in: BERNARDI P., 2007. *Forêts alpines & charpentes de Méditerranée*, L'Argentière la Bessée: 155-163.
- DE HAAN J., 2005. *Hier ziet men uit paleizen. Het groningen interieur in de zeventiende en achttiende eeuw* (Groninger Historische Reeks 31), Assen: 662 p.
- DE HARLEZ DE DEULIN N. (ed.), 2003. *Décors intérieurs en Wallonie*, vol. 1, Liège: 270 p.
- DEVLIEGHER L., 1980. *Vensters in West-Vlaanderen*, Tiel: 192 p.
- ENLART C., 1929. *Manuel d'archéologie française depuis les temps mérovingiens jusqu'à la Renaissance*, part 2: *Architecture civile et militaire*, vol. 1, Paris: 454 p.
- ESQUIEU Y., 1995. La maison médiévale urbaine en France: état de la recherche, *Bulletin Monumental* 153: 109-142.
- FANCHAMPS M.-L., 1966. Transport et commerce du bois sur la Meuse au moyen âge, *Le Moyen Âge* 72: 59-81.
- FÉRAULT M.-A., 2014. *Plafonds en bois. Du Moyen Âge au XVII^e siècle* (Albums du CRMH), Éditions du Patrimoine, Centre des monuments nationaux, Paris: 296 p.
- FLETCHER J. and MORGAN R. A., 1981. The dating of doors and cupboards in the Zouche Chapel, York Minster, *The Yorkshire Archaeological Journal* 53: 45-49.
- FRAITURE P., 2002. Contribution of scientific methods to the understanding of the work of the 16th century painter, Henri Bles, *Dendrochronologia* 20: 285-299.
- FRAITURE P., 2007. *Les supports de peintures en bois dans les anciens Pays-Bas méridionaux de 1450 à 1650: analyses dendrochronologiques et archéologiques*, PhD dissertation, University of Liège, 3 vol.
- FRAITURE P., 2015. Le second œuvre étudié par dendrochronologie: prémices d'un domaine prometteur, in: BOLLE C., COURA G. and LÉOTARD J.-M. (eds), *L'archéologie des bâtiments en question. Un outil pour les connaître, les conserver et les restaurer* (Études et Documents. Archéologie 35), Actes du Colloque international, Liège 9-10 novembre 2010, Namur: 141-161.
- FRAITURE P. and HOUBRECHTS D., 2004a. *Ancien hôpital Saint-Jean, dortoir des pères, Bruges (lambris de cellules composées de planches de réemploi). Fiche d'analyse dendrochronologique*, Université de Liège/Centre européen d'Archéométrie, Report INT : 2 p.
- FRAITURE P. and HOUBRECHTS D., 2004b. *Maison particulière, Vlamingsstraat n° 90, Bruges (façade arrière, essentage). Fiche d'analyse dendrochronologique*, Université de Liège/Centre européen d'Archéométrie, Report INT : 2 p.
- GENICOT L.-F., 1987. Un châssis de fenêtre du XVI^e siècle au musée de Louvain-la-Neuve, *Revue des Archéologues et Historiens de l'Art de Louvain* XX: 234-252.
- GENICOT L.-F., 1983-1992. *Architecture rurale de Wallonie*, 12 vol., Liège-Bruxelles.
