# Manuscript-Waste Fragments: Identifying the bindings from which they were removed

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## Abstract

Discarded manuscripts were often recycled and fragments of them used to make, among many other things, elements of bookbindings. In later centuries, these fragments were often extracted. This has resulted in bindings lacking key elements of their structure and fragments lacking a localizable context that might suggest when and possibly where their source manuscript was dismembered.

Previous attempts to identify the bindings from which these manuscript-waste fragments were removed have relied on two types of evidence: archival evidence on the fragment, such as shelfmarks, to select the volume, and evidence of the fragment in the binding, such as offsetting, to verify the association between the fragment and the binding. Shelfmarks, however, are not always present or current and without a way to select possible candidate matches, the process of examining candidate matches for offsetting is unmanageable - collections are usually too large to endeavour to check all the bindings in the library for traces of the fragment.

This research project set out to investigate whether, in the absence of archival evidence, it is possible to identify the source binding of a removed manuscript-waste fragment. The method devised to do this, which is presented here, is based on the understanding that a manuscript-waste fragment which was part of a binding will have evidence of that binding, that that evidence is sufficiently detailed to indicate features of the binding and that bindings are sufficiently different from each other that they can be distinguished on the basis of their features.

This research has found that the binding evidence on the fragment relating to the features of the spine is the key which allows candidate matches to be selected from the library shelves. Examples from the case studies showed that the spine features of these fragments matched a restricted number of bindings in the library and that this method could therefore be used to identify candidate matches. The method devised has proved most successful with endleaves but can also be applied to guards and comb spine linings but is not suitable, at present, for covers.

This new method for re-associating fragments with their source bindings will be of benefit to manuscript specialists and binding historians, enabling them to make connections within and across collections.

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## Accompanying USB files

Images and details of all fragments and source bindings are to be found on the accompanying USB

# Acknowledgements

This thesis owes a huge debt to the Ligatus Research Centre - both current directors and past students. The work of Prof. Nicholas Pickwoad and Dr. Athanasios Velios has changed for many of us how we approach the study of bindings and conservation. I would like to thank them firstly for accepting me as a PhD student and secondly for their generosity, both with their time and knowledge, and their exemplarly guidance and patience throughout the PhD process. It was not only hugely instructive but also a real pleasure to work with them both. I would also like to thank Prof. Michelle Brown, my co-supervisor, for her advice, hospitality and speedy response to my queries and my Ligatus fellow PhDs, Dr. Alberto Campagnolo, Dr. Anna Gialdini and Aurelie Martin who were a great source of help and support.

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# Chapter One
## Introduction

## 1.1. Overview

**Fig.1 Box of fragments.**
Lambeth Palace Library.

This thesis examines fragments of manuscripts which were re-used to make parts of bookbindings. These fragments were on occasion later removed (Fig. 1) resulting in the dissociation of the fragment from its binding, something affects our understanding of both

i. the fragment and the history of the dispersal of the whole manuscript and
ii. the binding which has been altered by the removal of an element of its structure.

Reinstating the connection between the fragment and binding - a connection which informs our understanding of both the later history of the manuscript and the manufacture of the binding - has previously relied on there being archival evidence which identifies the binding, such as a shelfmark, on the fragment. This evidence, however, is not always present. This thesis examines whether, in the absence of such evidence, the bindings for these removed fragments can still be identified. This has led to the development of a new method, presented here, which is was based on recognising these fragments as binding components, analysing the evidence of the binding which can be seen on the fragment, and comparing this to bindings visible on the library shelves.

As this thesis is concerned with both manuscripts and bindings, it is first necessary for the sake of clarity to define the terms which will be used here. The Language of Bindings Thesaurus (referred to from now on as *LoB*), is followed for bookbinding terms and links to the relevant definitions in this thesaurus are provided in the footnotes.

## 1.2. Definition of terms

**Manuscript-waste fragments**: In this thesis *manuscript-waste fragments* is the preferred term for fragments of a manuscript that were re-used to make elements of a binding. In contrast to the term *manuscript fragments*, which is found in the literature to describe both fragments that were never recycled in a binding and also those that were, the term *manuscript-waste fragment,* emphasises that the fragment had been discarded and recycled.

These fragments have also been classed as *binding fragments*[1] and *orphaned binding fragments*.[2] Neither term identifies what the fragment is a fragment of - whether it is a fragment *of* a binding or a fragment found *in*, and in the latter case *removed from*, a binding. Neither do these terms clarify whether these are fragments of manuscript or printed leaves. The term *manuscript-waste fragments*, on the other hand, identifies the nature of the fragments. For brevity, the term *fragments* will also be used and should be understood to be referring to *manuscript-waste fragments.*

*Manuscript-waste fragments* were frequently fragments of books but could also be fragments of documents and a small number of these examples are included here. The fragments discussed here are predominantly of parchment, though some paper examples also form part of this study. The leaves of printed books were also recycled to make elements of bookbindings and were often used along with *manuscript-waste fragments*. They are referred to as *printed-waste fragments* but are not the subject of this thesis.[3]

***Source manuscript:*** The *source manuscript* is the manuscript from which the fragment was removed.

***Source binding****:* The *source binding* is the volume from which the *manuscript-waste fragment* has been removed. This term is preferred to the phrase *host volume* used by, amongst other, the *Lost Manuscript Project*[4], Fragmentarium[5] and Keil[6] as the term *source binding* emphasises that the fragment was an integral part of the binding, rather than simply the place where the fragment was found.

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1 Watson uses the term to describe 'fragments of manuscripts removed from the bindings of All Souls printed books'; Watson, 1997, p.223.

2 Sheppard, 2000, p.169.

3 *LoB* refers to this as *printed waste* http://w3id.org/lob/concept/1523.

4 A project cataloguing manuscript fragments in bindings based at the Centre for Bibliographical History at the University of Exeter, http://www.lostmss.org.uk/.

5 https://www.fragmentarium.ms/

6 Keil, 2014, p.312.

***Binding* and *Cover*:** A binding is 'the structures and, if present, the covers used to hold together and protect the leaves of a bookblock and which allow them to be opened at the fore-edge'.[7] The binding structures encountered and discussed in this research are

i. *Inboard bindings*, where 'the boards are attached to the bookblock by whatever means before the book was covered'.[8] These bindings are sometimes described as 'bound in boards'.
ii. *Case bindings*, where the cover, with or without boards, is attached, by adhering or lacing, to the bookblock 'as a single component'.[9] The latter is referred to as a *laced-case binding*.[10]
iii. *Stitched-through-a-cover bindings*, where the cover is wrapped around the bookblock, before it has been stitched, and the two are stitched together in one process.[11]

A cover, in the case of inboard bindings is 'the primary covering material ... used to cover the boards and spine'.[12] With case bindings 'the case itself may also be the covering material, and thus serve a dual function as both primary covering ... and structural component'.[13] *Manuscript-waste fragments* have been found used as covers on *laced-case bindings* and *stitched bindings* but they are also found *within* bindings, both *inboard* and *laced-case*, where they were used to make components of the structure of the binding.

***Left Board/Cover, Right Board/Cover*:** The two sides of a binding are variously referred to in the literature as *upper* and *lower***, or** *front* and *back* **or** *left* and *right*. Describing the boards of a book as '*upper* and *lower*' or '*front* and *back*' presupposes that the reader understands which way the book is to be read – whether that be from left to right or right to left ('*upper* and *front*' indicates the board adjacent to the beginning of the book, with '*lower* and *back*' being at the end of the book). However, the terms 'front board' and 'back board' may not consistently mean the same thing – when the text of the book is read from left to right, the *upper* or *front* board is on the left (when the book is opened on the table in front of the reader) but, when the book is read from right to left, the *upper* or *front* board is on the right (Figs. 2, 3)**.** *LoB* avoids this confusion by using the terms *left* and *right* where 'left' means

> 'the place on the left of the centre of a book opened as if to be read. All the components or features of a binding on this side of the book can therefore be described as left (e.g. left board, left endleaves, *etc*.).'[14]

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7 http://w3id.org/lob/concept/2279
8 http://w3id.org/lob/concept/1395
9 http://w3id.org/lob/concept/4165
10 http://w3id.org/lob/concept/4103
11 http://w3id.org/lob/concept/1643
12 http://w3id.org/lob/concept/1268
13 Ibid.
14 http://w3id.org/lob/concept/2947

Following this definition, the *left board* will always be the same regardless of whether it is adjacent to the beginning or the end of the book. When referring to the side of the board or cover facing the text, the term *inner surface of the board/cover* is used.

***Endleaves:*** *Endleaves* are the leaves found at the beginning and end of a book which protected the text leaves.[15] The terms *endpapers* or *flyleaves* are sometimes used for these leaves but in this thesis, *endleaves*, following the terminology used in *LoB*, is preferred. An endleaf may be adhered to the *inner surface of the book's board* and, when used in this way, may be described as a *pastedown*.[16] An endleaf that was not pasted down is a *free endleaf*.[17] However, endleaves that were once pasted down can lift from the board and become *free endleaves* (Fig. 4) while endleaves which were originally *free endleaves*, at a later point, may have been pasted down. In either case the leaf, pasted down or not, is still an *endleaf*. The term *endleaf*, then, is used in all cases. This holds true even where it is clear that the *endleaf* had been pasted down, for example when paste residue remains visible on the leaf, and despite the fact that frequently in the literature pertaining to *manuscript-waste fragments* the term *pastedown* is used.[18] *Left endleaves* are adjacent to the left board or cover and *right endleaves* are adjacent to the right board or cover. (A fuller description of differences in endleaf construction follows in Chapter 4.)

***Guard***: This is 'a narrow strip of sheet material, most often of parchment but sometimes of paper, folded lengthways and either sewn on its own or with other endleaf components' (an *endleaf guard*[19]) or folded around a text gathering and sewn in with that section (a text guard) [20] (Fig. 5). (See Chapter 4.)

***Comb spine lining***: These are **'**spine linings made of two parts, each of which is slotted along one edge to allow it to be adhered to the spine on each side of the sewing supports, but retaining a continuous lining extension in each joint, giving them the appearance of a comb with very wide 'teeth'. The teeth lie over each other in the spine panels, creating two thicknesses of lining' (Fig. 6, 7).[21] ). (See Chapter 4.)

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15 http://w3id.org/lob/concept/1317
16 http://w3id.org/lob/concept/1493
17 http://w3id.org/lob/concept/1346
18 For example, Neil Ker *Fragments of medieval manuscripts used as pastedowns in Oxford bindings with a survey of Oxford binding c.1515-1620*. 2nd ed., Oxford: Oxford Bibliographical Society, 2004 for 2000.
19 http://w3id.org/lob/concept/1313
20 http://w3id.org/lob/concept/3697
21 http://w3id.org/lob/concept/1255

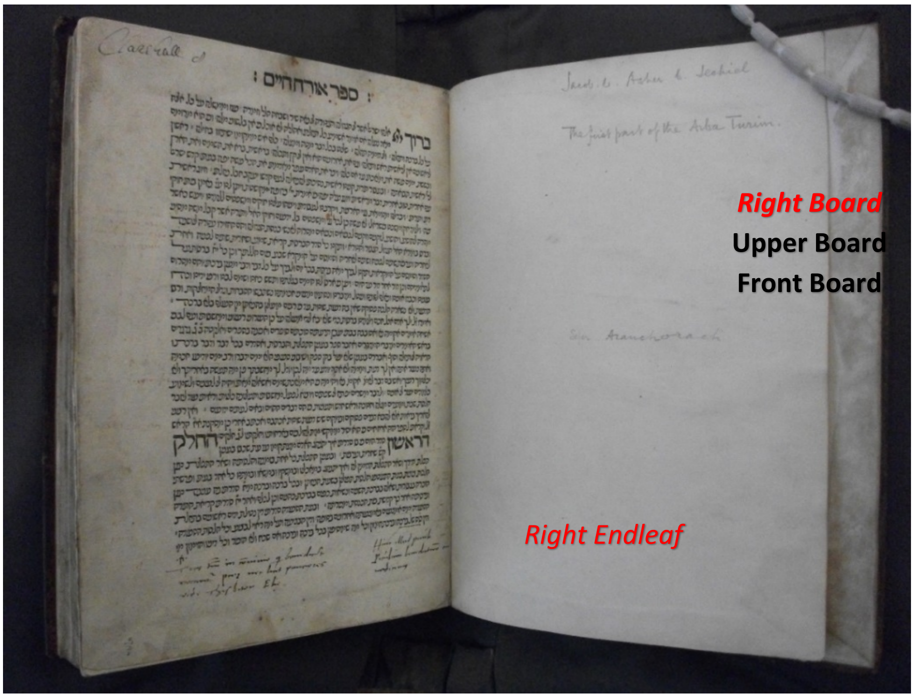


**Fig. 2. The ‘right’ board.**
The book is opened as if to be read. The right board faces the first leaf of text.
The Fellows’ Library, Clare College Cambridge: A.6.8 (Hijar, 1485).[22]


**Fig. 3. The ‘left’ board.**
The book is opened as if to be read. The left board (made of printed waste) faces a blank endleaf which is followed by the title page.
The Fellows’ Library, Clare College Cambridge: 0.5½.6 (Haguenau, 1534).

[22] All books in this thesis will be referenced in the format Library: Shelfmark (Place of Printing, date). Full bibliographical details can be found in Appendix 1.

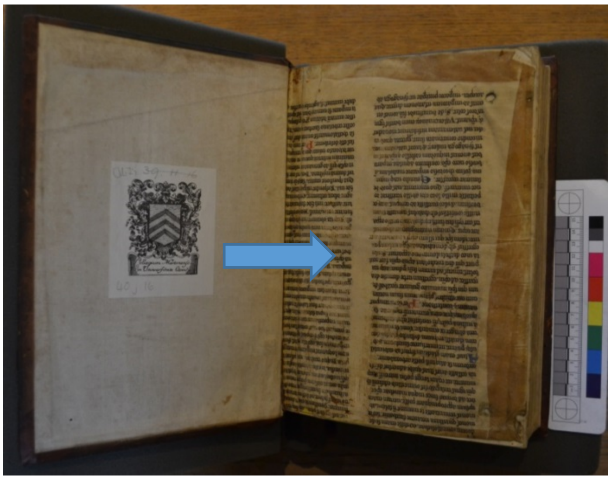

**Fig. 4. A pastedown is an endleaf.**
This manuscript-waste fragment had been pasted down but is now a free endleaf and the new pastedown is blank paper.
Merton College Library: 40.j.16. (Paris, 1516).

**Fig. 5. A guard folded around a blank paper endleaf.**
Lanhydrock House: B.1.13 (Basel, 1559 & 1550).

**Fig. 6. A comb spine lining – two parts, slotted along one edge to fit between the sewing supports**
Westminster Box IV 'From F.1.24'.
**Fig. 7. A comb spine lining *in situ* (**the last three panels damaged).
The two teeth of the comb had overlapped on the spine panels but the adhesive has failed. The other part of the lining – the extension - sits against the inner surface of the board.
St Canice's Cathedral: 2332 (Paris, 1554). (The label 2350 in the tail panel of the spine is an error.)

***Component:*** This is a constituent part of an object or a structure.'[23] For example, an endleaf is a binding component.

***Element***: This is a part of a component. For example, ***endleaf elements*** are 'the two parts of a single endleaf component which are joined at the spine-fold. Each element can be either a full leaf or a stub. These can be differentiated as the inner and outer elements, the inner element being that which is closer to the textblock at each end.'[24]

***Outer face of the fragment/ inner face of the fragment:*** The outer face of a fragment is the part of the fragment that faces towards the board or cover (the board or cover facing side). The inner face of the fragment faces towards the bookblock (the bookblock facing side).

***Textblock*** **and** ***Bookblock:*** The term *textblock* is used to describe' all the leaves on which the text of the book is written or printed'[25] while *bookblock*[26] refers to the textblock, endleaves and any other inserted leaves, such as interleaving, combined.

***Parchment:*** The term *parchment* is used in preference to vellum regardless of the animal of origin.

***Tanned Skin, Alum-tawed Skin***: While leather is the correct term for *tanned skin*[27], that is skin that has been treated with tanning agents, which in this period were from vegetable sources, 'leather' has also been used in relation to skin which has been prepared using alum[28] (*alum-tawed leather*). To avoid confusion and distinguish the two methods of perparing animal skin the two distinct terms *tanned skin* and *alum-tawed skin* are used while the term *leather* is not.

***Rebacked***: This is 'a very common repair to bindings, often where the boards have become detached, in which the original spine covering is lifted to be replaced by a new covering material which extends under the original covering along the back edges of the boards. On the spine, it is either left exposed or with the original spine adhered to it.'[29]

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23 http://w3id.org/lob/concept/2285
24 http://w3id.org/lob/concept/4043
25 http://w3id.org/lob/concept/1663
26 http://w3id.org/lob/concept/1227
27 http://w3id.org/lob/concept/1658
28 http://w3id.org/lob/concept/1197
29 http://w3id.org/lob/concept/1536

***Re-covered***: This is a repair where the cover has been replaced but the sewing stations have not been changed.

***Re-covered, with new boards***: This is a repair where the cover and the boards have been replaced but the sewing stations have not been changed.

***Rebound***: This is a repair where a textblock that has been resewn and the position of the sewing stations may have changed and there is a new cover.

***Guardbook***: This is a book of blank leaves into which loose material such as fragments was either pasted to or inset into the leaves (Fig. 8). They were often used to house fragments.

***Fascicule***: This is a book of blank leaves on to which the fragments are adhered using hinges made of Japanese paper (Fig. 9).[30] This is a modern version of the guardbook.

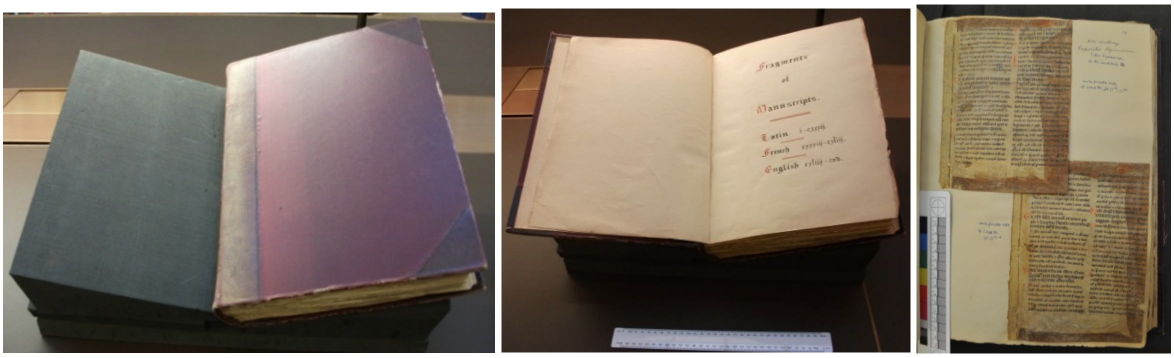

**Fig. 8. Bodleian Library, MS. Lat. Misc. b.17**. containing the manuscript waste fragments removed from books in the library at Lanhydrock House, Cornwall.

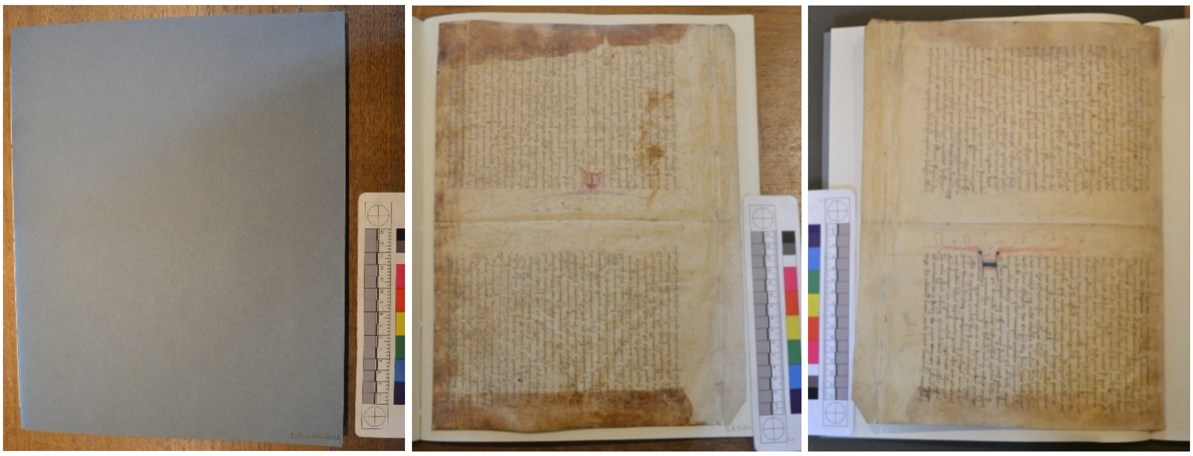

**Fig. 9. A fascicule from Merton College Library**
A fasciucle with the fragment D.3.5 (26), outer face and inner face.

30 Clarkson and Lindsay, 1994.

## 1.3. The background to the study

This thesis investigates whether the source bindings for removed manuscript-waste fragments can be identified. In order to understand what might be gained by re-associating fragments with their source bindings, it is necessary to examine the importance of the association between the two (1.4). Firstly, however, the circumstances in which this association and the later dissociation came about will be described.