- GEORGES G., 2002. Les châssis à guillotine, importation hollandaise?, in: *Bulletin de la Fondation Vanhove-Vonnèche* 4: 25-32.
- GILLAIN B., 2001. Les escaliers à Namur au XVIII^e siècle, in: TOUSSAINT J. (ed.), *Hôtels de maître à Namur du style Louis XIV au premier Empire*, Namur: 117-130.
- GUIBAL F. and BOUTICOURT É., 2010. Dendrochronologie des charpentes et plafonds peints médiévaux en région méditerranéenne, in: *Panorama de la dendrochronologie en France*, Actes du Colloque, Digne-les-Bains, 8-10 octobre 2009, Le Bourget-du-Lac: 145-150.
- HALL L., 2013. Dating trough details, in: CAMPBELL W.P. and TUTTON M. (eds), *Staircases: History, repair and conservation*, New York: 141-198.
- Historische Ausstattung* (Jahrbuch für Hausforschung 50, 2004), Bericht über die Tagung des Arbeitskreises für Hausforschung e.V. in Ravensburg vom 16.-20. September 1999, Marburg: 494 p.
- HOFFSUMMER P., 1989. La dendrochronologie des panneaux peints d'un plafond peint par Damery, à Alden Biesen, *Bulletin archéologique liégeois* 101: 33-47.
- HOUBRECHTS D., 1999. *Analyse dendrochronologique d'une alcôve conservée au château des comtes de Modave*, Université de Liège/Centre européen d'Archéométrie, Report INT.
- HOUBRECHTS D., 2008. *Le logis en pan-de-bois dans les villes du bassin de la Meuse moyenne (1450-1650)* (Dossier de la Commission royale des Monuments, Sites et Fouilles 12), Liège: 314 p.
- JANSE H., 1971. *Vensters*, Nijmegen: 230 p.
- JANSE H., 1978. Vensters met openslaande ramen in de tweede helft van de 17^{de} eeuw, *Bulletin Koninklijk Nederlandse Oudheikundige Bond* 77: 170-176.
- JANSE H., 1995. Trap en trede. Houten trappen in Nederland: een bouwhistorische beschouwing (Rvbijdragen 15), Zeist: 174 p.
- JEHEE J., 2010. *Tussen lucht en licht. De ontwikkeling van de vensters, kozijnen, ramen en luiken*, Zwolle: 176 p.
- KLOS H., 2004. Der Fensterverschluss vor 1700. Bauhistorische Befunde zur Fensterentwicklung, in: *Historische Ausstattung* (Jahrbuch für Hausforschung 50), Bericht über die Tagung des Arbeitskreises für Hausforschung e.V. in Ravensburg vom 16.-20. September 1999, Marburg: 173-190.
- LANDI A.G., 2016. La diffusion du modèle de fenêtre dans le Milanais au XVIII^e siècle: entre relevés et sources, de Crémone à Milan, in: FLEURY F., BARIDON L., MASTRORILLI A., MOUTERDE R. and REVEYRON N. (eds), *Les temps de la construction – Processus, acteurs, matériaux*, Actes du Deuxième Congrès francophone d'histoire de la construction, Paris, Picard: 141-151.
- LEWIS E., 1995. A sixteenth century painted ceiling from Winchester College, *Proceedings of the Hampshire Field Club & Archaeology Society* 51: 137-165.

- LOUW H., 2007. The development of the window, in: TUTTON M. and HIRST E. (eds), *Windows: History, repair and conservation*, New York: 7-96.
- Maisons d'Hier et d'Aujourd'hui, 1988. Escaliers et cages d'escalier du Benelux, p.1-139.
- MARTLEW D., 2007. History and development of glass, in: TUTTON M. and HIRST E. (eds), *Windows: History, repair and conservation*, New York: 121-158.
- MAYER J., 2007. Une archéologie du second-œuvre. Les travaux du centre de recherche sur les monuments historiques, in: BERNARDI P. (ed.), *Forêts alpines & charpentes de Méditerranée*, l'Argentière la Bessée: 165-169.
- MORRIS C.A., 2000. *Craft, industry and everyday life: Wood and woodworking in Anglo-Scandinavian and medieval York*, York: 393 p.
- MORRIS R.K., 2000. *The archaeology of buildings*, Stroud: 176 p.
- RACKHAM O., 1982. Wooden production and transport, in: McGRAIL S. (ed.), *Woodworking techniques before A.D. 1500* (British Archaeological Reports, International Series 129), London: 199-230.
- REUSENS E., 1871. *Éléments d'archéologie chrétienne*, vol. 2, Louvain : 506 p.
- ROMAN J.-J., GUILLOT C. and MAURIN E., 2015. *Lambris du xv^e au milieu du xvii^e siècle* (Albums du CRMH), Éditions du Patrimoine, Centre des monuments nationaux, Paris: 278 p.
- ROSOMAN T., 2007. History of window fitting, in: TUTTON M. and HIRST E. (eds), *Windows: History, repair and conservation*, New York: 97-120.
- ROSOMAN T., 2013. London staircase, in: CAMPBELL W.P. and TUTTON M. (eds), *Staircases: History, repair and conservation*, New York: 199-219.
- ROUX S., 1991. Le travail et les métiers du bois à Paris du xiii^e au xv^e siècle, in: BIGET J.-L., BOISSIÈRE J. and HERVÉ J.C. (eds), *Le bois et la ville, du Moyen Âge au xx^e siècle*, Saint-Cloud: 239-250.
- SALZMAN L.F., 1952. *Building in England down to 1540: A documentary history*, Oxford: 656 p.
- SOSNOWSKA P., 2013. *De briques et de bois. Contribution à l'histoire de l'architecture à Bruxelles. Étude archéologique, technique et historique des matériaux de construction (xiii^e-xviii^e s.)*, PhD dissertation, Université libre de Bruxelles, 3 vol.
- SOSSON J.-P., 1966. La structure sociale de la corporation médiévale: l'exemple des tonneliers de Bruges de 1350 à 1500, *Revue belge de philologie et d'histoire* 44: 457-478.
- SOSSON J.-P., 1977. *Les travaux publics de la ville de Bruges. xiv^e-xv^e siècles. Les matériaux. Les hommes* (Histoire Pro Civitate 48), Bruxelles: 375 p.
- SOSSON J.-P., 1986. Structures associatives et réalités socio-économiques dans l'artisanat d'art et du bâtiment aux Pays-Bas (xiv^e-xv^e siècles), in: BARRAL I ALTET X. (ed.), *Artistes, artisans et production artistique au moyen âge*, vol. 1: *Les hommes*, Colloque international, Centre National de la Recherche Scientifique, Université de Rennes II – Haute Bretagne, 2-6 mai 1983, Paris: 111-121.
- STENVERT R. and VAN TUSSENBROEK G., 2007. *Inleiding in de bouwhistorie. Opmeten en onderzoeken van oude gebouwen*, Utrecht: 216 p.
- TOGNI B., 2012. *Planchers et parquets du xv^e au xix^e siècle* (Albums du CRMH), Éditions du Patrimoine, Centre des monuments nationaux, Paris: 280 p.
- TOUZÉ R., 2011. Les traités d'architecture. Le bois dans les traités d'architecture du xv^e au xviii^e siècle: entre l'antique et le moderne, in: HOFFSUMMER P. (ed.), *Les charpentes du x^e au xix^e siècle. Grand Ouest de la France. Typologie et évolution, analyse de la documentation de la Médiathèque de l'architecture et du patrimoine (Architectura Mediiævi 5)*, Turnhout: 21-27.
- TUTTON M. and HIRST E. (eds), 2007. *Windows: History, repair and conservation*, New York: 480 p.
- TYERS C. and TYERS I., 2007. *Tree-ring analysis of the nave ceiling of Peterborough Cathedral, city of Peterborough* (Research Department Report 004/2007), English Heritage – Research Department.
- TYERS I., 2001. *The tree-ring analysis of the timbers from the Church of St Peter, Barton on Humber, North Lincolnshire* (Centre for Archaeology Report 51/2001).
- VAN DEN HEUVEL C., 1993. 'De Architectura' (1599) van Charles De Beste. Een onbekend architectuurtractaat van een Brugse steenhouwer, *Handelingen van het Genootschap voor Geschiedenis* 131: 65-93.
- VAN DEN HEUVEL C., 1995. 'De Architectura' (1599) van Charles De Beste. Het vitruvianisme in de Nederlanden in de zestiende eeuw, *Bulletin van de Koninklijke Nederlandse Oudheidkundige Bond* 94: 11-23.
- VAN DRUNEN A., 1993. Wisseldorpelklosjes. Een sieralement in het grensgebied tussen schuiframen en draairamen, *Jaarboek Monumentenzorg*: 123-136.
- VAN ENGELENHOVEN A., 2005. *Middeleeuwse huizen in Amersfoort*, Bussum: 132 p.
- VIERSSEN A., 2008. De vloerconstructie van de Grote Zaal van Kasteel Amerongen, in: *Over de vloer. Met voeten getreden erfgoed*, Zwolle-Zeist/Amersfoort: 117-125.
- WEVE W., 2013. *Huizen in Delft in de 16^e en 17^e eeuw*, Zwolle: 192 p.
- YEOMANS D. and HARRISON H., 2014. The construction and structure of medieval gates, in: CAMPBELL J.W.P., ANDREWS W., BILL N., DRAPER K., FLEMING P. and PAN Y. (eds), *Proceedings of the first Conference of the Construction History Society*, Queens' College, Cambridge, 11-12 April, Cambridge: 475-482.