### 1.3.1. The re-use of manuscript-waste fragments to make bookbindings

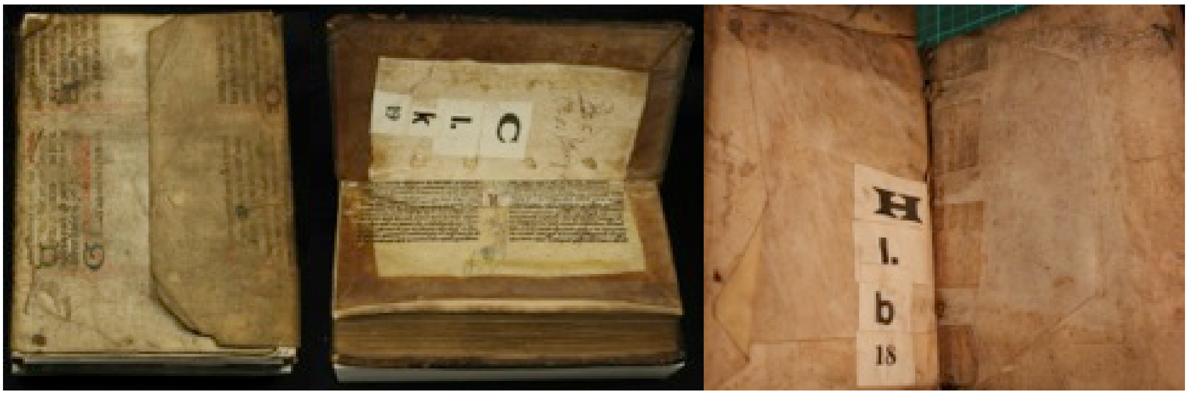


**Fig. 10. Manuscript-waste fragments *in situ* in bindings.**
(From the left) a cover, an endleaf and spine linings which extend beyond the width of the spine (right).
The Derry & Raphoe Diocesan Library, University of Ulster.
HII. b2 (Antwerp, [1566]); CI. k19 ([Heidelberg?], [1576]); HI. b18 (Lyon, 1539)

Given the strength, durability[31] and versatility of parchment, and the time and expense involved in its preparation,[32] it is hardly surprising that leaves of manuscripts made from this material were recycled for a wide range of purposes.[33] It is equally unsurprising, given that old manuscripts were readily to hand to those working in libraries, that one of these purposes was to make new bindings. The recycling of old books to make new books seems to have been the practice even from an early date – one Coptic manuscript (AD 999) had boards made from parchment leaves laminated together[34] while some Romanesque (twelfth century) bindings have been found with endleaves made from manuscript waste.[35] However, with the arrival of print and the subsequent increased production of texts, the demand for material which could be used to make bindings for those new printed texts also

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31 Reed, 1972, p.9.
32 Pickwoad, 2000, p.1.
33 Abukhanfusa, 2004, p.12 cites examples of fragments being used in saddles and to strengthen clothing and shoes.
34 Szirmai, 1999, p.35, p.43 note 5.
35 Ibid., p.147. However, Szirmai believed that the use of manuscript-waste fragments to make endleaves became ‘general practice’ only in the fifteenth century while De Hamel believed it ‘must have been a common practice in the upkeep of any major medieval library’; De Hamel, 1997, p.277, note 50.

increased.[36] This demand coincided with an increased supply of discarded manuscripts and contemporary records show bookbinders purchasing parchment manuscripts from both libraries and individuals.[37] This increased availability of old manuscripts has been attributed to the arrival of printing – which rendered obsolete, and so devalued, earlier manuscripts[38] - along with changes in academic subjects, liturgical practice and literary habits and also the neglect and 'the low prestige of medieval heritage'.[39] The leaves of these manuscripts were used to make a variety of structural elements for bindings for both archives and printed books - and also for manuscripts repaired in this period[40] - from covers to leaf tab markers (Fig. 10).[41] This practice of recycling earlier books continued until either the sources dried up or the importance of old manuscripts was re-evaluated. In Oxford, from about 1570, printed waste is more commonly used[42] than manuscript waste, though it was first used at the end of the fifteenth century.[43] However, in continental Europe, the use of manuscript-waste fragments endured into the eighteenth century.[44]

### 1.3.2. The removal of manuscript-waste fragments from bookbindings

Almost as soon as fragments had stopped being used to make bindings, their extraction from those bindings began. Librarians and antiquarians such as Samuel Pepys (1633-1703)[45] and John Bagford (d.1716) sought them out, intending to use them to compile histories of scripts.
In 1698 Humfrey Wanley asked to be allowed to remove fragments from books in the Bodleian Library,[46]as long as it could be done without damaging the books. In arguing for permission to do this he expressed the belief that these fragments had

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36 Pickwoad, 2000, p.1-2.

37 John Pocher, a Cambridge bookbinder, bought books directly from source, paying £2 to Eton College in 1550-1 'for certenne bokes in the libraye' but also from a Mr Seeres, 'whose trade and place of work are not specified' to whom he paid 24/- in 1564-5 'for old Parchment bookes weying cc pounds; Ker, 2nd edn., 2004, p.x.

38 Rabbi Joseph Yuspa Hahn Nordlingen (1570-1637) commented that 'the manuscript page fetches a higher price when sold as parchment to be used in a binding than when it is sold as a text for study, in particular today when printed books are so common', quoted in Emanuel, 1997, p.318.

39 Watson, 2000, p.22-3.

40 Sheppard noted that 39 manuscripts with early bindings in Caius College Cambridge, had been repaired with re-used materials including boards, chemises but also endleaves; Sheppard, 2002, p.196, 206-7.

41 Prinsen, 2012, p.118. Pickwoad, 2000, p.1-20.

42 Pearson, 2000, p.141.

43 Ibid, p.140. Pearson believes that the process of change from using manuscript-waste to printed waste was 'a long and gradual one'.

44 Watson, 1977, p.68. Their use continued in the Ljubljana Archives and Libraries up until the first decades of the eighteenth centur: Snoj, 2000, p.153.

45 Pepy's *Calligraphical Collection* is held at Magdalene College Cambridge as PL 2981 - 2983, the fragments are found at the beginning of PL2981; McC.Gatch, 1990, p.443. Bagford's collections passed from Edward Harley to the British Library; ibid., p.447.

46 Though endorsed by two of the curators, it is unclear whether the project went ahead; Mc.C Gatch, 1990, p.443.

> 'no Relation to the Subject or Matter of the books they belong to; nor contributing in the least to their Value; nor having ever been thought worth the taking notice of in any Catalogue whatsoever; nor being of any manner of use in the Library to any man, as they now lie, hid, dispersed and unknown'.[47]

In the late nineteenth century the collecting of manuscript-waste fragments from bindings became the trend and many librarians participated quite enthusiastically - Ker lists twenty eight colleges, cathedrals and individuals in the UK with collections of such fragments.[48] The intention was to 'preserve from loss the materials found in early printed books'.[49] This may have been motivated also by concern for how fragments were already being removed - W.D. Macray of the Bodleian Library Oxford noted in the 1850s that bindings were sent to binders with no instructions that such material should be retained and came back 'as "neat" as the binder could make them'.[50] Some binders did, though, return to the library the fragments they had removed when carrying out repairs on the collections there[51] but some were also sold on to collectors - Philip Bliss (1787-1857), sub-librarian of the Bodleian, for example, is known to have purchased fragments from bookbinders in 1825.[52] Libraries which could not afford to repair their books may have been spared these actions though fragments which had become detached from damaged bindings could also become part of fragment collections.[53]

Fragment collections may today be located in the same library as their source bindings are, or may once have been (the Bayerischen Staatsbibliothek fragments, for example, were removed in the mid-nineteenth century from bindings which were later sold as 'duplicates'[54]), but they may also have been bought in from sales as, for example, items from Bliss's collection, mentioned above, which are now in Stanford University.[55] These collections do not represent the full range of binding components that manuscript waste was used to make. Instead, as Gumbert noted, it was generally the larger fragments which were retained.[56] This may be because smaller fragments, having less text, were of less interest and as a consequence were less likely to be collected or retained. It may also be because the most visible fragments in bindings – endleaves, guards, and covers – happen to be both the largest fragment

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47 Quoted in Heyworth, ed., 1989, p.479.
48 Ibid, p.270-8.
49 McGatch, 1990, p.438.
50 Ker, 2nd edn., 2004, p.xiv.
51 A note from Wilson's bindery is attached to one pair of manuscript-waste fragments (guards) in The Fellow's Library, Clare College Cambridge stating they were '*From joints of Platonis Opera Basil, 1532*'. This volume is Q.2.5.
52 Watson, 2000, p.24.
53 This was the case with St. Canice's collection (3.4.1).
54 Bayerische StaatsBibliothek (n.d.).
55 Stanford University Libraries, n.d. MO389.
56 Gumbert, 2011, p.13.

types and the most easily removed – a cover can be slipped off the book and the sewing thread linking endleaves or guards to the textblock can be cut.

Removed manuscript-waste fragments were frequently inserted in guardbooks, where they were sometimes annotated, their texts and scripts identified.[57] Others, though, remained uncatalogued and loose in boxes. It was not always noted from which books fragments had been removed and even in cases where it was, when libraries were re-ordered and shelfmarks changed, the link between the two were lost.[58]

These manuscript-waste fragments dissociated from their source bindings form the basis of this thesis. They have survived to today because after their source manuscript was dismembered, they had been repurposed to make bindings and these bindings were preserved. However, at some point, a judgement was made that the fragments should be removed, possibly because there was a belief that they did not belong in the printed book collection or because there was a fear that they would be lost. The result is that

i. these manuscript-waste fragments are dissociated from their source bindings.
ii. the source bindings lack key components of their structure which had been made from these fragments.

### 1.4. The impact of the dissociation of the fragment from its source binding.

The impact that the dissociation of the fragment from its source binding has on both the fragment and the binding, can best be illustrated by the kind of research that can only be undertaken when the fragment is still linked to its binding, for example, Neil Ker's *Fragments of Medieval Manuscripts used as Pastedowns in Oxford Bindings: with a survey of Oxford binding c.1515-1620*,[59]

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57 McC. Gatch, 1990, p.438. Ker, 2nd edn., 2004, p.xv.
58 Snelling, 2014.
59 While this was first published in 1954, Ker continue to update his work until his death in 1982. His additional notes are included in Pearson (2000a) and Rundle and Mandelbrote's *Corrigenda and Addenda* on the same work is maintained on the website of the Oxford Bibliographical Society.

**1.4.1. Examining a manuscript-waste fragment in relation to its source binding.**

Ker recognised that

> '… manuscript pastedowns can be studied not merely as objects of interest in themselves, but as leaves of manuscripts which were taken to pieces by binders at a particular place and date'.[60]

*Manuscript pastedowns*, in the terminology of this thesis, are endleaves made from manuscript-waste fragments, the *particular place* was Oxford and the *date* was the date of the binding in which the fragment was found. (A system of dating Oxford bindings based on aligning the cover decoration with the dates of the printed texts within[61] had been developed by Gibson[62] and Oldham.[63] Ker largely relied on these dates – though he also used some college archives.[64])

By linking the identification of the manuscript-waste fragment with the date of the Oxford binding in which it was found,[65] Ker linked the dismemberment of different genres of manuscripts to historical events.[66] He found that

i. manuscripts of canon and civil law texts began to be used for bindings in Oxford between 1490 and 1540, when printed versions of these works became available.
ii. medieval Latin translations of, and commentaries on, Aristotle were recycled from the 1550's when new Renaissance translations of these texts were printed.
iii. service books were first used in bindings from 1540 (though not widely) but came to be used extremely frequently in the 1550s (coinciding with the dissolution of the monasteries) and after (a point disputed by Pearson[67]).
iv. twelfth-century manuscripts were not used before 1550 but were used up until 1590 and even 1600, when the value of manuscripts was once more recognized.

In addition to identifying when manuscripts were being broken up, Ker's research also provides 'the most useful and up to date source of wide-ranging information on Oxford bookbinding in sixteenth

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60 Ker, 2nd edn., 2004, p.viii.
61 For example, stamped bindings were produced *c.*1480-1516; bindings with rolls or panels *c.*1515-1574; roll-bindings *c.*1574-1620; and centrepiece-bindings *c.*1565-1620; Ker, 2nd edn., 2004, p.203-219.
62 Gibson, 1903.
63 Oldham, 1952.
64 Ker used the All Souls College Bursar's Accounts to date some bindings there; Watson, 1997, p.257.
65 The majority of the fragments examined by Ker were still in situ in the bindings but if they were not the shelfmark of the source bindings had been noted.
66 Ker, 2nd edn. 2004, p.ix.
67 Pearson notes that fragments from service books are also found in bindings from the early rolls and panel groups and were used 'extensively' bythe Dragon binder (fl. *c.*1490-1506); Pearson, 2000a, p.139-140.

and early seventeenth centuries'.[68] Based on his analysis of the use of manuscript-waste fragments in 2,200 Oxford bindings[69] he found that[70]

i. in Oxford bindings they were widely used as endleaves from 1520 to 1570 and for around fifty years on either side of this date.
ii. in Cambridge bindings manuscript-waste fragment endleaves were not common after 1570. [71] (Pearson notes that instead a guard made from manuscript-waste was folded around two leaves.[72])
iii. in London bindings they were not in general use at any time and hardly at all after *c*.1540.
iv. in undecorated bindings fragments were rarely used.[73]

Ker also noted the differences in the structure of these endleaves made from manuscript waste fragments. He identified the existence of two broad groups (discussed in Chapter 4) and observed that one form superseded the other around 1540.[74]

Ker's conclusions on the dismemberment of manuscripts and the construction of Oxford bookbindings rely on the link between the fragment and the binding. Today it is accepted that bindings are not necessarily strictly contemporary with the printed text within them and it would be unwise to assign the date of a printed text to both the making of the associated binding and also to the dismemberment of the source manuscript for the manuscript-waste fragments used to make that binding. The date of the printed text should instead be considered a *terminus ante quem* for the dismemberment of the source manuscript and a *terminus post quem* for the date of the binding. It also cannot be known how much of a time gap there could be between the breaking up of a manuscript and the use of its leaves to make a binding. Bent and Klugseder, for example, found fragments from the same manuscript, the Veneto *Liber Cantus* (*c.*1440),[75] on one volume with a text printed in 1493[76] and on another printed in

[68] Pearson, 2000a, p.1.
[69] Ker examined only endleaves and the 'wrappers' (*i.e.* covers) of some college business books; Ker, 2nd edn. 2004, p.xviii.
[70] Ibid, p.vii.
[71] Ker, 2nd ed., 2004, p.viii, however, notes one binder in Cambridge, apparently a German, who continued to use full leaf endleaves post 1570.
[72] Pearson, 2000b, p.176.
[73] Ker, 2nd edn. 2004, p.vii, note 3.
[74] Ibid., p.227.
[75] In both cases, these fragments have been removed from their source bindings but the shelfmark of that volume was noted, allowing it to be identified today.
[76] These fragments are now in Munich Bayerische Staatsbibliothek, Mus. Ms. 3224. The source binding is Inc. extr. 1090. Gratianus, *Decretum*. (Venice, Georgius Arrivabene, 1493). Bent and Klugseder, 2012, p.69.

1516.[77] The date of the printed text then, is to be taken as a guide rather than a definite, assignable date for both the dismemberment of a manuscript and the making of the binding.

Recent research would also question Ker's assumption that the process of binding a text – the sewing, putting in boards, covering and then decorating - all happened in the one town, in this case Oxford, and that the fragment must have been in Oxford for it to become part of that binding. Ker, on the basis that some of the fragments were from Merton and All Souls Colleges manuscripts, assumed that the majority of the fragments in Oxford bindings had come from manuscripts belonging to Oxford college libraries or chapels.[78] However, he also acknowledged that binders would have had access to many other sources for this material[79] and while English sources other than Oxford have been identified for some of the fragments,[80] the presumption is still that the binding in its entirety was made in Oxford. However, the survival of *sewn bookblocks*[81], that is, bookblocks which were sewn, some with manuscript-waste endleaves, but never put in boards (see note 77) would suggest that this is not necessarily the case. Pickwoad has identified almost 100 examples of these sewn bookblocks and has proposed that they were exported in this condition and that boards were added at their destination.[82] While sewn bookblocks may not survive in large numbers this may be because they were never intended to survive in this condition at all. However, their existence indicates that it cannot be assumed that the fragments attached to a textblock - let alone the source manuscript for those fragments - were once in the place where the boards and cover were added to that textblock. To identify where that happened, it might be necessary to pay as much attention to where the text was printed as to where the cover was decorated. This, of course, given the trade in manuscripts as waste material also need not have been the last location where a manuscript was used or dismembered - John Bale's comments from 1549 on the dispersal and sale of English manuscripts to bookbinders overseas is well known.[83]

77 These fragments are in Vienna, Österreichischen Nationalbibliothek, Fragm. 661. This source binding is 15.F.2. Colonna, *Defensorium seu correctorium fundamentarii doctoris domini Egidi*. (Venice, Ottaviano Scotto, 1516). Bent described how these fragments both as a 'provisional cover' (Bent and Klugseder, 2012, p.72) but also as 'endpapers for an unbound book' (ibid). This, in *LoB* terminology, is a *sewn bookblock*. http://w3id.org/lob/concept/1587.

78 Ker, 2nd edn., 2004, p.x.

79 Ibid.

80 De Hamel identified fragments from Canterbury College in Oxford bindings; De Hamel, 1997, p.269.

81 http://w3id.org/lob/concept/1587; Pickwoad, 1994, pp.64-70.

82 Writing in 2012 Pickwoad notes 71 examples. The editions found in these examples are dated between 1511 and 1701; Pickwoad, 2012, pp.39-40. Pickwoad has since found additional examples and the number stands at close to 100; Pickwoad, personal communication, 23/11/18.

83 '… some they sent ouersee to the bokebynders, not in small nombre, but at tymes whole shyppes full, to the wonderynge of the foren nacyons' quoted in Wright, 1958, p.153.

While it is likely that the source manuscript for a fragment recycled in an English binding for a text printed in England was itself in England and broken up in England, the source manuscript for a fragment in an English binding for a text printed on the continent may have been either in England or the continent. In some enviromnents, though, there may be a very close association between the source manuscript and the new binding. The monastery at Mondsee, for example, which had a bindery from the fifteenth century, is thought to have used its old manuscripts to bind new books for that library.[84] Archives are also likely to have been bound within the city to which they belonged rather than being sent outside the city to be covered - though the manuscript leaves could still have been imported into the area.[85]

As there is currently not enough known about how texts were transported (whether as sheets or as sewn bookblocks) to say definitively that manuscript-waste fragments were added to the textblock in the same place where the boards were added – and, given the trade in manuscripts mentioned earlier, as it can also not be assumed that the source manuscript for fragments used to make a binding had been in the country where the textblock was sewn or the binding was made - the connection between the manuscript and the binding, then, may be more complicated than Ker had considered. However, his conclusions regarding when and why manuscripts were dismembered – the arrival of printed editions, changes in religion, *etc*. – would apply regardless of where the bookblock was sewn and so his analysis, for example, that legal manuscripts were reused in bindings as a particular point in time, would still stand.

Ker himself was cautious with his findings. While he noted when he thought fragments might be from the same manuscript, he felt that this more likely when the manuscript was unusual; otherwise he believed it to be 'only a likely guess'.[86] He did not believe that fragments from the same manuscript in different bindings necessarily meant that those bindings were from the same workshop[87] and while he was inclined to believe that these bindings were produced at the same time,[88] he reasoned that, as parchment was valuable, portions of one manuscript might have been distributed between binders.[89] However, perhaps, given the large numbers of bindings made with manuscript-waste fragments, this latter point may not be true in all cases. Mullett and Palmer, for example, while examining bindings of

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84 Fragmentarium, case study 8: https://www.fragmentarium.ms/about/case_studies#5
85 Snoj, 2000, p.153.
86 Ker, 2nd edn. 2004, p.xix.
87 Ker, 2nd edn. 2004, p.224.
88 Ibid.
89 Ibid.

incunabula,[90] found fragments from the same fourteenth-century manuscript, either Southern French or Northern Italian,[91] in two bindings decorated with the same roll.[92] One of these bindings is held at the Bodleian library,[93] the other in Emmanuel College Cambridge.[94] If it is taken that bindings decorated with the same tools were produced by the same bindery - which would leave aside the possibility that tools may have been swapped or loaned between binderies - this might suggest that other fragments from the same manuscript might be found in similarly decorated bindings. However, it should also be noted that both these volumes are sammelbands with all the texts printed in Venice. In the light of the previous discussion on sewn bookblocks,[95] the link between these two volumes may not solely be the roll used to decorate the binding but also the city where the texts were printed. Unfortunately, the city in question is Venice, a major producer of books, and also the question of where a sammelband might have been compiled is problematic.

However, with regard to the earlier example of two bindings with fragments from the same manuscript (the Veneto Liber Cantus discussed on page 15)[96]– Bent and Klugseder believed these two bindings were unconnected.[97] They do acknowledge, though, that is likely that the volume now in Vienna (the sewn bookblock) was sewn, with the fragments as endleaves, in Venice. Their assumption is that 'the original music manuscript was disassembled in Venice, and used as scrap material in book bindings, or to package them for travel'[98] and that it was in this way that the leaves found in the binding now in Munich arrived in Weihenstephan. It is not clear whether the fact that the text in the Munich volume was also printed in Venice may also be of relevance here.

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90 Fragmentarium Case Study 1 http://bit.ly/FragmentariumBodleianLibrary.

91 Bod Inc Online identifies the manuscript fragment as being Italian, see Copy No. A-037 (2) http://incunables.bodleian.ox.ac.uk/record/A-037. The manuscript is *Corpus juris canonici: Liber Sextus*, with gloss.

92 Roll I ('first used between 1515 and 1520', and not attested after 1523). https://www.fragmentarium.ms/description/F-6et3/377.

93 A.2.8 Art. Seld, a sammelband containing one incunable dated 1500 (A-037(2) and five other texts printed between 1504-1512. They are 1. Gualtherus Burlaeus, *In Isagogas Porphyrii.* (Venice, Philippus Pincius, 1509); 2. Johannes Duns Scotus, *Quaestiones in Vniversalia Porphyrii.* (Venice: Philippus Pincius, 1512-3); Mauritius Hibernicus, *Super Isagoge Porphyrii*. (Venice: 1512); 4. Robertus [Grosseteste] Lincolniensis, *Commentaria in Posteriora Aristotelis.* (Venice: Petrus de Quarengis, 1504); 5. Johannes Duns Scotus, *Questiones utiles super libros Priorum Analyticorum Aristotelis*. (Venice: Philippus Pincius, 1512).This volume is not listed in Ker (2nd edn. 2004) or Pearson (2000a); https://fragmentarium.ms/overview/F-6et3

94 Emmanuel College Cambridge, 5.2.13, Ker no.74 (Ker, 2nd edn. 2004, p.8) contains three texts: Ptolemy's *Almagest* (Venice, 1515), Celsus *De medicina* (Venice, Ioannes Rubeus, 1493) and Aristotle. *Rhetorica Alfarabius. Declaratio compendiosa super libris rhetoricum Aristotelis* (Venice, per magistrum Philippum Venetum, 1481).