Already published in the *Scientia Artis* collection

- 1 *Le retable d'Oplinter / Het retabel van Oplinter* 1999
R. DE BOODT, M. SERCK-DEWAIDE, J. SANYOVA, N. GOETGHEBEUR,
L. KOCKAERT & J. JANSEN
- 2 *Les vitraux de la cathédrale Saints-Michel-et-Gudule de Bruxelles. Histoire, conservation et restauration / De glasramen van de Sint-Michiels- en Sint-Goedelekathedraal te Brussel. Geschiedenis, conservatie en restauratie* 2005
I. LECOCQ (ed.)
- 3 *Lambert Lombard, peintre de la Renaissance. Liège 1505/06-1566. Essais interdisciplinaires et catalogue de l'exposition / Lambert Lombard, Renaissanceschilder. Luik 1505/06-1566. Interdisciplinaire essays en tentoonstellingscatalogus* 2006
G. DENHAENE (ed.)
- 4 *Autour de la Madeleine Renders. Un aspect de l'histoire des collections, de la restauration et de la contrefaçon en Belgique dans la première moitié du XX^e siècle* 2008
D. VANWIJNSBERGHE (ed.)
- 5 *D'Ennion au Val Saint-Lambert. Le verre soufflé-moulé. Actes des 23^e Rencontres de l'Association française pour l'Archéologie du Verre* 2010
C. FONTAINE-HODIAMONT (ed.)
- 6 *Imitation and Illusion. Applied Brocade in the Art of the Low Countries in the Fifteenth and Sixteenth Centuries* 2011
I. GEELEN & D. STEYAERT
- 7 *Tree Rings, Art, Archaeology. Proceedings of an international conference* 2011
P. FRAITURE (ed.)
- 8 *The Brueg(H)el Phenomenon. Paintings by Pieter Bruegel the Elder and Pieter Brueghel the Younger with a Special Focus on Technique and Copying Practice* 2012
C. CURRIE & D. ALLART
- 9 *A Masterly Hand. Interdisciplinary Research on the Late-Medieval Sculptor(s) Master of Elsloo in an International Perspective* 2013
F. PETERS (ed.) | Also available as an e-book on the KIK-IRPA website.
- 10 *Machinae Spirituales. Les retables baroques dans les Pays-Bas méridionaux et en Europe. Contributions à une histoire formelle du sentiment religieux au XVII^e siècle* 2014
B. D'HAINAUT-ZVENY & R. DEKONINCK (ed.)

- II *D'une même main. Peintures murales du XV^e siècle dans la principauté de Liège. Regards croisés sur la chapelle du château de Pontnoz et l'église de Bois* 2016
I. HANS-COLLAS (ed.)

These volumes are available for purchase at the KIK-IRPA or from Brepols Publishers (www.brepols.net).

Printed in December 2016 by Peeters Printers (Herent, Belgique).

Printed on acid free paper norm ISO 9706.

D/2017/0613/1



From the examination of the historiography of finishing work in wood for architecture from the medieval to modern period, it is clear that this field of research is the poor relation of historical and archaeological studies, with the lion's share focusing on the structural work of carpentry. It is on the basis of this observation that the present work has been produced, which results from a conference held in Brussels in 2013. The work demonstrates first the real interest in an approach to finishing work for the study of ancient buildings and the establishment of a precise chronology for their phases of layout as well as in obtaining better understanding of material cultures and ways of living. Second, it reiterates that the limit between carpentry and joinery was often porous, sometimes artificial. Finally, the work stresses that an overall approach to the use of wood is crucial to comprehensively address the organisation of a building, the logic of its construction and its 'utilisation', and more generally, the complex history of the buildings studied. This work, which thus represents a first step toward an overall approach of 'wood material' in European architecture, includes thirteen contributions divided into two thematic sections in keeping with current research practices. The first addresses the divide between structural and finishing work via the question of flooring, ceiling and roofing techniques. The second focuses intrinsically on finishing work by examining the contribution of this craft domain to the organisation, comfort and ornamentation of houses.

The *Scientia Artis* series is published by the Royal Institute for Cultural Heritage (KIK-IRPA, Brussels). The works in this series – monographs, exhibition catalogues and conference proceedings – present the results of research projects and scientific events (co)organized by KIK-IRPA. Since 1948 this Federal Scientific Institution has been charged with the study, protection and promotion of Belgium's cultural heritage. www.kikirpa.be



Royal Institute for Cultural Heritage



.be

ISBN 978-2-930054-28-5



9 782930 054285