95 See p.16.

96 The Weihenstephan binding, now in Munich, for an incunable printed in Venice in 1493 and the endleaves for a text printed in Venice in 1516, now in Vienna. See note 77).

97 Bent and Klugseder, 2012, p.74.

98 Ibid.

### 1.4.2. Ker's influence on recent fragment projects

Ker's approach of analysing manuscript-waste fragments used as one type of binding component (the endleaf) in bindings from a particular location (Oxford) over a specified date range (1515-1620) has been imitated only in part by more recent research. Current projects - excluding Mullett and Palmer's work, which has an even more restricted date range than Ker's - are generally broader in scope and consider more than just endleaves. They focus on recording and cataloguing – and often digitising[99] - the instances of manuscripts in bindings.[100] There is often an additional aim to recreate the source manuscripts from the fragments –contrary to Ker's belief that this would not be possible. Less attention seems to be paid to an analysis of the structure of the components of a binding that these fragments were used to make – as Ker did with endleaves. These projects have also, to date, not produced the same kind of analysis that makes Ker's work so useful. However, they point to the acceptance of the relevancy of the connection between the fragment and the binding, which Ker pioneered. Hollender and Lenhnardt, for example, whose intention is to record the surviving fragments of Hebrew manuscripts in printed books across Europe, acknowledge that

> 'knowing either the binder or the first library that owned the volume is … an important step toward reconstructing the history of a Hebrew manuscript, its possible region of production and its place and time of secondary use'.[101]

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99 Widener, 2010.

100 For example, *The Lost Books Project* at The Essex Centre for Bibliographical History - a pilot for a proposed union catalogue of all the manuscript fragments in the British Isles, currently focused on the collection of Archbishop Samuel Harsnett (1561-1631). It aims 'to identify, catalogue and reunite in virtual form manuscript fragments', http://www.lostmss.org.uk/project/aims. University of Essex, n.d.; The Medieval Parchment Covers Project' (MPO)which was completed in 2003, catalogued all the manuscript fragments used as bindings for archive records in Sweden; Abukhanfusa, 2004, p.15. However, there is no archive information on how accounts were bound and so this area is still being researched; Brunius, 2000, p.162. An earlier project on the same Swedish *Medelita PergamentOmslag* material, which ran from the 1930s to the 1980s but was never completed, had attempted to reconstruct the manuscripts as part of the cataloguing process. This aspect was abandoned for the later project which focused on completing the cataloguing of the whole collection but it is hoped that the reconstruction might be possible at some point in the future Brunius, 2000, p.161; The *Books within Books* Project which began in 2007, also focuses on collecting information on Hebrew fragments from Europe, Israel and USA: Books within Books, n.d.; Olszowy-Schlanger, 2015.

101 Hollender & Lehnardt, 2012, p.543.

### 1.4.3. The impact of the dissociation of the fragment from its source binding on the study of the fragment and the binding

Ker’s approach to studying fragments and their source bindings in relation to each other opened up an avenue of research that had not been examined before. It was this approach that allowed him to draw conclusions with regard to

i. when manuscripts were dismembered.
ii. why manuscripts were dismembered.
iii. how the form of endleaves changed.
iv. how the use of manuscript-waste fragments in bindings varies between towns.

Today, while Ker’s conclusions may raise further questions (particularly when the possibility that some of these volumes may have been imported to the UK as sewn bookblocks is considered), his approach demonstrates that examining the fragment and the binding in association with each other opens up various lines of enquiry.

But by inference, Ker’s work also shows what avenues for research have been closed when the fragment has been removed and this affects both the study of fragments and the study of the bindings. Sheppard asserted that the

> ‘value of fragments in the context of the history of bookbinding structures themselves … has hardly been recognized, principally because the history of binding structures is still a new discipline within the field of medieval physical bibliography.’[102]

However, it is not so much that the value of fragments has not been recognised but rather that so many bindings either lack these components or they have been altered through repair - Ker himself noted that in some cases repair to the binding inhibited the identification of the form of endleaf.[103] The removal of components of a binding compromises our understanding of the techniques used to make that binding, techniques which possibly could be used to identify workshops. Though it is arguable whether fragments from the same manuscript found in two bindings can prove that those bindings were from the same workshop, it may be possible that the form of the binding component made from the fragments, could, in conjunction with other features of the binding, suggest those links. Such research cannot be conducted while fragments and their source bindings are dissociated.

[102] Sheppard, 2000, p.167.
[103] Ker, 2nd edn., 2004, p.xv.

## 1.5. The subject of this thesis

The subject of this thesis is dissociated manuscript-waste fragments and their source bindings.

> **The research question behind this thesis is whether it is possible to identify the binding from which a manuscript-waste fragment was removed, in the absence of archival evidence.**

## 1.6. The organization of the thesis

Following on from this introductory discussion, the thesis is divided into the following chapters:

Chapter Two: where a review of the current research on this subject is presented, a new approach to the study is identified, the aim of the study is defined, a new way to identify source bindings is proposed and the objectives to be followed in order to achieve the aim of the study are listed.

Chapter Three: where the key idea underpinning the new method is tested using a control sample and the case studies which will be used to develop that method are selected.

Chapter Four: where a classification of manuscript-waste fragments as binding components is presented.

Chapter Five: where the first stage of the method, which examines the features on the spine of the binding, is presented.

Chapter Six: where the second stage of the method, which looks at the sides of the binding is presented.

Chapter Seven: where the third stage of the method which examines the interior of the binding is presented.

Chapter Eight: where examples from the case study showing all three stages leading to the identification of the source binding are discussed.

Chapter Nine: where the results of the application of the method on the case study fragments and an assessment of the method is presented.

Chapter Ten: where the conclusions drawn from this research are presented.

The following points in relation to this thesis should be noted:

i. This research is not intended as a history of bookbinding.
ii. It is also not intended to be a history of the manuscripts represented by the fragments examined.
iii. An analysis of the parchment, inks, decoration, ruling or any features of the fragment which relate to it being part of a manuscript are beyond the scope of this work.
iv. The decoration of the bindings, or identification of binders, is not described unless provided by the library catalogue.
v. Printed waste fragments are not included in the study.
vi. This research is not confined to fragments from books but will also include fragments from documents by way of comparison.
vii. The identification of the manuscript fragments, in terms of their date and origin, follows that provided by the libraries housing those collections.
viii. All the work for this thesis was conducted in libraries as opposed to archives, and all those libraries were in the UK and Ireland (see Chapter 3).
ix. Details of the manuscript-waste fragments and bindings examined are listed in the appendices (to be found on the accompanying USB) along with associated images. They are organised by library

In the text of the thesis, books that form part of the study, and also those that are included to illustrate certain features, will be cited in relation to their library and the place and date of printing, for example, Clare K.5.5. (Strasbourg, 1529) (see note 22). Full details of the titles of these volumes can be found in Appendix 1.

# Chapter 2

## Contextual Review of the Subject

## 2.1 Overview

In this chapter

i. the current research on manuscript-waste fragments is reviewed (2.2 - 2.3).
ii. a new approach to the study is identified (2.4 - 2.6).
iii. the aim of this research is defined (2.7).
iv. a new way to identify source bindings is proposed (2.9).
v. the first objective of this research is determined (2.10).

## 2.2. The study of manuscript-waste fragments today

In recent years the study of manuscript-waste fragments – both those still *in situ* in bindings and those removed - has become more visible and accessible through digitisation projects[104] and has acquired a new term: 'fragmentology'.[105] 2015 saw the launch of *Fragmentarium*, 'a laboratory for digital fragmentology'[106] which uses the internet as a 'central workplace to inventory, catalog and scientifically research medieval fragments' to include assembling medieval manuscript fragments.[107] Currently twelve projects are in progress and reports are presented in a new online journal. Digitisation projects also contribute to the development of national inventories of fragments, as is planned for Norway,[108] and create virtual links between dispersed collections, as for example the bindings for the archives of medieval Sweden, made from manuscript waste fragments and now split between Sweden, where the fragments are still *in situ* and not digitised[109] and Finland, where the fragments have been removed and digitised.[110]

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104 For example, the 3350 Danish fragments in the Fragmenta Latina Hauniensia (n.d.); the 2700 Latin fragments and 470 in the German language in Bayerische StaatsBibliothek (n.d.); the 20 items collected by Philip Bliss Stanford University Libraries, (n.d.). A list of these digitisation projects is provided by Otto Veraart at https://glossae.hypotheses.org/projekte-mit-fragmenten.

105 https://en.wikipedia.org/wiki/Fragmentology_(manuscripts). This term also includes manuscripts which were broken up to allow for the sale of individual leaves or miniatures.

106 *E-codices Newsletter*, 2015b.

107 Ibid.

108 This inventory will include the fragments held in National Archives in Oslo, the main repository for the fragment collection, in addition to around twenty-five other public collections, such as the National Library, the university libraries, the state archives, the town archives and museums (*Inventory of Medieval Manuscripts in Norway*, n.d.) The site is currently maintained by the University of Bergen through the project, *From manuscript fragments to book history* (University of Bergen, n.d.).

109 The Medelita Pergament Omslag Project (Brunius, 2000).

110 The *Fragmenta Membranea* database contains 9319 digitized fragments from approximately 1500 different medieval manuscripts (*Fragmenta Membranea*, n.d).

The emphasis in these projects is on the fragment as evidence of a lost manuscript, and in some cases the aim has been to reassemble these lost manuscripts.[111] E-codices, working virtually, have assembled an incomplete ninth-century manuscript, the *Biblia Theodulfi*, from fragments removed from bindings held in the Solothurn's State Archives and central library.[112] While the source bindings for these fragments are known, no descriptions are included.[113]

Modern printed catalogues of manuscript collections now also include descriptions of these fragments, both those removed or still *in situ.*[114] They are usually catalogued in the manner of a leaf of a manuscript – and include information on its size, ruling, script, and decoration[115] - though it is also often noted if the fragment had been placed in a binding. A new Fragmentarium project, on the removed fragments in University Library Leipzig also gives the measurements for thse fragments as they are now rather than relating them solely to their source manuscript.[116]

## 2.3. Previous attempts to re-unite fragments with their source bindings

While the emphasis on the study of these fragments is as evidence of lost manuscripts, when there has been a clear way of linking removed manuscript-waste fragments to their source bindings this has been attempted. This has been possible by using

i. written evidence, or
ii. physical evidence.

### 2.3.1. Written evidence – shelfmarks, titles

As endleaves and covers were often the places where shelfmarks or book titles were written, fragments which were used to make either may have this kind of evidence written on them. In addition, fragments, irrespective of where they had been used in a binding, may also have had information identifying the source binding added by a librarian or binder after their removal from the binding (1.3.2, note 51). Old shelfmarks, however, may no longer be relevant - R. Proctor and G. Milne's careful annotations of the fragments with the shelfmarks of the volumes they removed them

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111 This echoes the work being done on reassembling manuscripts from dispersed leaves which had been broken up for sale, for example, Davis, 2015.
112 e-codices, 2015a. https://www.e-codices.unifr.ch/en/list/one/sl/0003
113 The source bindings are listed in Holt, 2012, p.22.
114 Merton College Oxford (Thomson, 2009); Corpus Christi College Oxford (Thomson, 2011); Trinity College Oxford fragments *in situ* (Gameson, 2018).
115 Dobcheva and Mackert acknowledge the difficulty there can be in understanding the measurements for fragments in some catalogues, and whether these refer to the fragment or the source manuscript (Dobcheva and Mackert, 2018, p.87).
116 Dobcheva and Mackert, 2018, p.91.

from in Corpus Christi College Oxford in the late nineteenth century[117] is of little use today as the reordering of the library led to a change in those shelfmarks.[118] While an old shelfmark may be written elsewhere on the source binding, it would, if it had not been included in a cataloguing description, only be visible on examining the book. The possibility of errors occurring in the recording of shelfmarks or titles should also not be overlooked – particularly if they were added after the fragment had been removed from the source binding (see 10.2.9). Frequently, however, there is no such evidence.

**2.3.2. Physical evidence - offset ink, stains**

Ink from a fragment can offset onto the inner surface of the boards, or on the adjacent textblock and comparing a fragment against the offset in a binding in order to verify an association between the fragment and the binding is not uncommon. It has, for example, been used at Eberhardsklausen[119] and the collection of the Abbey of Mondsee, now held at the Austrian National Library.[120] It is, after all, the type of evidence that would be immediately apparent and of interest to manuscript specialists. In cases where the ink has lifted completely off the parchment and transferred to the boards of the source binding, the re-association of the fragment and binding, may complete some of the text still on the fragment. As evidence, this kind of physical evidence is more reliable than shelfmarks as the latter can be subject to transcription errors while the presence of offsetting clearly indicates that the fragment had once been in that binding. But it is not always present. The transference of ink from the fragment to the binding is dependent on the materials involved, the environmental conditions and, if the fragment was pasted down to the inner surface of the board, the way it was removed from the binding. Even if this evidence is present, it may not be immediately visible. The inner surfaces of the board may not be visible if they have been covered by new endleaves - though offset ink can sometimes be seen through the leaves - and even if this evidence had once been present, it may also have been cleaned off the boards (7.2.3.1.).

However, before a binding can be examined for the presence of offsetting, it has to be *selected* in some way. In the Eberhardsklausen and Mondsee examples mentioned above, the binding collections were sufficiently small to allow *all* the bindings to be examined for evidence of offset ink.

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117 McGatch, 1990, p.437. Thomson, 2011, p.xxv.

118 I am grateful to Ms. J Snelling, Librarian, Corpus Christi College, Oxford for this information; Snelling, 2014, 12 June.

119 Hollender, 2010, p.76-77.

120 Kaska, 2018, 16 July. This is a *Fragmentarium* project (Case Study 8) based at the Austrian National Library Vienna, collaborating with the State Library of Upper Austria, the State Archive of Upper Austria and the Institute of Austrian Historical Research.

This will not always be feasible. While it might be possible to use image-matching software to speed up the process of linking offset with fragments, this does not solve the problem of how bindings are selected for examination and any damage to the fragments - which is likely if the ink had become detached from the fragment - may complicate this process.

Therefore, while offsetting can *verify* whether a binding is the source binding, it will not *select* that binding from all the other bindings in the library. The same is true of stains. When it came to *verifying* the association between a late thirteenth-century fragment of Aquinas *De Scientia Dei* and its source binding, De Hamel used 'exactly matching stains'[121] to prove the connection. That volume, however, had been identified firstly by an inscription on the fragment ('From Merton College Court rolls for 1542-1553'). The stains *verified* the connection but they did not *select* the binding - the archival evidence did that.

**2.3.3. Applicability of previous attempts to identify the source binding**

As seen, then, relying on the presence of written evidence or offsetting to identify the source binding will have a limited applicability as

i. such evidence will not be found on all fragments or bindings.
ii. even if present, written evidence may not be current or accurate.
iii. offsetting in a binding will only be found when a binding has been examined – it does not *select* bindings for examination.
iv. it will not be practicable in most cases to examine all the bindings in a library for offsetting.

However, what can be seen from these two methods of identifying the source binding for a removed manuscript-waste fragment is that it is a two-step process which involves

i. *selection:* the source binding(s) must be selected from all the other bindings in the library.
ii. *verification*: the association between the fragment and this binding is then examined and, if correct, it is verified as being the source binding.

Offsetting and stains are useful for *verifying* the source binding (though they may not always be present), but first the source binding – or a number of bindings which could possibly be the source binding, that is, *initial matching candiates*[122] - has to be *selected*. The terms used for these *initial matching candidates* in this thesis will be *candidate matches*[123] or *candidate source bindings*.

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[121] De Hamel, 1997, p.269.
[122] The term 'matching candidates' is used by Kleber and Sablatnig, 2009, p.1064.
[123] Funkhouser et al, 2011, 7:1.

**What is currently lacking is a method for selecting candidate source bindings which**

i. **does not depend on the presence of shelfmarks or similar written evidence (archival evidence) on the fragment.**
ii. **does not involve examining all the bindings in a given library for offsetting or stains.**

## 2.4. Further possible ways to identify the source binding

One possible method of identifying source bindings might be based on the history of the use of fragments in bindings. For example, it is known that

i. fragments were, in some cases, removed from bindings by binders while they were carrying out repairs (1.3.2.).
ii. fragments were frequently used in bindings of printed books from the mid-fifteenth century to the early seventeenth century (1.3.1.) – though they were also used before this.

It might then be logical to select bindings which are either

i. repaired (2.4.1.), or
ii. date from the mid-fifteenth century to the early seventeenth century (2.4.2.).

### 2.4.1 Selecting repaired volumes

When selecting repaired books, if bindings are not identified as such in a catalogue description, it would be necessary to select them from the bookshelves in the library.

When the fragment in question is a cover, the textblock from which this fragment was removed *must* have a new cover and so a new binding is being sought. With respect to the other fragment types, their source bindings *may* have a new cover but it cannot be assumed that this will be the case. Therefore, while exclusively selecting and examining books with new covers (that is, from the late nineteenth century onwards, as this was the period of concentrated interest in removing fragments from bindings) might be one option, it is only really appropriate for those fragments which were used as covers. Source bindings for endleaves, guards and spine linings may have been *repaired* rather than re-covered or re-bound or may not have been repaired at all.

One of the most common types of book repair is the *reback*. Here the section of the covering material that was over the spine is replaced with new material (1.2).[124] During the course of a reback, it would be possible to remove endleaves, guards or spine linings. The new covering material on the spine will have been toned to blend with the original on the boards and in some cases the old spine may have been laid down on top of the new. If carefully executed, the repair may not be immediately visible.

Another type of repair which is even less easily visible involves no new material being applied to the cover. Instead the covering material is removed from the boards, the boards are replaced and the covering material is then pasted down onto these new boards. This method seems to have been used particularly when wooden boards had been damaged by insects.[125] This repair leaves no signs of interference on the cover – except when the new board is visible through old wormholes in the covering material - but it may be seen on examining the inner surface of the board (6.3.7.2).

It can, then, be difficult to identify repaired books solely by what is visible of that book on the shelves of a library, that is, the spine of the binding. It should also be remembered that the quality of tanned skin has varied over time and books that were repaired even in the middle of the last century might, as a result of light damage, look older than they are. Bindings may also have been repaired more than once.[126] Even if it were possible to identify all the repaired books in a library, that might be a significant proportion of the overall collection and would not necessarily reduce to a manageable number the number of bindings to be examined. It should also be remembered that fragments could be removed without the interference of a binder. Endleaves and guards, placed at the beginning and end of the textblock, could be released by simply cutting the threads (Fig. 11) or tearing or cutting them out of the bookblock (Fig. 12, 13). Fragments may also have become detached from a damaged binding while spine linings may come lose from the spine if the adhesive holding them in place fails (1.3.2). Therefore, a selection process which is based on the assumption that all fragments were removed while the source bindings were being repaired and so the source bindings will have signs of repair, has its limitations as

i. repaired books may be difficult to identify and so not all relevant bindings may be examined.
ii. a removed fragment is not necessarily from a repaired binding (though a cover fragment is from a re-covered textblock).

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124 Middleton, 2004, 4th ed., p.135-148.

125 Ker refers to the librarian at Magdalene College Oxford arranging for books to be repaired in this way as recorded in the library's annual report of November 1881; Ker. 2nd ed., 2004, p.xv.

126 The Fellows' Library, Clare College Cambridge: A.2.3. (Basel, 1552) was recovered with new boards, and then later rebacked.

A selection process that is restricted to repaired bindings, then, may not include the source binding.

### 2.4.2. Selecting volumes according to date

A second way to identify bindings for examination might be to select bindings that date from the mid-fifteenth century to the early seventeenth century, the period in which manuscript-waste fragments were frequently used in bookbindings.

Excluding later bindings could be easily done – for example cloth-covered bindings which date from the nineteenth century[127] and canvas, which was used in Britain from the 1760s.[128] Other bindings, for example parchment-covered laced-case bindings, might be more difficult to date. The spines of bindings may also not be immediately identifiable as being from an early period as labels, titling or decoration can be added to a spine at any time. To select, then, fifteenth and sixteenth-century bindings based on what is visible on the shelves might be a difficult task and again there is a question, dependent on the type of library, whether this would significantly reduce the number to bindings to be examined.

### 2.4.3. The limitations of these methods

As seen, selecting volumes based on either of the two criteria cited above would not necessarily

i. enable a comprehensive selection of all possible bindings.
ii. reduce to a manageable number the number of bindings to be examined.

However, both selection processes have in their favour the fact that a binding is selected based on what can be seen on the spine of the book. This means that source bindings could be selected without removing books from the shelves.

[127] http://w3id.org/lob/concept/1223
[128] http://w3id.org/lob/concept/4238

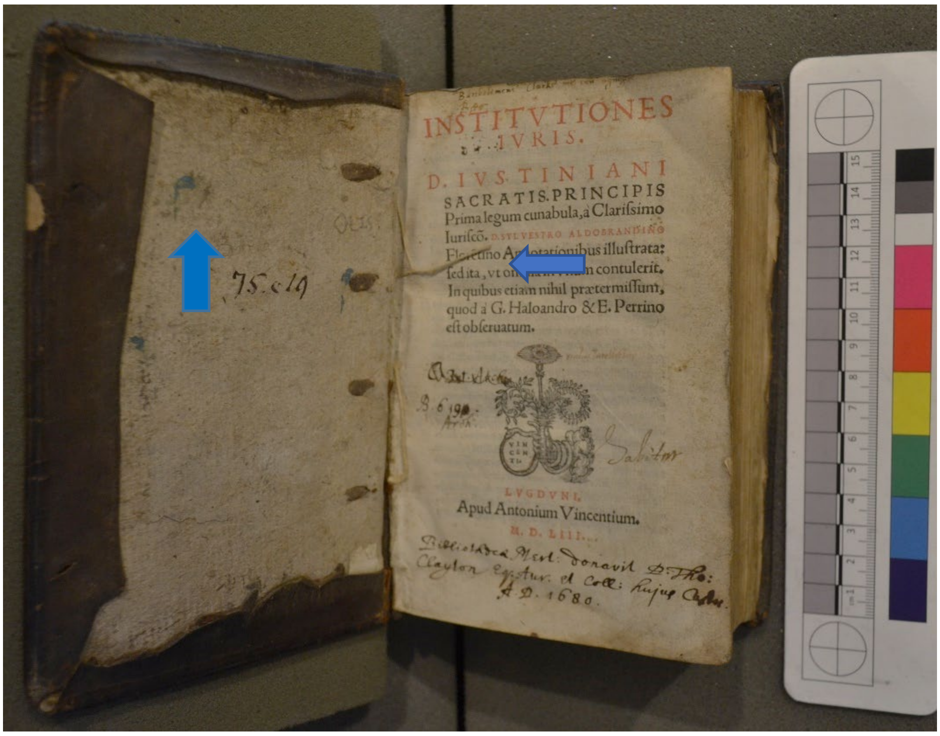
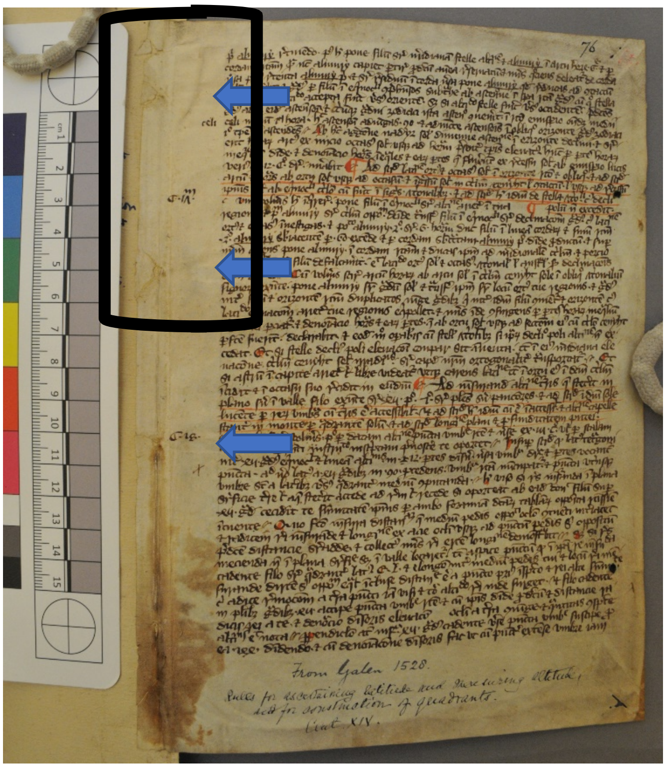



**Fig. 11. A binding from which a fragment has been removed.**
Merton College Library: 75.c.19 (Lyon, 1553).
The sewing thread has been cut. Offset from blue ink can be seen on the boards.



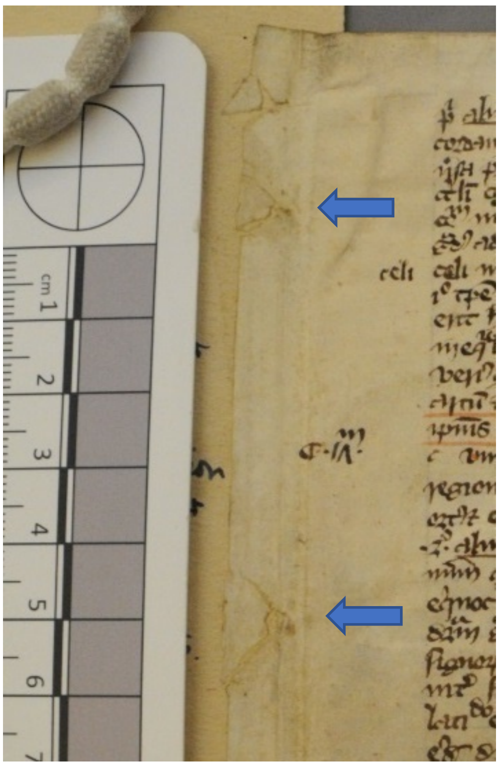


**Fig. 12. A fragment torn out of a binding.**
**Fig. 13. A detail of this fragment torn out of a binding.**
The fragment, Lanhydrock 76, was pulled out of its binding as can be seen by the tearing at the sewing holes.

## 2.5. Evidence of the source binding on fragments

Both methods discussed above base the selection of candidate source bindings on the known history of the fragments – when they were used in bindings and how they were removed. However, manuscript-waste fragments, having been part of a binding as endleaves or spine linings *etc*., have more concrete evidence of the source bindings than this.

When Antony Cains was conserving the Ellesmere Chaucer, the Huntingdon Library's early fifteenth-century illuminated manuscript of The Canterbury Tales which had been rebound *c*.1911, he noticed that the endleaves, which had faced the inner surface of the book's boards, retained evidence of an early binding (Fig. 14).[129] The boards of that early binding had left an impression on the endleaf - an image which, in Cains' words, amounted to 'a negative'[130] of the inner surface of the boards. This evidence, despite the fact that the endleaf had been cropped, cleaned and flattened, was still sufficiently detailed to indicate the materials and techniques used to make the earlier binding, for example

i. the number and distribution of sewing supports can be seen from the outline of the channel[131]-and-peg[132] locations where the sewing supports had been laced into the boards.
ii. the position of fore-edge clasps is indicated by the corrosion stains found near the fore-edge which were from the metal clasps. [133]
iii. the board material is suggested by the presence of insect damage which could indicated that the wood was beech, though Hadgraft felt it could also be oak.[134]
iv. the covering material is seen from a remnant of alum-tawed skin.[135]
v. the shape of the covering material's turn-ins including the corners were evident.[136]
vi. the presence of a chemise could be seen from the profile of the envelope pocket on the fragment.[137]

129 Cains, 1995, p.141.
130 Ibid., p.144.
131 'Recesses cut into the surface of a board to accommodate sewing-support or endband slips', http://w3id.org/lob/concept/1251
132 'Tapering pieces of wood, more or less round in cross section, used to secure sewing-support slips in holes drilled in wooden boards', http://w3id.org/lob/concept/3711
133 Ibid., p.146.
134 Ibid., p.146.
135 Ibid., p.145.
136 Ibid., p.145.
137 Ibid., p.145.

There was no evidence for the lacing in of the endbands[138] but Cains reasoned that the lacing-in could have been overlaid by the leather cover and would therefore not have marked the pastedown or that the evidence could have been removed when the endleaves where trimmed.[139]

In her work, Sheppard also noted that endleaves in rebound manuscripts often retained binding features from an earlier binding and commented that

> ‘there is a mirror image, sometimes clear sometimes obscure of such elements as the channels through which the ends of the primary sewing supports were laced, and sometimes the lacing channels of the endbands at head and tail (often including the wedges used to fix the sewing support in place) can be clearly reflected. The turn-ins of the primary covering, impressions of spine linings (when these were pasted onto the inner surface of the board), the remains of filler sometimes used to level the lacing channels under the pastedown, as well as holes left by nails that once fixed fastenings, bosses, chain staples, or other metal fittings on the covers are often also identifiable’.[140]

Sheppard also recognised that endleaves were not the only components of a binding that could have evidence of that binding, and pointed also to spine linings which

> ‘may, depending on the structure of the lining, reveal impressions of sewing supports across the spine, making it possible to see whether single or double sewing supports were used, what type of sewing was employed, how many quires the book comprised, and perhaps also whether the sewing supports were laced into the thickness of the board (‘romanesque’ mode of board attachment, to use J.A. Szirmai’s term) or over its outer edge (‘gothic’ mode)’.[141]

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138 ‘Components which are found at the head and tail of the spine of a bookblock, which are either sewn with thread or thongs to the head and/or tail edges of the spine of a bookblock or attached by adhesive only’; http://w3id.org/lob/concept/2370.

139 Cains, 1995, p.143.

140 Sheppard, 2000, p.168.

141 Ibid.

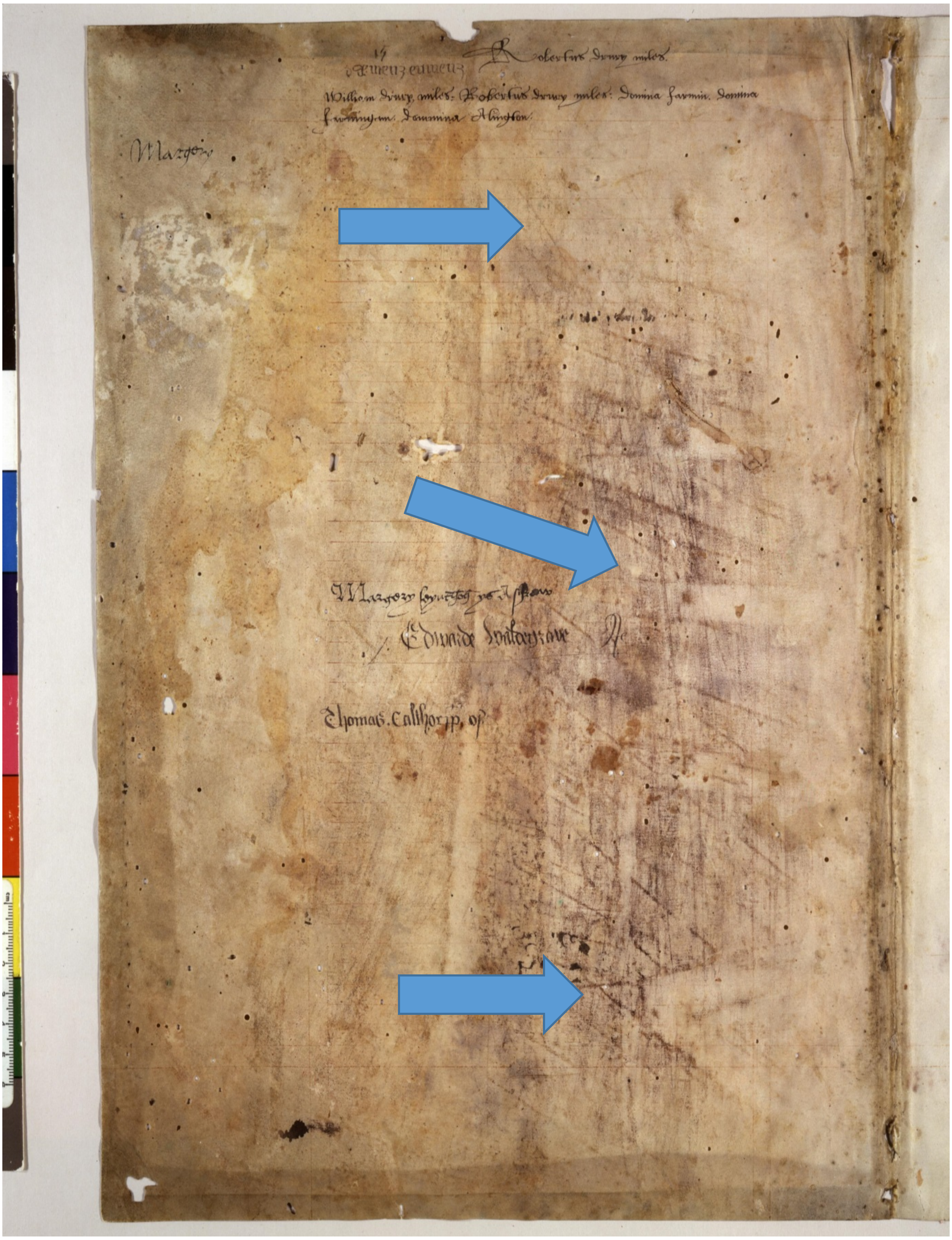

**Fig. 14. An *in situ* endleaf with evidence of an earlier binding**
Ellesmere Chaucer: EL 26 C9. Folio f.1.v, the verso of the left endleaf.
The lacing channels are clearly visible.[142]

[142] Digital Scriptorium Database, 2002. http://dpg.lib.berkeley.edu/webdb/dsheh/heh_brf?Description=&CallNumber=EL+26+C+9

In addition to Cains and Sheppard identifying evidence of earlier bindings on *in situ* endleaves, Gullick noted that the principal evidence for the earliest binding (*c*. eleventh century) of the Great Domesday book - in addition to the boards - was 'the perforations in the spine-folds of the sheets', that is the sewing stations.[143] He demonstrated that it was possible to identify the position of the sewing supports by recording the position of sewing holes in the bookblock.[144] Drawing on this, Craft examined bookblocks dating from the thirteenth to fifteenth centuries which were lacking their original cover.[145] By noting the presence of stains, marks and holes in the bookblock - all evidence of the removed cover - she arrived at 'a tentative interpretation'[146] of that cover. This she then verified by examining the actual cover – which had been identified by shelfmarks. She noted that the strongest evidence of the binding was found on the endleaves but that the bookblock had information on the endband structure - the tiedown[147] stains were visible in the bookblock - and the sewing thread, the impression of which was visible in the manuscript.[148]

## 2.6. The value of this evidence

Cains and Sheppard showed that the image on the endleaves was not simply a 'negative' of the board to which it was adjacent but could also be interpreted to describe the exterior of the binding, from the covering and board material to the presence of clasps and the position of the sewing supports. In addition, the pattern of the turn-ins, especially the corners, could be very specific.[149] Gullick demonstrated how sewing holes in the bookblock's leaves (which could also be endleaves or guards) can be used to indicate the spacing of sewing supports and Craft showed how this evidence is visible on both a cover and in the textblock. In addition. Sheppard suggested that spine linings could also have evidence of the sewing.

Sheppard held that while this evidence may appear to be of limited value,

> 'a lost binding can be notionally reconstructed to a considerable extent from surviving marks.'[150]

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143 Gullick, 1987, p.106.
144 Gullick, 1987, p.107-8, 112.
145 Craft, 1999, p.5.
146 Craft, 1999, p.3. The eleven manuscripts and their early covers are held at The National Archives UK.
147 'The lengths of thread taken down into the gatherings at head or tail of the spine which provide the structure of the endband, and, where there is a core, secure the core to the bookblock', http://w3id.org/lob/concept/1668
148 Craft, 1999, p. 33
149 Sheppard, 2000, p.169.
150 Ibid.

Her remarks on the value of the evidence to 'notionally reconstruct' a lost binding would still hold true if

i. those same binding components (endleaves, spine linings and covers) were made from manuscript-waste fragments.
ii. those manuscript-waste fragments had been removed from the binding.

This would then suggest that the evidence of the source binding can be seen on removed manuscript waste fragments. Sheppard did not go further to question whether the evidence she identified could, in fact, identify the *actual* source binding as there was no reason to believe, in the examples that she was studying, that this binding still survived.

## 2.7. The aim of this thesis

As has been seen, there is a value to studying a manuscript-waste fragment and its binding in association with each other (1.4) but when a fragment is dissociated from its source binding, the study of both is compromised. Identifying the source binding for a removed fragment would allow that fragment to be re-associated with a dateable context and the source binding to be re-associated with removed components - something which would increase the research potential of both.

While it has been possible to identify source bindings using archival evidence on the fragments (2.3.1.) or offsetting or stains (2.3.2.), these methods have a limited applicability. There is currently no systematic way of *selecting* candidate matches for removed manuscript-waste fragments. Proposed selection methods based on identifying volumes of a specific date range (2.4.2.) or condition *i.e.* repaired (2.4.1) would not be sufficiently comprehensive or likely to reduce the candidate matches to be examined to a manageable number (2.4.3). However, it has been shown that evidence for a binding can be found on the leaves of a textblock (2.5) – particularly when those leaves are endleaves. This would also hold true if those endleaves had been made from manuscript waste fragments. The question then is whether, when it is known which library the fragment had been removed from, this evidence is sufficient to identify the source binding in that library.

> **The aim of this thesis is to develop a way to identify the source binding for a removed manuscript-waste fragment using the material evidence on the fragment**

It is not the intention to physically return the fragment to the binding but rather to reinstate the connection through documentation.

## 2.8. Proposal for a new method

It has been shown that the binding evidence on a manuscript-waste fragment can be specific and varied and, when all of it is combined, can create an accurate image of what the binding looked like when the fragment was within it – though the binding may, of course, have been altered by repairs since then.

The variety of the binding evidence which can be seen on a fragment is substantial. In the field of archaeology, where the re-assembling of fragments to reconstruct frescoes or ceramics is a common problem, it has been shown that the greater the number of properties ('feature descriptors'[151]) being considered when selecting a candidate match, the more effective the search to find that match.[152] The 'feature descriptors' in these scenarios can be related to both shape and surface colour or image. In the case of binding evidence, the 'feature descriptors' might include the size of the binding, its covering material, the number of sewing supports *etc*.

However, this evidence would not necessarily be sufficient to identify the *actual* source binding unless bookbindings can be differentiated from each other on the basis of this evidence – for example, if the evidence were to match a large number of bindings, this would not reduce the number of bindings that have to be examined. It would still be like looking for a needle in a haystack. However, bindings do differ enormously, both in terms of materials and structure. These variations have been attributed to two main factors,

> 'one being the process of development over time, particularly as the trade adjusted to the increasing flow of books from the printing presses and attempted to increase output and lower costs; the other is that different countries and centres of book production arrived at different solutions according to their varied traditions and locally available materials. In addition, of course, individual workshops or craftsmen may also have had their own special techniques'.[153]

It should be remembered that bindings of this period are handmade and so each one, with its combination of materials, features and techniques, is unique and so distinguishable from other bindings.

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151 Toler-Franklin et al, 2010, p.185:1.

152 'Classifiers based on many match properties can be significantly more effective at ranking proposed matches than scores based on any single property alone', Toler Franklin et al, 2011, p.2.

153 Pickwoad, 1995, p.209-10.

The proposed method for identifying the source binding for a manuscript-waste fragment would be based on the connection between the following observations

i. that the fragment has evidence of features of the source binding.
ii. that the bindings in a library are distinguishable from each other by their features.
iii. that when all the binding evidence on the manuscript-waste fragment has been combined it will result in a very specific image of a binding and will be comparable only to a limited number of bindings in the library.

If, when all the evidence has been compared, it is matched only by one binding in the library, then this would be a viable method

**The proposed method recognises the key to the identification of the source binding as being the fragment itself. It is based on the observation that evidence of the source binding can be seen on the manuscript-waste fragment removed from that binding. The image of the inner surface of a book's board which transfers to an endleaf is not simply an 'image' made up of random stains but rather an image which can be interpreted to reveal information on the structure and materials of the source binding – which can be visible on the exterior of the binding.**

In first stage of this process, the manuscript-waste fragment is classified as a binding component (Chapter 4) and the binding evidence visible on this fragment is recorded creating the 'notionally reconstructed' binding referred to by Sheppard.[154] The final stage is the *verification stage*. Here the source binding is verified, in the case of endleaves, by matching the 'mirror image'[155] of the inner surface of the board which can be seen on the endleaf with the actual inner surface of the board (2.5.). The examination of offsetting from the fragment onto the boards or the adjacent textblock, if present, is undertakenher. What has to be determined is how to bridge the gap between these two stages. A method of *selecting* candidate matches, which will reduce the number of bindings to be examined, needs to be identified.

This *selection stage* is not something that has been attempted before in a systematic manner – except in cases where there the shelfmark of the source binding is present on the fragment and the binding can be selected using this (2.3.1, 2.3.3). While selecting candidate matches on the basis of whether the binding had been repaired or was of the correct date was not a practical method (2.4.1, 2.4.2), it

154 Sheppard, 2000, p.169.
155 Ibid., p.168.

did allow bindings to be selected on the basis of what was visible on the spine. If it is possible to relate the binding evidence on the fragments to what can be seen on the spines of books then bindings could be selected by comparing the evidence on the fragments against the bindings on the shelves. While bindings are varied, the question is whether there would be sufficient variety in the spine features alone that the binding evidence would match only a small number of the bindings in the library.

Sheppard and Cains showed that the binding evidence visible on a manuscript-waste fragment is sufficiently detailed and varied to create an idea of what the source binding looked like (2.5). However, their examples related to twelfth century (Sheppard) and early fifteenth century bindings (Cains), the materials and features of which, for example wooden boards and lacing-in holes, would be expected to leave strong impressions in adjacent leaves. For the purposes of this thesis, which is likely to be more concerned with fifteenth to early seventeenth-century bindings (see 2.4.2), it will be necessary to ascertain whether these later bindings will leave equally detailed evidence on manuscript waste fragments.

It will also be necessary to see if this method will work with fragments other than endleaves. While fragments were used to make a wide range of binding components from covers to tie fastenings (1.3.1), it is the larger fragments that are found in fragment collections today and it will be on these fragments that this research is based (1.3.2). Larger fragments were often used to make key structural elements of the binding – such as endleaves, guards, covers, *etc*. This again is beneficial for the method as having been closely integrated into the structure of the binding, in contrast with small pieces of fragments that had been used to make, for example, reinforcements for clasps,[156] they will have evidence related to the sewing structure. However, not all large fragments would necessarily have evidence of the source binding - a fragment, for example, used as covering material on the sides of a quarter-binding (a German phenomenon in the sixteenth century[157]) will have no evidence of that binding's sewing structure.[158] For the purposes of this research, the fragment must have been part of the structure of the binding rather than simply having been applied to the binding.

156 Prinsen, 2012, p.118.
157 Pickwoad, personal communication, 27/07/18.
158 No examples of fragments of this type were found in the collections consulted.

This tendency for larger fragments to predominate in fragment collections is also beneficial for this method as larger fragments are likely to have more evidence of the binding than smaller fragments. It may, however, impact on

i. the date of the bindings that are likely to be encountered in the course of this work.
ii. the origin of those bindings.

Gumbert found that larger fragments were more likely to be used in fifteenth and sixteenth-century bindings.[159] From a sample of 120 fragments in medieval manuscripts, incunables or 'post incunables' (1501-1540), Gumbert found 37% (45 fragments) were 'major' fragments.[160] In a sample of books from 1541-1600, the incidence of major fragments decreases to 12% (145 fragments), and in a sample of seventeenth-century books only one of the 272 fragments is classed as 'major'. If Gumbert's findings can be more generally applied, then the fact that it is the larger fragments which have been preserved after they were removed from bindings will mean that their source bindings are likely to be earlier bindings.

The prevalence of these larger fragments in collections is also likely to mean that the source bindings will be from those binding centres where the use of larger fragments was more common. This, in a UK context, would favour Oxford as binders there continued to use manuscript waste fragments to make endleaves for a longer period than in Cambridge, where its use ceases around 1570 (1.4.1).

### 2.9. The first objective

The method being proposed here intends to use the features of the spine of the binding to select bindings for examination.

> **The first objective in the development of this method is to trial the theory that the binding evidence on the fragment can indicate the features visible on the spine.**

This will be done by using a control sample similar to the method employed by Craft (2.5). The binding evidence on a removed manuscript-waste fragment will be compared to its source binding (which has been identified by shelfmark written on the fragment) to see if the evidence on the fragment is consistent with the features of the binding.

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159 Gumbert, 2011, p.13.
160 Gumbert does not provide measurements to define 'major'.

# Chapter 3

## Setting up the Research Study

## 3.1. Overview

Following an examination of the control examples (3.2), the design of the research study is discussed (3.3).

## 3.2. Examining manuscript-waste fragments and bindings in Westminster Abbey Library

These fragments had been listed in Ker.[161] (See Appendix 2).

### 3.2.1. MS36, 3a & b and source binding M.6.80[162]

The most immediately visible evidence on the pair of endleaves, MS36 3 (fragments of a fifteenth century manuscript and listed here as 3a and 3b), was the stain from the turn-ins of the tanned-skin cover of the source binding (Fig. 15, 16). The fragments had been conserved and the fold through which the endleaf had been sewn in to the textblock had been opened out. However, when it had been within the binding, the stub of the endleaf had been folded back and lay on top of the full leaf. In this position, it acted as a barrier between the turn in and the endleaf resulting in the gap in the turn-in stain on the outer face of the endleaf. There was no evidence of the lacing of the sewing supports in to the boards – the supports had left no stain and there were no impressions from lacing-in channels comparable to those noted by Cains (2.5.). There was no evidence of clasp fastenings but there was a bell-shaped impression at the fore-edge side which was thought to be from a fore-edge tie. While some sewing holes were visible on MS36 3a along the spine fold, the removal of the fold crease had made others less visible. The fold of its pair, MS36 3b, had been less effectively flattened and more evidence for the sewing could be seen there. From the evidence on these two fragments the following features of the source binding were noted

i. height greater than 181mm (the height of the fragment).
ii. width greater than 118mm (this is width of the fragment from the fold to the fore-edge and does not include the width of the stub).
iii. sewn on four sewing supports and their distribution pattern along the spine
iv. the sewing supports were of a non-staining material.
v. the covering material was tanned skin.
vi. there were textile fore-edge ties.

This combination of this evidene gives a picture of a ‘notional binding’ which was then checked against the known source binding, M.6.80 ([Geneva] 1564), an Oxford binding (Fig.17).

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161 Ker, 2$^{nd}$ edn. 2004.
162 Ker no. 1835b; Ker, 2$^{nd}$ edn. 2004.

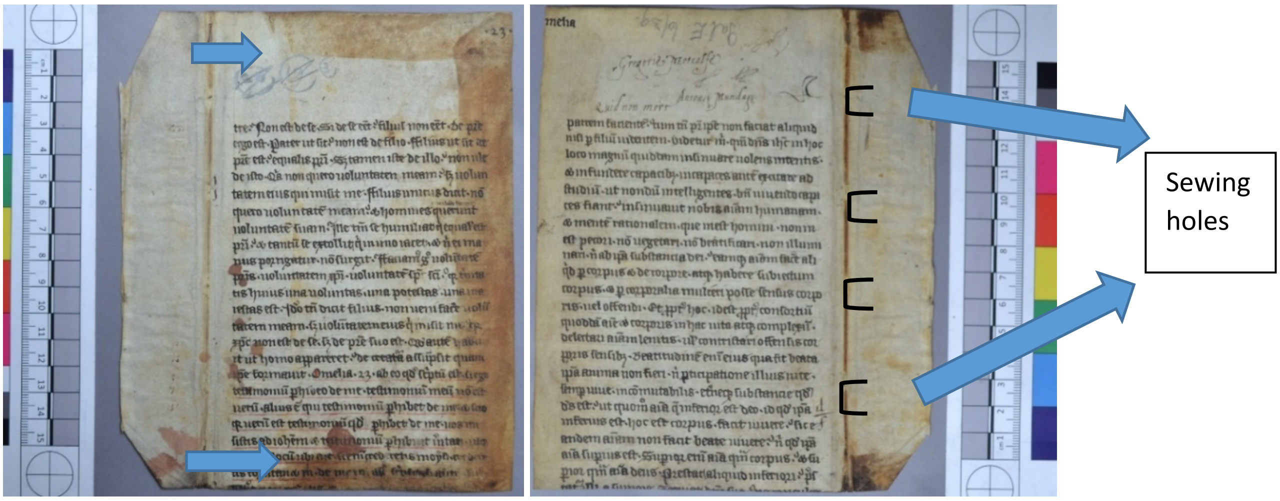


**Fig. 15. MS36, 3a: Left endleaf, adjacent to the left board.**
Left: Outer face of the fragment (which faced the left board). Right: Inner face of the fragment. The blue arrow marks where the stub sat, blocking off the turn-in stain from part of the leaf.

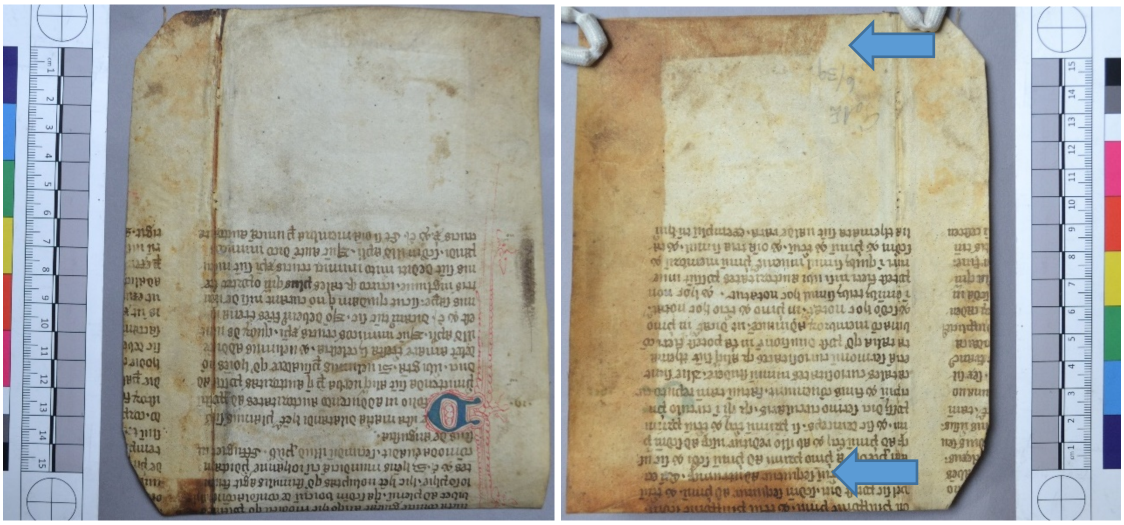

**Fig. 16. MS36, 3b.: Right endleaf, adjacent to the right board.**
Left: Inner face of the fragment.
Right: Outer face of the fragment, faced the right board.

**Fig. 17. Source binding for MS36, 3a & b: M.6.80 ([Geneva], 1564).**
From left to right: the right board, the spine, the left board.

The boards of this binding were covered in a tanned skin and alum-tawed sewing supports were visible on the spine where the covering material was damaged. On opening the book, it was clear by the shape of the cover's turn-in and their matching stain on the fragments, which endleaf faced which board: 3a faced the left board (Fig. 18) and 3b, the right (Fig. 20). Offset ink from the left endleaf onto the adjacent blank leaf (Fig. 17) provided additional evidence to verify the position of the endleaf. The bookblock was sewn on four alum-tawed supports which were laced into, and then hammered down onto, the paper boards. This explains the lack of evidence on the fragments related to the lacing-in of the supports - alum-tawed skin leaves no stain and paper boards do not require lacing-in channels to be cut into them. This volume, being of a later date than those examined by Cains and Sheppard, lacked the prominent features that they had identified on their endleaves. It did not have clasps or a chain that leave corrosion stains or wooden boards into which deep lacing-in channels had been cut. Its features were less dramatic –boards made from paper and with the stubs of textile ties at the fore-edge but there was also clear evidence of the turn-in shape including the corners.

The 'image' on these fragments - 'the negative', as Cains called it,[163] (2.5) - matches the appearance of the inner surface of the boards and ink from the fragment also offset onto the adjacent textblock. However, for the proposed method to work, the evidence must also indicate the appearance of the exterior of the binding, and in particular the spine (2.9) – and it does. The covering material, and the number of the sewing supports and their position (which relate to the sewing holes on the fragment) are all visible on the spine of the binding while the approximate height of the spine of the binding (as opposed to the height of the spine of the bookblock) can be deduced from the height of the fragment, that is, it is greater than the height of the fragment.

| **Fragment Height (mm)** | **Textblock Height (mm)** | **Board Height (mm)** | **Fragment Width (mm)** | **Textblock Width (mm)** | **Board Width (mm)** |
|---|---|---|---|---|---|
| 3a:181<br>3b: 178 | 186 | 192 | 3a: 116<br>3b: 118 | 117 | 128 |

**Table 1. Westminster MS36, 3a & b and source binding, M.6.80: measurements compared.**

In this case, the evidence on the fragments MS36 a, b is sufficiently detailed to indicate the features of the spine of the source binding, but there was also enough evidence visible *in* the book – both on the inner surface of the board and the adjacent leaf - to verify the match.

163 Cains, 1995, p.41.

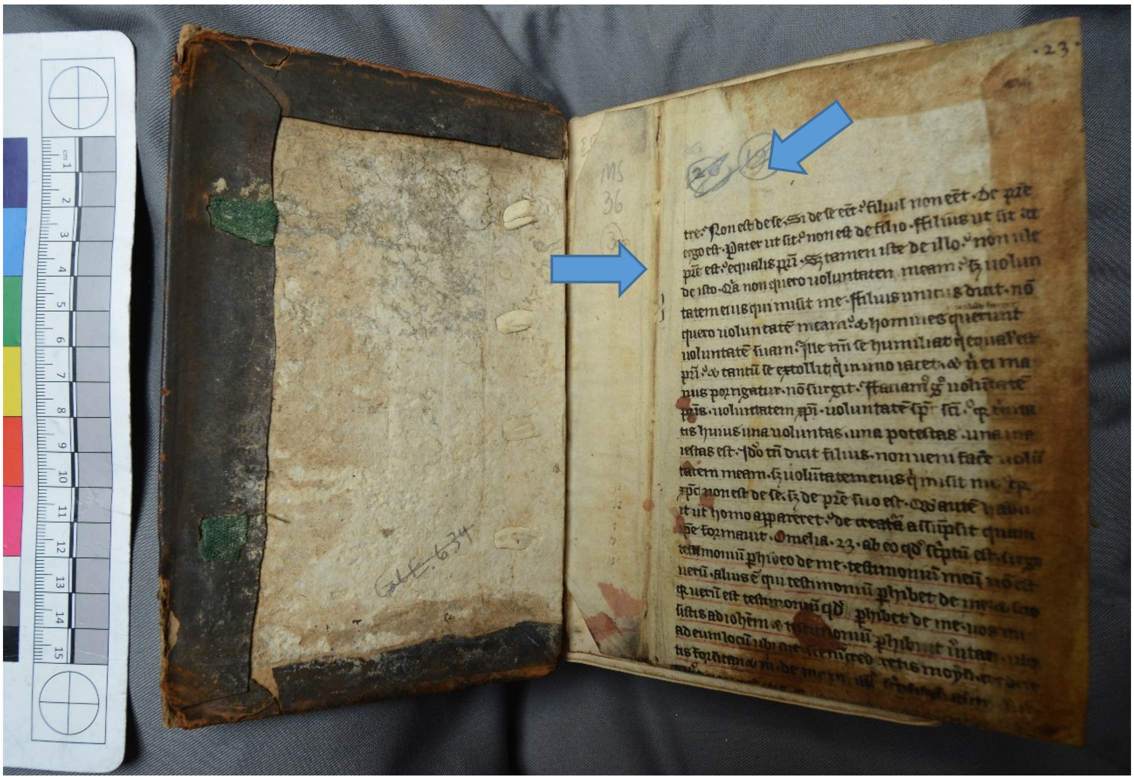

**Fig. 18. MS36, 3a. Left endleaf facing the inner surface of the left board.**
The sewing fold (blue arrow), now opened out, is visible on the fragment. The stub on the left side of the fold was folded over and sat on top of the leaf on the other side of the fold (red arrow marks the line). This is an outside hook endleaf (4.3.1.3.2).

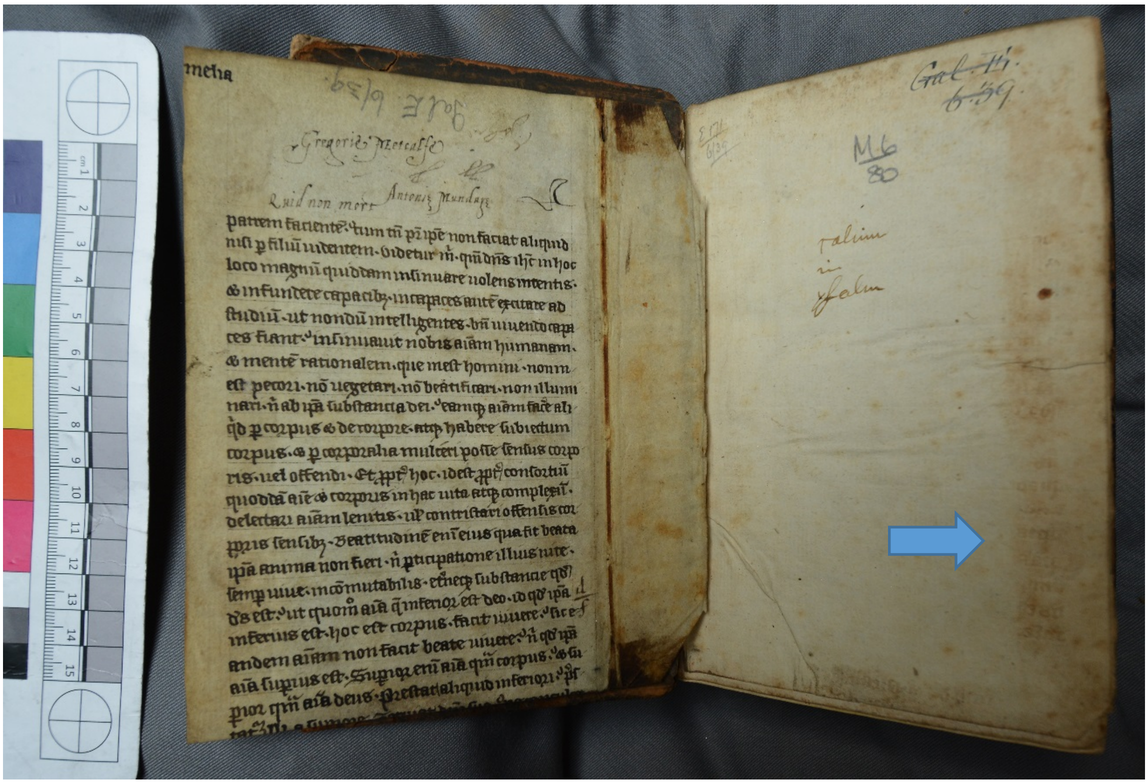

**Fig. 19. MS36, 3a. Left endleaf, facing the textblock.**
There is some offsetting on the paper endleaf. The part of the stub visible here was folded at the spine-fold as described above and would have faced the inner surface of the board.

**Fig. 20. MS36, 3b. Right endleaf, facing the inner surface of the right board.**
The spine-fold crease is visible and the stub was folded over this crease so that it faced the board.

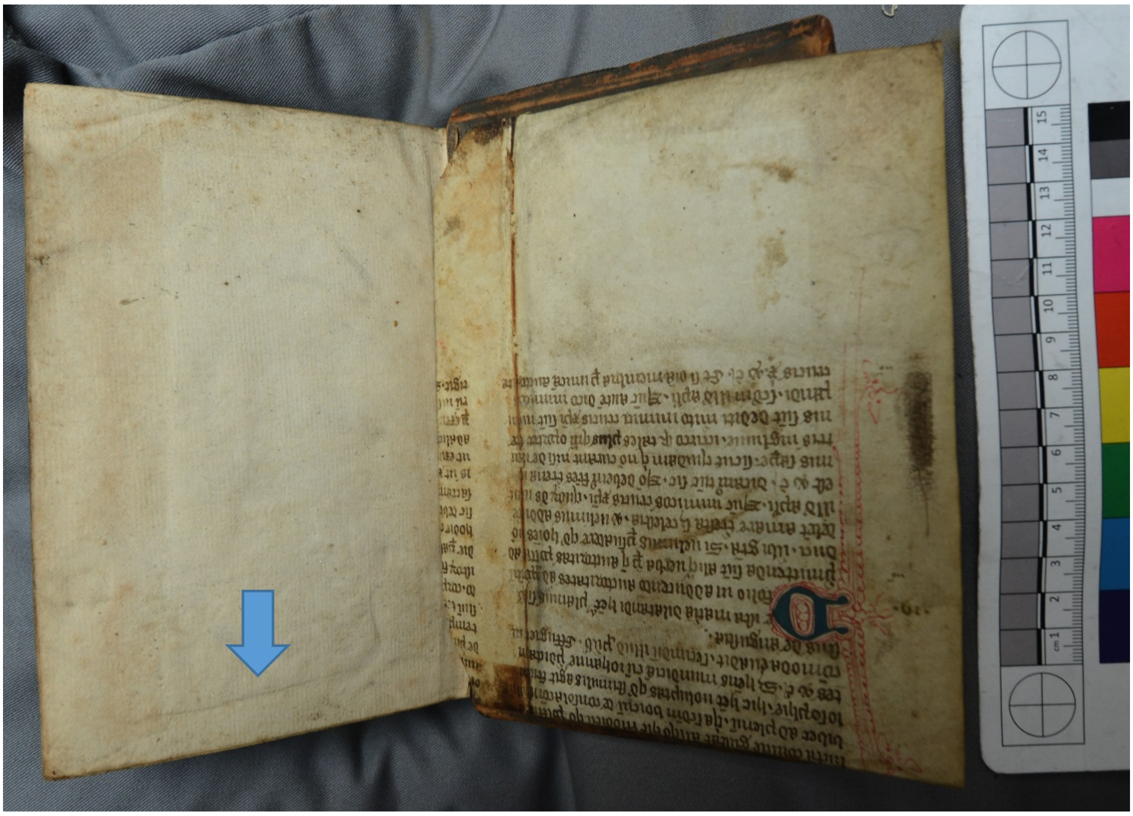

**Fig. 21. MS36, 3b. Right endleaf, facing the textblock**.
The stub was folded and would have faced the inner surface of the board. The impression from the turn-in is visible on the blank paper leaf.

**3.2.2. MS36, 1 & 2 and source binding CD.82**[164]

The second example was a pair of fragments from a twelfth-century manuscript (Fig. 22, 23), which had been used as endleaves in another Oxford binding, CD.82 (Florence, 1556), again, a later binding than those examined by Cains or Sheppard. The endleaves were different to the previous example - the sewing fold had been cut at head and tail which allowed the stub to be positioned *under* the turn-in (4.3.1.3.2.). This resulted in a different turn-in staining pattern on the fragment where the staining continued across the same side of the fragment (Fig. 22, 23) – on the leaf where it faced the inner surface of the board and on the stub where it sat under the turn-in. The evidence on the fragment shows the minimum height and width of the source binding, the number of sewing supports, their distribution and an indication of their material (that is, non-staining) and the covering material. There was no evidence for ties, clasp fastenings or chains. This information tallied with the source binding. The height of the spine of this binding was, as expected, greater than the height of the fragment (Table 2) and the position of the sewing supports on the spine was the same as that of the sewing holes on the fragment.

| Fragment Height (mm) | Textblock Height (mm) | Board Height (mm) | Fragment Width (mm) | Textblock Width (mm) | Board Width (mm) |
|---|---|---|---|---|---|
| 1: 220<br>2: 215 | 224 | 232 | 1: 147<br>2: 147 | 148 | 150 |

**Table 2. Westminster MS36, 1 & 2 and source binding CD.82: measurements compared.**

The source binding had been rebacked and new endleaves made from a heavy paper had been pasted down onto the inner surface of the boards (Fig. 24, 25). As a result, it was not possible to see where the sewing supports were laced in to the boards but it was possible to feel them under the pastedown. The cover's turn-ins had been trimmed and no longer had the shape they originally had - the shape which can be seen on the fragments. However, the trace of the original extent of the turn-in can be seen on the boards (Fig. 27) and in the adjacent leaf (Fig. 28) and it was on the basis of this evidence that the left and right endleaves were distinguished from each other.

A rebacked source binding may have little visible evidence on the interior of the binding to verify the match with the fragments. However, the position of the sewing supports on the spine had not been altered during this repair and still matches the evidence on the fragments. The evidence on the spine of this repaired source binding still relates to the fragment - the repair material used for the reback was also tanned skin, and the height of the spine of the binding is as expected - but the evidence on the inner surface of the boards is less immediately visible than in the first example.

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164 Ker no.825; Ker, 2nd edn. 2004, p.77.

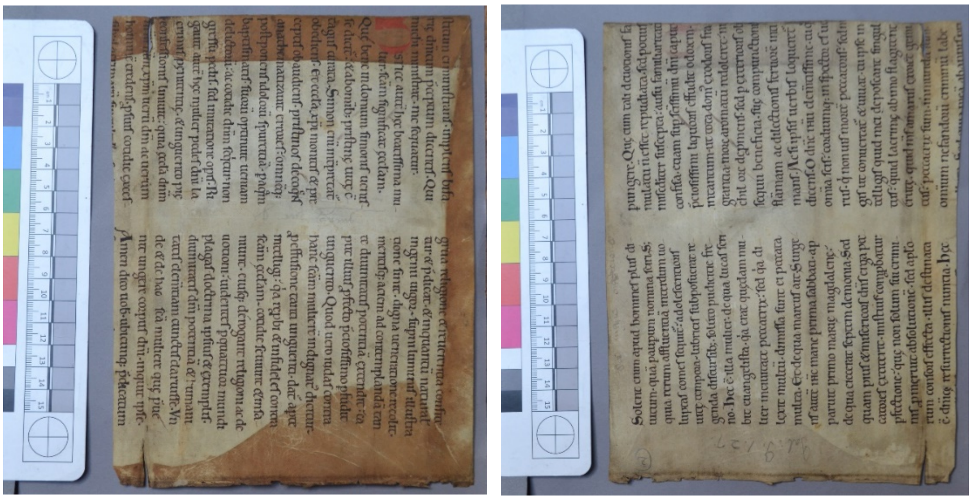


**Fig. 22. MS36, 2. Left endleaf.** Left: Outer face of the fragment. Right: Inner face of the fragment.

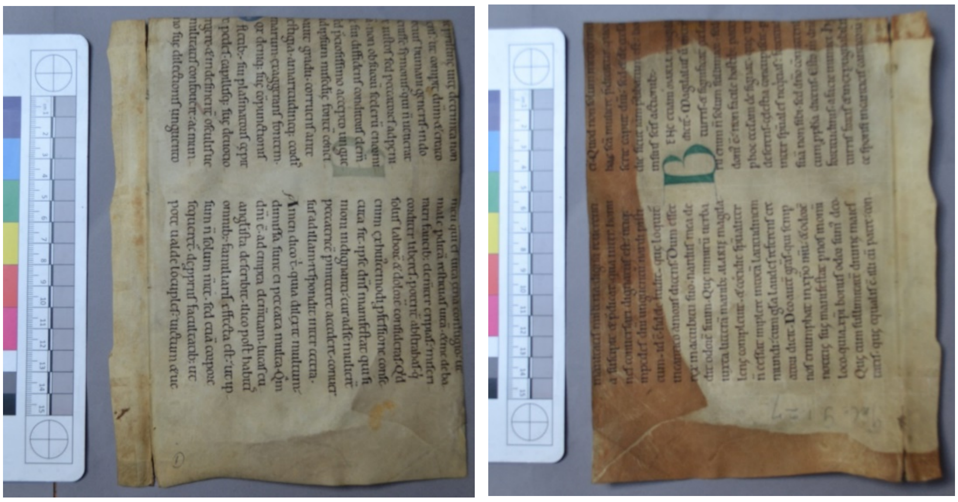


**Fig. 23. MS36, 1. Right endleaf.** Left: Inner face of the fragment. Right: Outer face of the fragment.

**Fig. 24. Source binding for MS36 1, 2:CD82. Spine and left board.** The tanned skin on the spine has discoloured.

**Fig. 25. CD.82**. **Inner surface of left board, new endleaves, trimmed turn-ins.**

**Fig. 26. MS36, 2. Left endleaf facing the inner surface of the board with new pastedown**. The turn in is visible under the pastedown.

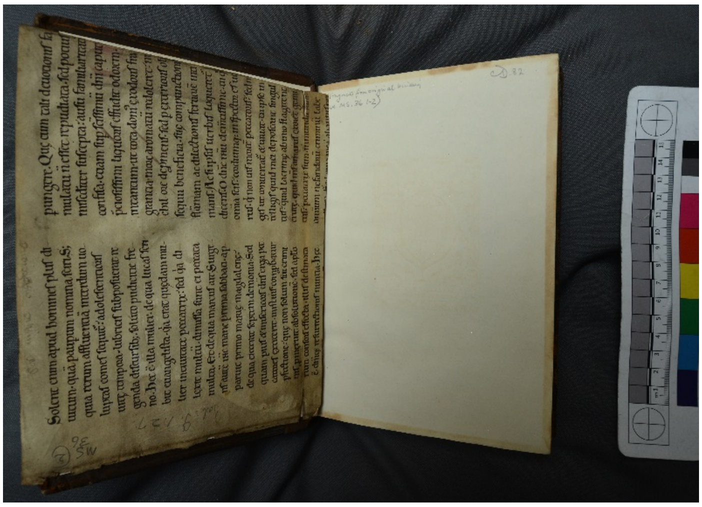
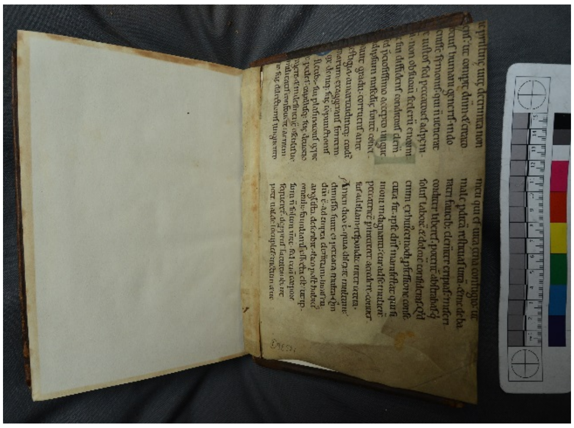


**Fig. 27. MS36, 2. Left endleaf facing the new endleaf.**

**Fig. 28. MS36, 1. Right endleaf facing the inner surface of the board and new pastedown.**



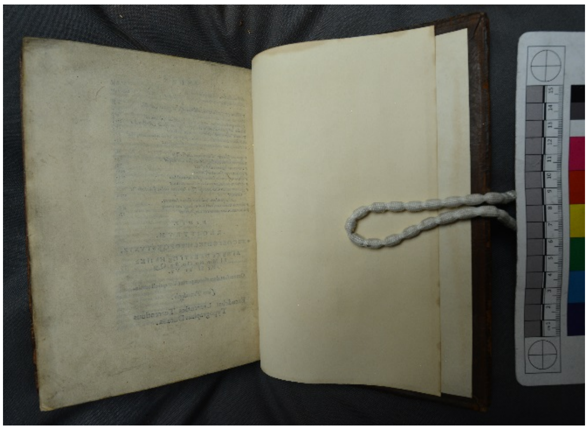


**Fig. 29. MS36, 1. Right endleaf facing the new endleaf.** The last text leaf and the new endleaf.

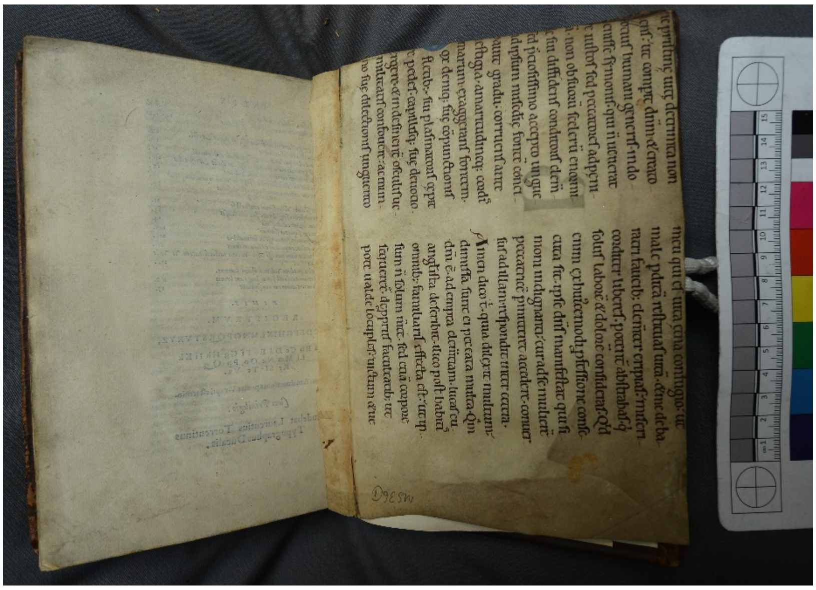


**Fig. 30. MS36, 1. Right endleaf facing the last text leaf.**
The marks of the turn-in can also be seen in the blank text leaf. (There is also a new endleaf bound in after this final text leaf.)

**3.2.3. MS36, 13a & b and source binding F.2.17**

The third example, MS36 13 (here referred to as 13a and b),[165] fragments of a twelfth century manuscript, were also from a repaired binding, F.2.17 (Cologne, 1555) (Fig. 31). These endleaves had a similar form to the second example, MS36 1 and 2, with the cut at the head and tail of the fold. As with the previous two examples, the evidence visible on the fragment for the height of the binding, the position of the sewing supports and the covering material matches the spine of the source binding which, though repaired, had not had the position of its sewing supports altered. The new endleaves pasted down onto the inner surface of the boards were of a lighter paper than in the previous example and the cover's turn-ins, which had not been altered during the repair, were clearly visible under them (Fig. 32, 34). The turn-in stain had also transferred to the new paper endleaf (Fig. 33, 35). In this case, then, as the evidence in the binding was more visible, it was possible to verify the source binding more easily than in the previous example. There was no evidence on the fragments for fore-edge ties but they are present on the binding.

| Fragment Height (mm) | Textblock Height (mm) | Board Height (mm) | Fragment Width (mm) | Textblock Width (mm) | Board Width (mm) |
|---|---|---|---|---|---|
| 13a: 152<br>13b: 152 | 157 | 162 | 13a: 96<br>13b: 95 | 95 | 98 |

**Table 3. Westminster MS36, 13a & b and source binding F.2.17: measurements compared.**

**Fig. 31. Source binding for MS36, 13 a & b, F.2.17. Spine and left cover.**

165 Ker no.518; Ker, 2nd edn. 2004, p.48.

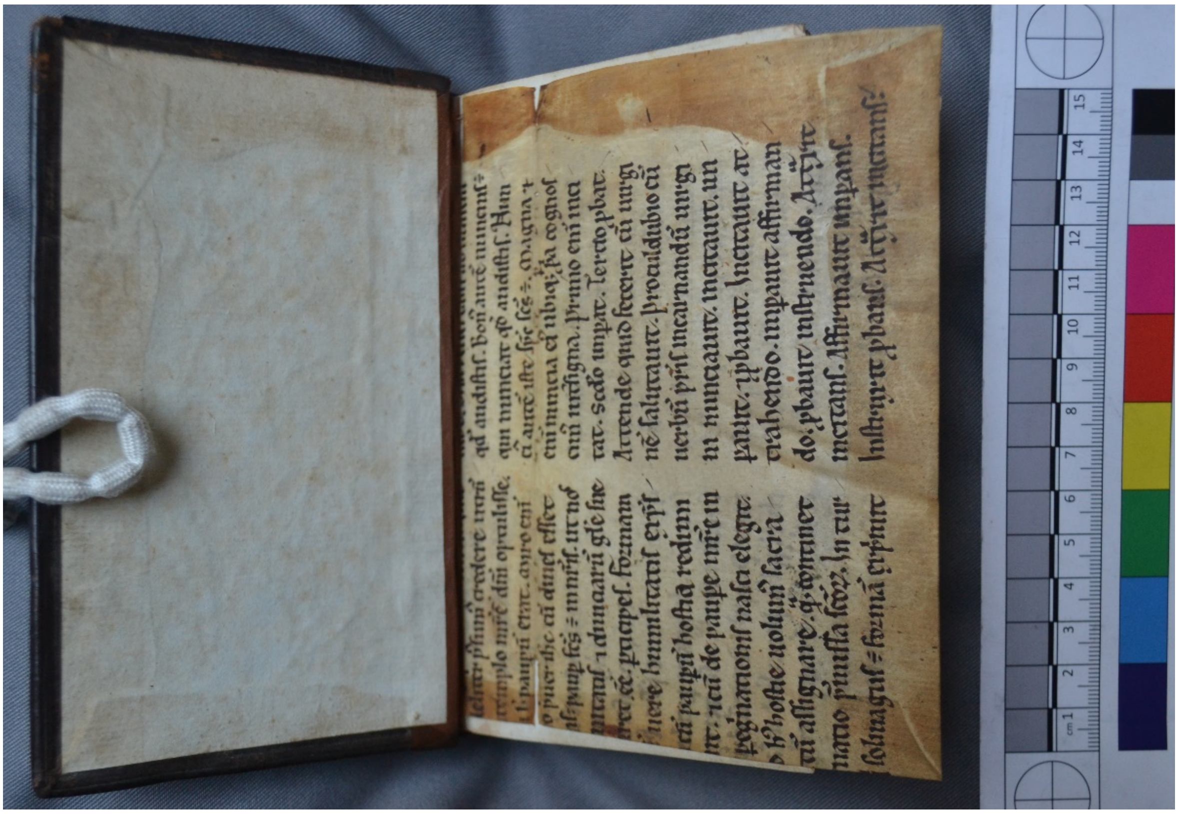


**Fig. 32. MS36, 13a. Left endleaf facing the left board.**
This binding has been rebacked, a new endleaf has been pasted down but the turn-ins are still visible and their shape has not been altered

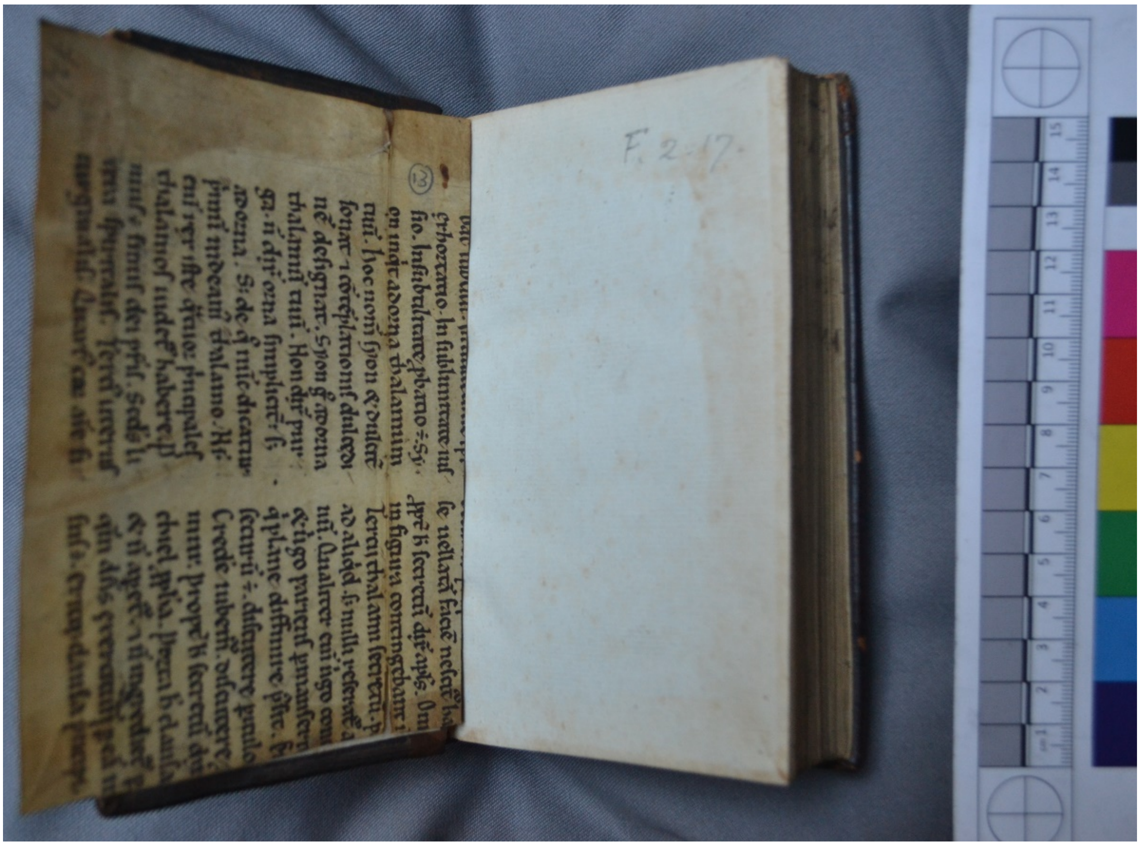


**Fig. 33. MS36, 13a. Left endleaf facing the textblock.**
The new endleaf also shows staining from the turn-in.

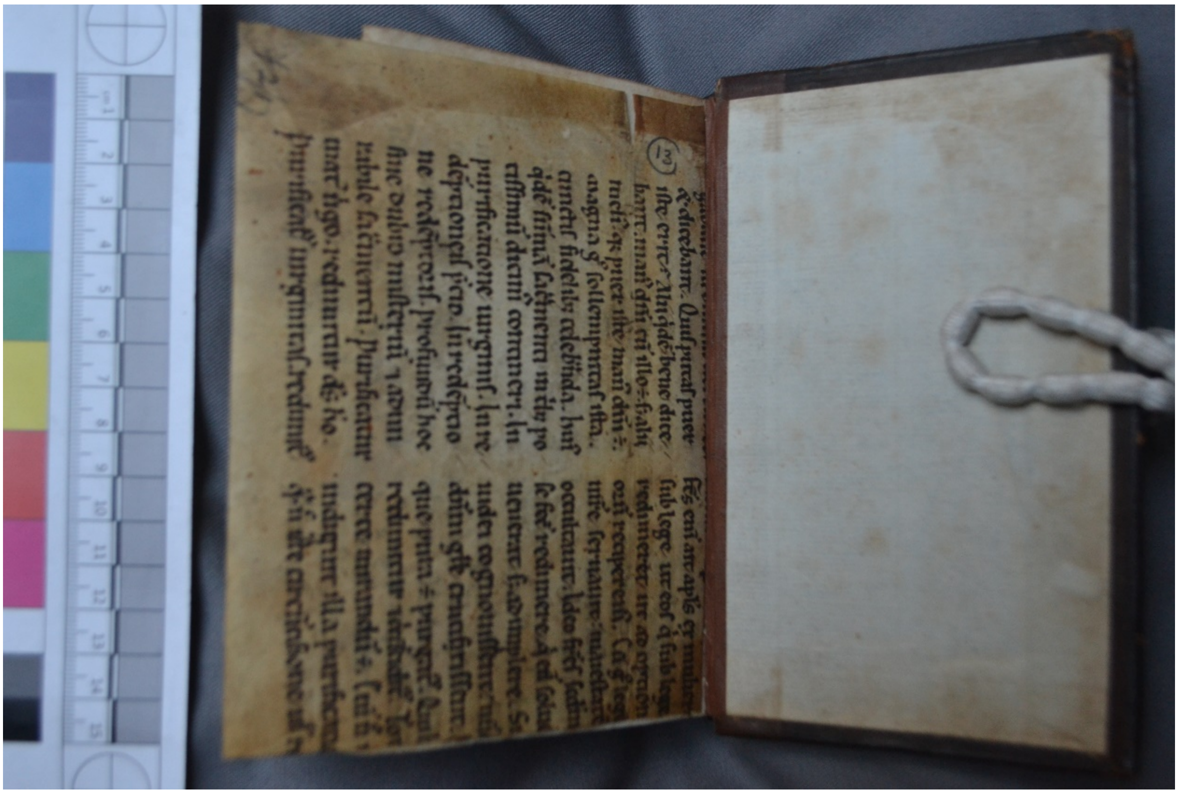


**Fig. 34. MS36, 13b. Right endleaf facing the right board.**
The turn-in stains are still visible under the pasted down endleaf.

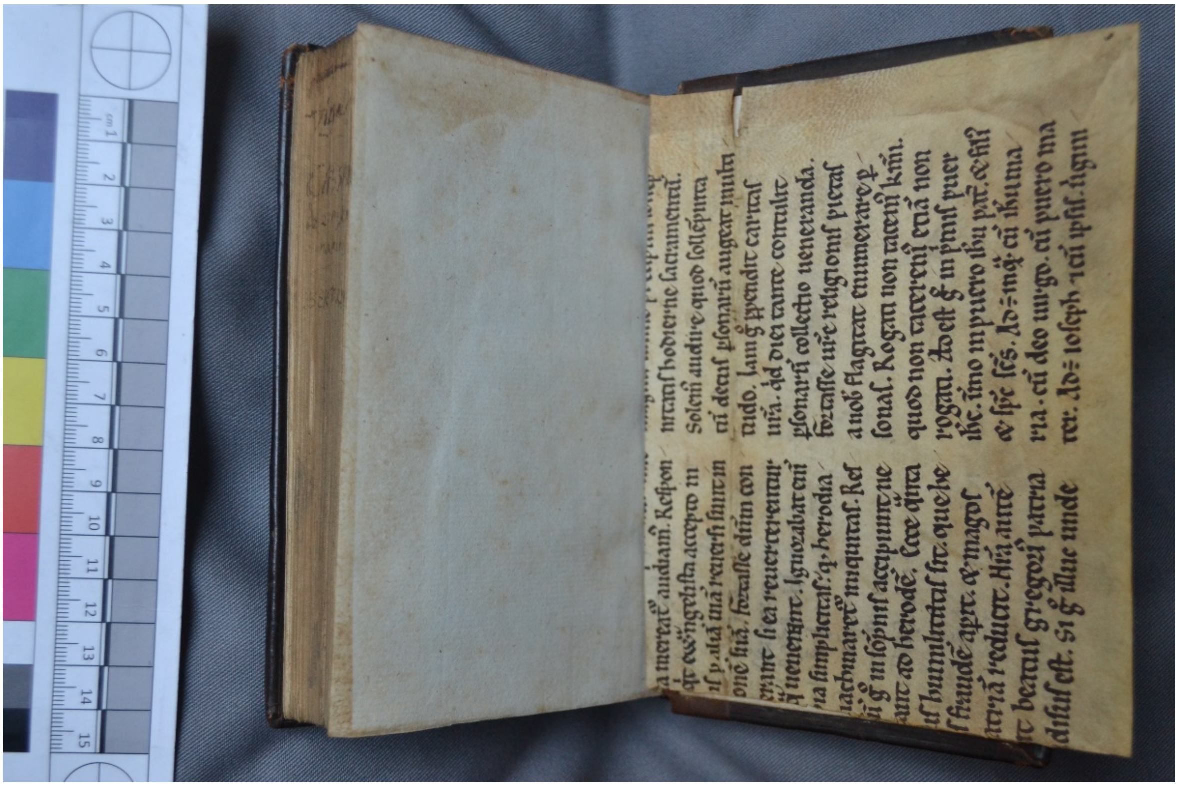


**Fig. 35. MS36, 13b. Right endleaf facing the textblock.**

### 3.2.4. Fragment 'From F.1.24'[166] and source binding F.1.4 3/4

A comb spine lining made from a fragment dated to *c.*1300 and of a French or possibly English origin was also selected (Fig. 36).[167] Its source binding was identified as F.1.24 3/4 (Venice, 1583), the damaged third volume of a four-volume set. (The other intact volumes in the set still had their comb spine linings *in situ*, visible under a pasted down endleaf.) There is little evidence of the covering material on the fragment but one side of the lining is darker which could suggest that this is the side that was positioned directly under the cover of tanned skin. The fragment has evidence of the height and the width of the spine and the distribution of the sewing supports - the lining was pasted to the spine between the supports and the 'gaps' in the lining correspond to where those supports lay (Fig.37). All of the above correspond to the source binding. The sewing supports have left no stain or impression on the element of the lining that was adjacent to the board - they are cord and sit flush with the board. Extensive offset from the fragment was visible on the inner surface of the right board but only slightly on the left board as the part of the lining next to that board had no text (Fig. 38, 39). The comb spine lining is a feature of Continental bindings (see Chapter 4) and the three-hole lacing-in pattern of the supports in the boards is French.[168]

| Fragment Height mm | Textblock height mm | Board Height mm | Width of lining on board mm | Textblock Width mm | Board Width mm | Fragment Spine Width mm | Binding Spine Width mm |
|---|---|---|---|---|---|---|---|
| 313 | 323 | 334 | 40 | 214 | 220 | 80 | 83 |

**Table 4. Westminster 'From F.1.24' and source binding F.1.24 ¾: measurements compared.**

**Fig. 36. A comb spine lining 'From F.1.24'.**
Left: the two sections of the lining shown separately. Right: the two sections of the lining overlapping across the spine panels.

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[166] This fragment was not numbered but was listed as 'From F.1.24'. It is in fragment box 4.
[167] I am grateful to Prof. Michelle Brown for this information.
[168] http://w3id.org/lob/concept/3071

**Fig. 37. F.1.24, 3/4 (Venice, 1583).**
The source binding for the comb spine lining (the tail edge is to the right of the image).

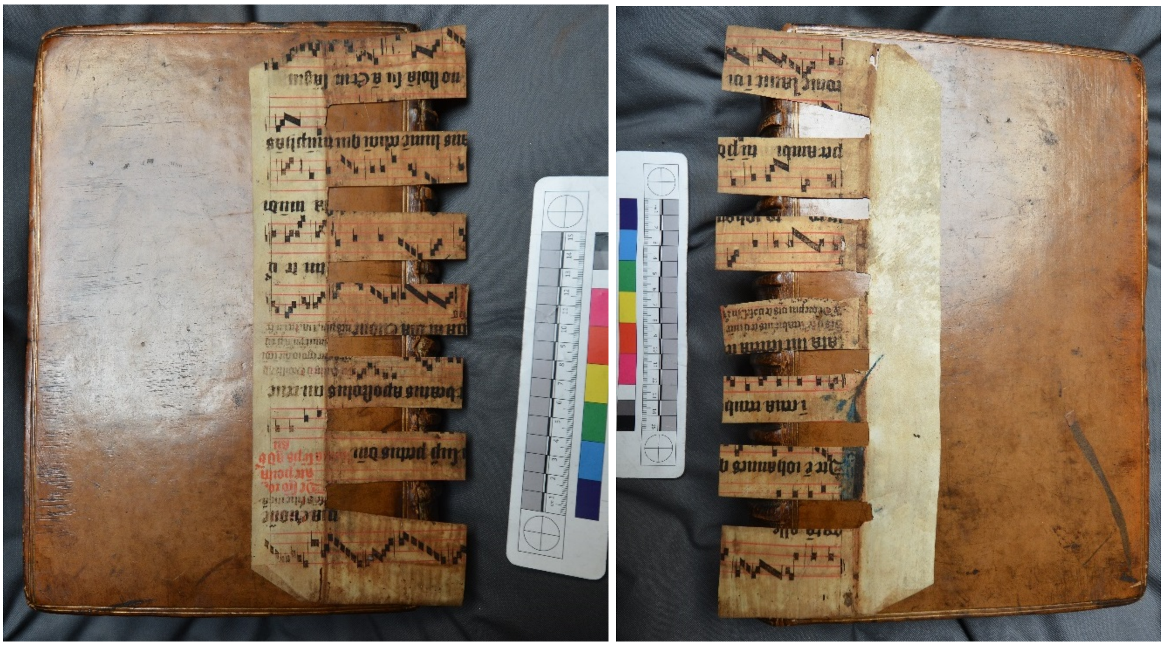

**Fig. 38. F.1.24 3/4 (Venice, 1583) and the comb spine lining.**
**Right-hand side of the comb spine lining  (right image) and left-hand side (left image).**

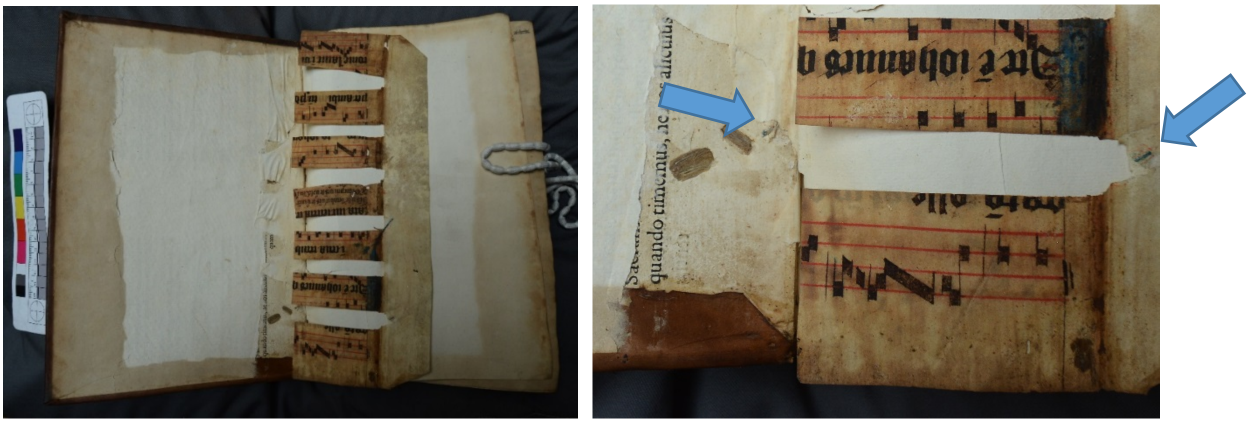

**Fig. 39. F.1.24 3/4 (Venice, 1583). The inner surface of the left board.**
The board is made of printed waste, visible under the pasted down paper endleaf. There is a small area of offsetting on to the board from the blue initial.

**Fig. 40. F.1.24 3/4 (Venice, 1583). The inner surface of the right board.**
The supports are laced into the printed-waste boards using three holes. Offset of the black musical notation is visible.

**Fig. 41. A detail of the offset from the fragment on the printed waste boards.**

### 3.2.5. Conclusions

The Westminster Abbey Library control sample comprised six pairs of endleaves (of which three have been described here – see also Appendix 2) and one comb spine lining. These were examined in association with their source bindings and the following conclusions were made

i. endleaf fragments removed from sixteenth-century bindings have evidence of that binding (p.38).
ii. bindings with paper boards transfer evidence to endleaves (Cains and Sheppard had only examined examples with wooden boards).
iii. binding evidence on these fragments relates to the features visible on the spine of the binding.
iv. evidence on a fragment can still relate to bindings that have been rebacked.
v. evidence on the inner surface of the boards of a binding may be obscured by a later repair.
vi. the textblock, in addition to the inner surface of the book's boards, may have evidence of the fragment in the form of offsetting.
vii. there is a variety in endleaf types.
viii. comb spine linings also retain evidence of their source binding.

**Most importantly, the control sample showed that the binding evidence on endleaves and comb spine linings relates to the appearance of the spine of the binding, a fact which would mean that candidate source bindings for these fragments could be selected from library shelves.**

What still had to be determined was

i. how many bindings in the library could have matched the evidence on the fragment.
ii. whether it would be possible to work with other fragment-types such as guards and covers.
iii. the degree to which repaired bindings would impede the method. (This is of importance as it would be expected that a significant number of the bindings from which fragments were removed would have been repaired.)

### 3.3. The next objectives for the development of a new method – Designing the research

Having tested the feasibility of the proposed method (3.2.5), and seen that it was successful, it was decided to proceed with the necessary work to develop this method.

The examination of manuscript-waste fragments in association with their source bindings identified that the fragment can contain not only an 'image' of the inner surface of the board but also evidence for the features of the spine, and the sides of the board (width, ties, clasps). It is proposed that the process of identifying the source binding is divided into the following three stages

i. the spine.
ii. the sides of the boards.
iii. the inner surface of the boards and the textblock.

Candidate source bindings would be first selected based on what is visible on the spine. By identifying the evidence on the fragment which relates to the most distinctive feature on the spine of the source binding, it should be possible to reduce the number of books which have to be examined - what this key selection feature is has yet to be determined. This first selection of candidate source bindings would then be further refined by comparing features on the sides of the binding with evidence on the fragment and eliminating those bindings which do not match. The remaining volumes would then be examined for evidence on the inner surface of the boards and the textblock. During this stage the source binding would be identified. The method results in only a small number of books being opened.

In order to develop the method, the next objectives were to select libraries with manuscript-waste fragment collections.

## 3.4. Considerations for selecting libraries for the case studies

Libraries which could be used as case studies had to have

i. a collection of manuscript-waste fragments that had been removed from the books in the library.
ii. open shelves on which the source bindings would be visible as the method depends on the books being selected from the open shelves.
iii. a limited number of sales – so that it is likely that the source binding will still be in the collection.
iv. fragments other than endleaves in their collections.

The first criterion, then, was that there would be a collection of fragments. Such collections can be difficult to find as they are often not catalogued. However, Ker provided an *Index of Guardbooks*[169] which he had consulted for his work on fragments in Oxford bindings. As such, these collections all existed pre-1954 – the year Ker's work was published – though they could have been added to since that date. Using Ker's list to identify fragment collections simplified and accelerated the process which was an important consideration given the timescale of the research project. Ker's work focused on Oxford bindings on printed books but that is not to say that fragments from other types of bindings from other periods are not also included in these guardbooks.

The second criterion was whether the bookshelves were accessible and the spines of the library's books visible and that at least the majority were not housed in boxes. Added to this the librarian had to agree to allow the books to be removed from the shelves by the researcher. Whether the library collection had been altered since the fragments were removed, due to sales, was also a third criterion - the less interference the library had suffered since the removal of the fragments from the bindings, the more likely the source bindings were to be still on the premises. A fourth criterion was the type of fragments in the collections in these libraries – fragments other than endleaves were required.

Potential libraries, then, were first identified on the basis that they were known to have manuscript fragment collections but the selection of the actual libraries to be used as case studies was determined by practical considerations (shelving, access, location, *etc*.). (Table 5. Comparison of the libraries for the case studies.)

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169 Ker, 2nd ed., 2004, pp.270-8.

**Table 5. Comparison of the libraries in the case studies**

| Library | Type of Library | No. of Volumes | Sales | Layout | Access | Boxing | Working Day | Fragments: Method of removal | Fragments: Housing |
|---|---|---|---|---|---|---|---|---|---|
| Merton | College Library | 21,635 – plus c. 1000 in Special Collections Room | Unknown | Upper Library: 3 areas, multiple bays. Additional Special Collections room | Some upper shelves containing smaller volumes inaccessible | Some - but limited | Restricted | Collected by College Librarian; possibly also binders. Bindings may not have been repaired . | Modern Fascicules |
| Lanhydrock | Country House | 3,258 | Very Few | 1 room – shelves on two walls | All shelves accessible | Minimal - clam shell boxes | Full day | Collected by Librarian. Likely to have been repaired | 19th c. Guard book |
| Clare | College Library | c.6000 | Unknown | 1 room – shelves on four walls and some free-standing shelves | Upper shelves (2 rows around the room) difficult to access | Very limited | Full day | Binders. No evidence that this is a librarian's work. | Archival-quality polyester sleeves |
| St Canice's | Cathedral | 3200 | Unknown | Rolling stacks | All shelves accessible | No boxing – all wrapped in tissue paper | Full day | Fragments detached due to poor condition of books. Possibly also binders | Archival paper |
| The Wren | College Library | c.70,000 | Unknown | 1 room, multiple bays | Upper shelves difficult to access | None | Full day | Binders. No evidence of librarian's work | Archival-quality polyester sleeves |

### 3.4.1 The libraries

The libraries selected for study were

i. Merton College Oxford.
ii. The Fellows' Library, Clare College Cambridge.
iii. Lanhydrock House, Cornwall.
iv. The Wren Library, Trinity College Cambridge.
v. Otway-Maurice Collection of St. Canice's Cathedral Library, Kilkenny, Republic of Ireland now housed at the National University of Ireland, Maynooth (hereafter referred to as St. Canice's).

**Merton College Library** dates from the thirteenth century. The books are held in two spaces: 21,635[170] volumes in the historic upper library (Fig. 42), and a smaller number (less than 1000 printed books[171]) in a separate room. The manuscript-waste fragments are catalogued by Thomson[172] and many are listed in Ker.[173] Labels, numbered and dated between 1920-1922, are attached to some of the fragments indicating when they were removed and corresponding labels can be found attached to the inner surface of the boards of some of the source bindings. These labels are thought to be the work of Percy Stafford Allen, a Fellow of Merton, and the man presumed to be responsible for removing the fragments. [174] It is not known whether there were sales from the library after the fragments were removed. Given that many of the fragments were removed by a librarian, rather than a binder, the source bindings might not have been repaired. The majority of the fragments have been conserved and are housed in modern archival-quality fascicules (Fig. 9). The majority are endleaves, a fact that is not surprising given that this is an Oxford library with many Oxford bindings which, as Ker noted, continued to use manuscript-waste fragments as endleaves longer than other binding centres.[175] Endleaves can also be easily removed without involving a binder.

[170] This number is from a 2011 inventory. I am grateful to Dr. Julia Walworth, the Fellow Librarian, Merton College Oxford, for this information.
[171] The manuscript collection is also held in this room but as that collection is housed in boxes they were not examined as part of this research.
[172] Thomson, 2009, pp. 251-261.
[173] Ker, 2nd ed., 2004,
[174] I am grateful to Dr. Julia Walworth, the Fellow Librarian, for this information. Whether Allen was also responsible for the removal of fragments without these labels is unknown.
[175] Ker, 2nd ed. 2004, p.vii.

**The Fellows' Library, Clare College Cambridge**, comprises around 6000 books[176] and occupies a single room with bookshelves along all four walls and an additional six free-standing book cases (Fig. 47). The library catalogue, which does not include the fragment collection, has a restricted circulation. The fragment collection, conserved and housed in archival-quality polyester sleeves,[177] is small, *c.*200 items (manuscript and printed). It is possibly the result of a bookbinder returning components removed during the course of repairs rather than a librarian systematically extracting manuscript waste from the bindings. If this is the case then it is likely that the source bindings were repaired. A Cambridge collection was chosen as it was expected that it might have examples of fragments used to make guards (Cambridge did not use full endleaves for as long as Oxford) and the fragment collection at Clare does contain endleaves, guards and some covers. Some fragments have shelfmarks written on them.

**Lanhydrock House, Cornwall**, is the National Trust's 'most important 17th century library'.[178] It contains 3258[179] books, collected by John Lord Robartes (1606-85) and Hannibal Gamon (1582-1651), housed along both sides of the gallery (Fig. 48). As Gamon studied at Oxford it is likely that many of the bindings will be from there.[180] The manuscript-waste fragments were extracted by William Allnutt[181] towards the end of the nineteenth century when he was employed to reorder and catalogue the books.[182] They were collected together in a guardbook of 185 numbered leaves. The fragments are grouped according to their language - Latin, French and then English - rather than country of origin. The leaves of this guardbook were annotated, presumably by Allnutt, who identified the text and assigned a date to the manuscript. Some of the fragments have the title of the source binding, often in an abbreviated form, written on them or on the leaf to which they are attached. The guardbook, which was listed as B.12.16 in Ker,[183] was purchased by the Bodleian Library[184] where it is now MS. Lat. Misc. b.17. Another similarly bound guardbook, one of printed waste fragments which had also been removed from books in the library, is now in Harvard.[185] Allnutt also produced a manuscript catalogue of the library which includes a list of both the

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176 I am grateful to Ms. Catherine Reid, Librarian, Forbes Mellon Library, Clare College Cambridge for this information.
177 These polyester sleeves are frequently referred to by their brand names, Melinex or Mylar.
178 Purcell, 2005a, p.682.
179 This number has been calculated from Collins' 2009 catalogue.
180 Ker, 2nd ed., 2004, p.xvi, note 1.
181 Allnutt worked at the Bodleian Library from 1864; Purcell, 2005b, p.219.
182 Allnutt was working in Lanhydrock in 1878; Purcell, 2005b, p.220.
183 Ker, 2nd ed., 2004, p.270.
184 McGatch, 1990, p.437. A note on the bottom of the first blank endleaf of the guardbook reads 'P.12.vi.63 Sotheby's, lot 132'.
185 Houghton Library, Harvard, f *EC.A100.B659c. A note on the first blank leaf reads 'Cat. Of MSS, 10 June 1963 Sotheby's, lot 132.

manuscript-waste and the printed fragments – but in neither case are the source bindings mentioned.[186] Many of the books in the library have been repaired and there have been a small number of sales (*c.*320 items were sold in 1954 according to Collins' 2009 catalogue[187]). Another fifty-one items listed in Allnutt's manuscript catalogue are marked in Collins' catalogue as missing. In total, then, 371 books are known to no longer be in library. The collection is also included in the Library Hub discover (Copac)[188] catalogue. As the fragments are now in a different location to the source bindings, this case study was intended as a further test of the method and the process of documentation. The fragments in this collection include endleaves, covers and a smaller number of endleaf guards. There are also fragments of manuscript on paper including some which were part of the boards of a binding.

As none of the above had examples of spine linings in their fragment collections, other libraries were considered. A comb spine lining was found in the **Otway - Maurice Collection of St. Canice's Cathedral Library, Kilkenny**, now housed at the National University of Ireland, Maynooth.[189] This is a collection of 3200[190] books and it is likely that the small group of manuscript-waste fragments became detached from bindings which were damaged. These bindings have not been repaired. The fragments are housed in archival-quality paper folders. The bindings are wrapped in tissue paper and shelved on rolling stacks a secure storage area of a modern library (Fig. 41). The fragments have been identified but are not included in the online catalogue.

**The Wren Library, Trinity College Cambridge** was also selected for its comb spine linings. This library of some 70,000[191] books is housed on open shelves in bays arranged along the length of the library (Fig. 42). This fragment collection, which is available online[192], is another small collection which might suggest that it was the work of binders rather than a librarian collecting fragments.

186 This catalogue is still in Lanhydrock today.
187 Collins, 2009. This catalogue is held on site.
188 Library Hub Discover is an online library for UK national libraries, University libraries and specialist libraries. It replacd Copac in 2019 https://discover.libraryhub.jisc.ac.uk/
189 This fragment was identified via a media report on the collection.
190 I am grateful to Ms Barbara McCormack, Special Collections Librarian, Maynooth University, for this information.
191 I am grateful to Dr. Nicolas Bell, College Librarian, Trinity College Cambridge for this information.
192 http://trin-sites-pub.trin.cam.ac.uk/manuscripts/R_11_2/manuscript.php?fullpage=1&startingpage=33

**Fig. 42. Merton College Library, Oxford.**
Cases 63-65.

**Fig. 43. The Fellows' Library, Clare College Cambridge. ©Sue Rawlinson**

**Fig. 44. Lanhydrock House, Cornwall.**
Case E, one of six cases in the gallery.

**Fig. 45. Otway-Maurice Collection of St. Canice's Cathedral Library, Kilkenny National University of Ireland, Maynooth.**[193]

**Fig. 46. The Wren Library, Trinity College Cambridge**[194]

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193 I am grateful to Ms. Barbara McCormack, Special Collections Librarian at Maynooth University, for providing this image.

194 Wren Library (2019).

### 3.4.2. Summary

Five libraries were selected as case studies for the development of the method. All were in the UK or Ireland (though St Canice's also had a strong Huguenot connection). These libraries would be expected to have British bindings in the collections, but also continental bindings. The fact that these are libraries as opposed to archives will influence the type of bindings found as will the nature of those libraries (college, cathedral or country house) and the fact that it is expected that the fragments will have been removed from bindings of printed books from the mid-fifteenth century to the early-seventeenth century. These bindings are expected to be Western-European supported sewing structures, that is, they were sewn on sewing supports[195] (5.3.3).

While libraries were not selected on the basis of how the fragment collections were formed, whether by librarians or binders, the fact that the collections which were selected were formed in different ways meant that this too could form part of the study. For fragments that had been removed by binders, it would be expected that the source bindings will have been repaired which may not necessarily be the case when librarians are responsible. This then adds for consideration the issue of how books are repaired and the impact this has on the evidence visible on the bindings. It also might be reasonable to assume that those bindings that were more likely to have been damaged will have been the ones sent for repair and the ones from which fragments were more likely to be removed. These bindings may then be those that were sewn on tanned skin supports (which are weaker than alum-tawed skin supports) and may be more likely to be in-board bindings rather than laced case bindings.[196]

As previously stated, the main consideration in selecting libraries was whether or not they had a manuscript-waste fragment collection and whether the bindings were visible on open shelves. By chance, however, the libraries selected were sufficiently varied to allow the following factors to be considered during the course of the research:

i. The type of library.
ii. The layout of the library.

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[195] https://www.ligatus.org.uk/lob/concept/2508

[196] Parchment-covered laced-case bindings are what Clarkson referred to as limp vellum bindings. He attributed their robustness to a simplicity of construction, light weight, mechanical yielding qualities, lack of distortion in varying atmospheres and the durability of their component materials' and commented that these structures 'achieved a balance between sound sewing construction & a flexible, durable limp cover having the character of a tied bundle, the whole technique using little or no adhesive'; Clarkson, 1982, p.1.

iii. The size of the library.
iv. The accessibility of the shelves.
v. The reason for the removal of the manuscript-waste fragments.
vi. The effect of binding repair on the collections.

Each library had a different role to play in the development of the method

i. Merton was where the method was to be developed and work would focus exclusively on fragments which had been used as endleaves.
ii. Clare, Lanhydrock, St. Canice's and The Wren Library were where the method would be extended by examining not only endleaves but also other fragment types.
iii. Lanhydrock was to be where the developed method would be proved (using a control sample) and the documentation method tested (as the fragments are in a different location).

## 3.5. Considerations for selecting fragments for the case studies

The next objective was to select examples of fragments from those libraries. The fragments were selected firstly on the basis that they did not have shelfmarks – whether current or not - for the source binding. This was done to ensure that the development of the method would not be subject to any interference from archival evidence and would be based solely on the evidence on the fragment. Some fragments in Lanhydrock had titles or author's names written on them which referred to the source bindings and a number of these were selected to act as a control sample – again, without the risk of guidance from a shelfmark.[197]

### 3.5.1. Selecting fragments based on their classification as a binding component

The collections examined in the selected libraries were, as expected (1.3), predominantly of larger fragments.[198] There fragments were found to belong to four main binding components, all distinguishable from each other by their distinctive shapes (discussed in Chapter 4). They are

i. Endleaves.
ii. Guards.
iii. Spine linings.
iv. Covers.

197 The titles on these fragments are abbreviated so while titles may be tooled on the spine of bindings in Lanhydrock these generally do not correlate with the titles on the fragments.

198 Gumbert, 2011, p.13.

All four were part of the structure of the binding rather than simply having been applied to the binding (2.8). (A further discussion on how these binding components are identified follows in Chapter Four.)

As mentioned earlier (3.4.1), the Merton collection consisted mainly of endleaves. Covers, while also found there, were not selected here as the focus in this library was on developing the method using endleaves. In Clare College endleaves, guards and covers were examined, as they were at Lanhydrock. In Lanhydrock, examples of fragments used to make boards were also selected. St. Canice's and the Wren Library were included, as mentioned earlier (3.4.1), as both had examples of comb spine linings, which had not been found in the other three libraries.

The absence of spine linings from these collections may be explained by Gumbert's observation (p.38) that it is the larger fragments that are retained in preference to the smaller ones – though this would only explain the lack of smaller spine linings such as patch or panel linings in fragment collections, and not comb spine linings. It may be the case that comb spine linings are less easily removed than endleaves or, as the fragment type is a feature of Continental bindings, that the libraries examined may not have had many bindings with this kind of lining.

**3.5.2 Selecting fragments to reflect the variety in bindings**

Within each binding-component group, fragments were selected to represent the variety of evidence that can be seen. The following features were considered and fragments were selected to represent these features:

i. Fragment material: While the fragments were predominantly of parchment, one pair of paper endleaves was found in the Lanhydrock collection. This was selected in order to compare whether paper fragments were easier to work with than parchment as the dimensions of the endleaves were less likely to have altered.
ii. Fragment size: Fragments of a variety of sizes were selected in order to investigate whether the size of the book and the nature of the evidence on books of various sizes (for example, larger bindings of a later period might be more likely to have wooden boards) would be a determining factor in whether the method was successful or not.
iii. Sewing evidence: Fragments exhibiting different types of evidence for the sewing supports were elected to see which was more useful.

iv. Source binding covering material: The majority of the fragments found in all the libraries had evidence of a tanned skin cover but an attempt was made to select examples which seem to have been removed from books with non-staining cover material.
v. Other features: Evidence of a variety of other features were also sought on the fragments and selected on the basis of their presence. These included examples of different board material, fastening evidence, *etc*.

In addition, a small number of fragments of documents were included by way of comparison but also as they may have been removed from later bindings.[199] A variety of single fragments and paired fragments were selected to determine whether the method could work in both cases.

### 3.5.3. Selecting fragments to reflect the variety in collection care

The condition of the fragments will have been affected by environmental conditions both when they were in the source binding and after they had been removed from that binding. The fragments were also likely to have incurred some damage in their history. To try, then, to determine whether such factors could affect the effectiveness of the method, fragments in various states of repair were selected. The impact of conservation treatments was also considered. The Lanhydrock fragments have had no conservation treatment. Merton had both conserved and un-conserved fragments and examples of each were selected. Clare, St Canice's and the Wren Library had had minimal interference from conservators.

Connected with the conservation of the fragments was the issue of how the fragments had been housed and the way that can affect the visibility of the evidence on the fragments. The Lanhydrock fragments, in a late nineteenth-century guardbook (Fig. 8), were either adhered to a guard (Fig. 47) or set into a window cut in the leaf (Fig. 48). The edges of the fragments were in some cases stained by the adhesive used to adhere them into the leaf and obscured by the leaf of the guardbook – though efforts had been made not to obscure the text on the fragment. These fragments were the least accessible of all and, in some cases, it was difficult to take accurate measurements. In the case of Merton, the majority of the fragments had been conserved in the later twentieth century and were housed in fascicules (Fig. 9). They had been surface-cleaned and the creases flattened and were adhered to the leaves of the fascicules using a light Japanese paper. In both the Lanhydrock guardbook and the Merton fascicules, the fragments are orientated so that the text on the fragments is legible and so for the purposes of this research, the fragments were not always aligned

[199] While the supply of parchment leaves from manuscripts declines (p.11), it is likely that parchment documents would still be available.

correctly (Chapter 4). The collections at Clare and the Wren were housed separately in archival-quality polyester sleeves while St.Canice's had opted for archival paper folders. Both allowed for easier manipulation of the fragments.

The housing system used can also help indicate when and why the fragments were removed. In the case of Lanhydrock, the collection of all the fragments in one guardbook – and their annotation by the same hand, that of Allnutt - suggests that their removal from bindings was carried out as one concentrated period of work. In this case, source bindings are likely to have been repaired in the same style and possibly by the same bindery. In Clare, on the other hand, where the fragments had not been bound together, the removal of fragments and the repair of bindings could have taken place over several decades.

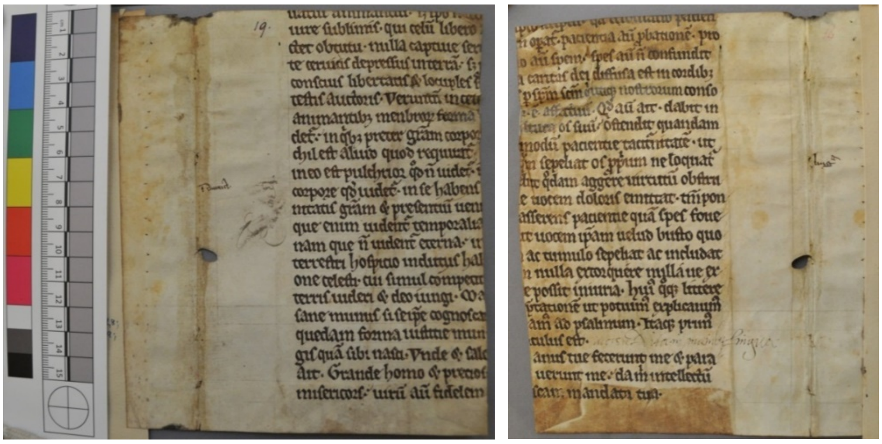

**Fig. 47. Housing a fragment in a nineteenth-century guardbook – on a guard.**
Lanhydrock 19, right endleaf (faced the right board)
Left: The inner face of the fragment. The full fragment is visible and can be measured easily.
Right: the outer face of the fragment.

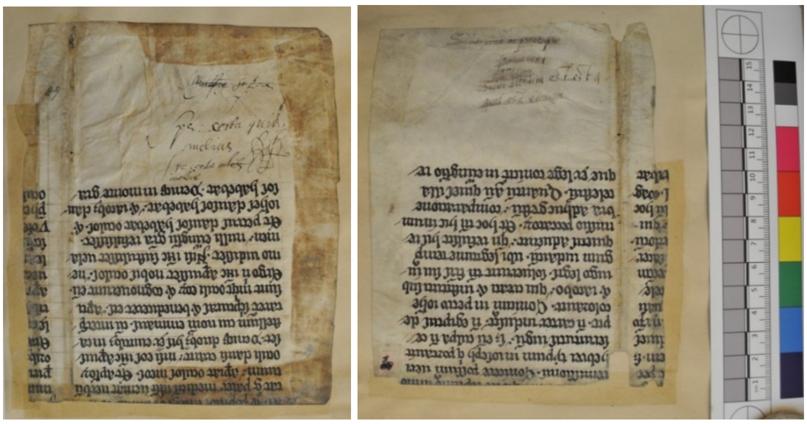

**Fig. 48. Housing a fragment in a nineteenth-century guardbook – inset in the leaf.**
Lanhydrock 20, the pair of no.19, the left endleaf (faced the left board)
Left: the outer face of the fragment.
Right: the inner face of the fragment .This fragment has been inserted into the leaf and and one side of the fragment has a larger visible area.

**3.5.4. Summary**

Five libraries were selected to develop the method to identify the source binding for a removed manuscript waste fragment. The libraries and the fragments from those libraries determined the parameters of the research *i.e*.

i. The source bindings are likely to be on printed books and archival bindings will not feature.
ii. As the libraries are in the UK, there will be a predominance of British bindings but it is expected that Continental bindings will also be present.
iii. The fragment collections were formed by the intervention of either librarians or binders and the source bindings may, then, either be repaired or not.
iv. Some of the fragment collections had been conserved others had not.
v. Different housing methods for the fragments were used.
vi. The libraries varied in size and layout.

The fragments were not randomly selected but were chosen to

i. develop the method.
ii. test the applicability of the method.
iii. determine when the method did and did not work.

The fragments selected varied according to

i. the fragment type (see Chapter 4).
ii. whether a pair or single.
iii. binding evidence
iv. condition of the fragments.

In total fifty-five fragments – where a pair is counted as one - divided over the five fragment types and drawn from five different libraries were examined of which (Table 6):

i. thirty-seven were endleaves (of which twenty-seven were pairs and ten were singles).
ii. seven were guards.
iii. six were covers (four laced and two stitched – see Chapter 4).
iv. three were comb spine linings.
v. two were board linings (both paper) selected to offer a comparison to the endleaves.

In terms of libraries, the breakdown was: (Table 6)

i. Merton: twelve fragments (of which seven were pairs) and all were endleaves
ii. Clare: fourteen fragments. Six paired endleaves and one single), two guards (one paired, one single), and two covers.
iii. Lanhydrock: twenty-six fragments. Fourteen paired endleaves and one singe, five guards and four covers. The remaining two fragments were board linings, selected to be used to compare with the endleaves.
iv. St. Canice's: one fragment, a comb spine lining.
v. Wren library: two fragments, both comb spine linings, one complete, one with only one side of the lining.

| Library | Endleaves Pair | Endleaf Single | Board Lining | Guards Pair | Guard Single | Comb spine lining | Cover Laced | Cover Stitched | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Merton** | 7 | 5 | - | - | - | - | - | - | **12** |
| **Clare** | 6 | 4 | - | 1 | 1 | - | 1 | 1 | **14** |
| **Lanhydrock** | 14 | 1 | 2 | 3 | 2 | - | 3 | 1 | **26** |
| **St. Canice's** | - | - | - | - | - | 1 | - | - | **1** |
| **Wren** | - | - | - | - | | 2 | - | - | **2** |
| **Total** | **27** | **10** | **2** | **4** | **3** | **3** | **4** | **2** | **55** |

**Table 6. The fragments selected for the development of the method.**

A full list of all the fragments examined for this research is found in Chapter 9.
A full description of each fragment and its features along with images, arranged by library are found on the accompanying USB.

**Given that there will be so many variations in the manuscript-waste fragments that are found in various collections *i.e.* their condition, the conservation treatment they may have undergone, the manner in which they are housed, the size and type of source binding, and indeed the many ways in which these variations may be combined, the examples selected are representative but cannot be exhaustive of all possible manuscript-waste fragments.**

### 3.6. The next objectives for the development of the method

Having identified the case studies (3.3), the next objective is to classify the fragments as binding components (Chapter 4). Following this, the work can begin on the method. This is described in (Chapters 5, 6 and 7) with examples taken from the case studies. The complete method of trying to identify the source binding as it was applied to a selection of fragments is described in Chapter 8. The method is then assessed in Chapter 9 and the results for each fragment are presented.

Fragments are listed by the name of the library and followed by the library-assigned shelfmark, or, in the case of the fragments from The Fellows' Library Clare, when the fragments did not have a shelfmark, a number which has been assigned for the purposes of this study. An endleaf pair is referred to as, for example, Clare 2c, 4c or Clare 2di, ii. The fragments from Lanydrock which are housed in a guardbook now at the Bodleian Library, MS. Lat. Misc. b.17, are listed, for the sake of brevity, as 'Lanhydrock' followed by the number of the guardbook leaf on to which the fragment is adhered. e.g. Lanhydrock 96i, ii refers to two fragments (i and ii) on the Lanhydrock guardbook leaf no. 96. Bindings, as previously explained in 1.7, are listed according to their library, their shelfmark and then the place and date of printing of the text within. A full list of the bindings with their bibliographical details is found in Appendix 1.

The libraries are referred to in short form of Lanhydrock, Merton, Clare, St. Canice's, Wren.

# Chapter 4
## Classifying Manuscript-Waste Fragments as Binding Components

## 4.1. Overview

The terminology used to classify manuscript-waste fragments reflects the binding component the fragment was used to make. This is in order to understand where the fragment was positioned in the source binding.

## 4.2. The terminology

The fragments examined during this research and with (and for) which this method has been developed are

i. Endleaves.
ii. Guards.
iii. Spine linings.
iv. Covers.

Each of these binding components has a distinct shape determined by its function in the binding.

## 4.3. Endleaf components – endleaves and guards

Endleaves and guards are both classed as endleaf components.[200] Those examined during this research are

i. *sewn*, by which is meant that they were 'sewn through the fold as part of a bookblock'[201] and will therefore have evidence of the sewing structure used in the binding.
ii. *separate*[202], that is, they are added by a bookbinder to the textblock (in contrast to integral endleaves, that is the blank leaves at either end of the textblock which were used as endleaves.[203])

### 4.3.1. Endleaves

Endleaves are the leaves 'found at each side of a bookblock … intended to give protection to the text leaves'[204]. They are usually approximately the same size as the textblock[205] - though the dimensions of the parchment may have altered slightly since they were originally sewn as a result of environmental conditions.[206] Undersize endleaves,[207] where the endleaf is smaller than the

200 http://w3id.org/lob/concept/2886
201 http://w3id.org/lob/concept/4600
202 http://w3id.org/lob/concept/1573
203 http://w3id.org/lob/concept/1398
204 http://w3id.org/lob/concept/1317
205 Referred to as 'same-size endleaves' http://w3id.org/lob/concept/1556
206 Parchment is a hygroscopic material which responds to changes in humidity; Clarkson 1992, p.5
207 http://w3id.org/lob/concept/1701

textblock and oversize endleaves,[208] where the endleaf is larger than the textblock were not found in the course of this research.

Endleaves are either sewn in contemporaneously with the textblock[209] or added later to an already-sewn textblock. To be sewn in with the textblock they must have a fold that can be sewn through. This fold may be created by either

*i.* taking a piece of sheet material and folding it once to make two complete leaves.[210] This is a *fold endleaf.*

ii. folding a piece of material along the spine edge to create a shorter element (the stub) and a larger element (the leaf).[211] This is a *hook-type endleaf,* so-called because the stub is 'hooked' around other elements of the endleaf structure.

Only one example of a fold endleaf was found during this research, and this was of paper (Fig. 49). All the other endleaves were hook-type endleaves.

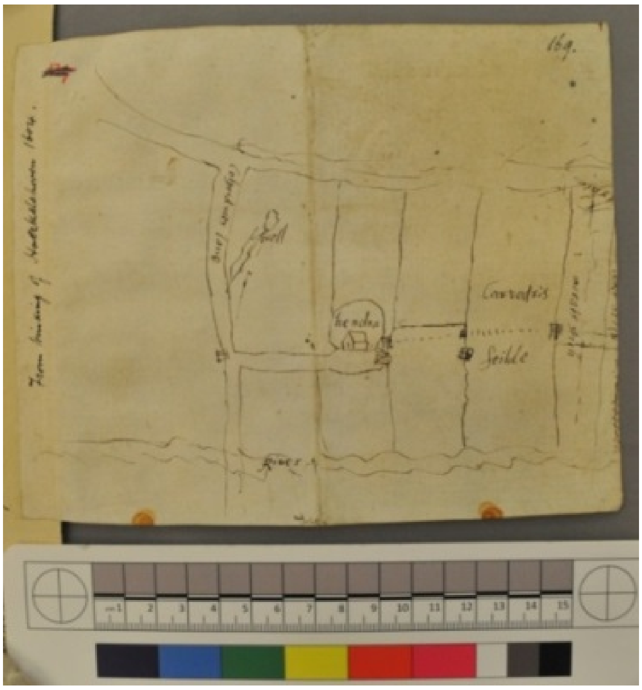

**Fig.49. A *fold endleaf* made of paper.**
Lanhydrock 169, from the source binding D.1.31 (Frankfurt, 1604). The central crease separating the two leaves is visible and the orange stains at the tail edge of both leaves would have been aligned when the leaves were folded along this crease.

208 http://w3id.org/lob/concept/4095

209 Neither *tipped endleaves*, used in Italy from the late fifteenth century through the sixteenth century, and secured to the textbook only by adhesive (and, therefore, without sewing evidence; http://w3id.org/lob/concept/1672) or *wrapper-type endleaves*, where 'a piece of sheet material [is] wrapped around the spine of a textblock to provide conjugate endleaves at each end of the bookblock', http://w3id.org/lob/concept/3573, are not included in this study as no examples were found.

210 http://w3id.org/lob/concept/1338

211 http://w3id.org/lob/concept/1393

#### 4.3.1.1. The hook-type endleaf

Hook-type endleaves are subdivided based on *where the stub of the endleaf is positioned in relation to the textbook* (Fig. 50). They may be

i. *a text-hook endleaf* - where the stub faces towards the textblock and is folded around the adjacent text gathering.[212]
ii. *an endleaf-hook endleaf* - where the stub faces towards the textblock but is not folded around the adjacent text gathering. It may be used alone or it may be folded around another endleaf component, *i.e.* another endleaf (Fig. 51).[213]
iii. *an outside-hook endleaf* - where the stub faces away from the textblock and is folded back to sit on top of the leaf-element of the endleaf (3.2.1., Fig. 52).[214]
iv. *an outside-hook with a cut-stub endleaf*[215] – where the stub faces away from the textblock but, in contrast to type iii, the stub is pasted to the inner surface of the board and cut at head and tail along the fold to allow the cover to be turned in over the boards (3.2.2., 3.2.3, Fig. 53). This endleaf is found on bindings where all or only some of the sewing supports have been laced in to the boards.[216] The pasted-down stub may be acting as a board stabiliser,[217] intended to stop the boards from moving when they are being covered. It is thought to be a Flemish technique.[218]

Another type of outside-hook endleaf, one which was not encountered during this research, **'**consists of a single piece of sheet material folded in half and then folded again along the folded edge to create a folded stub'.[219]

In this thesis, endleaf types i and ii are together termed *inside-hook endleaves* as in both cases the endleaf stub faces the textblock. The stub of the outside-hook endleaf is usually the widest of the hook-type endleaves and its corners are sometimes canted, that is, cut off at an angle of 45 degrees.[220] An endleaf might be only one component of an endleaf unit.[221] The unit might also include another endleaf, either blank paper or printed waste, or a guard.

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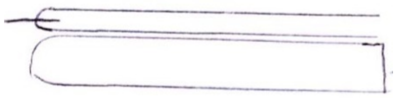
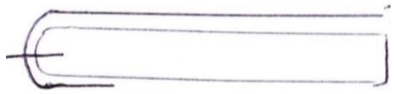
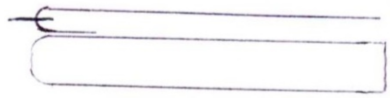
212 http://w3id.org/lob/concept/1662
213 http://w3id.org/lob/concept/1316
214 http://w3id.org/lob/concept/1467
215 This term is not included in *LoB*.
216 This feature is known as *select lacing* http://w3id.org/lob/concept/1571
217 http://w3id.org/lob/concept/1220
218 Pickwoad, personal communication, 29/07/18.
219 http://w3id.org/lob/concept/1467
220 http://w3id.org/lob/concept/4612
221 http://w3id.org/lob/concept/2887



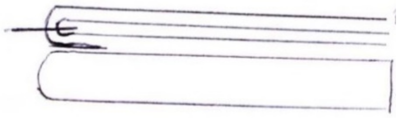
1. Fold endleaf -  sewn through the fold - the sewing thread is indicated as a line through the fold - separate from the adjacent text gathering below.



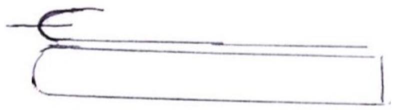
2. Hook-Type endleaves
i. Text -hook endleaf - the stub is folded around the adjacent text gathering.



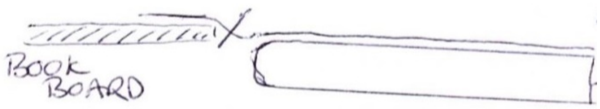
iia. Endleaf-hook endleaf – used alone, the stub is facing the text gathering.



iib. Endleaf-hook endleaf - folded around another endleaf with the stub facing the text gathering.



iii. Outside-hook endleaf - the stub is facing away from the adjacent text gathering, towards the cover.




iv. Outside- ,hook with cut stub endleaf - the stub is facing away from the text gathering and pasted down to the inner surface of the book board.

**Fig. 50.  Endleaf types**
1.The fold endleaf
2.  hook-type endleaves (i – iv)

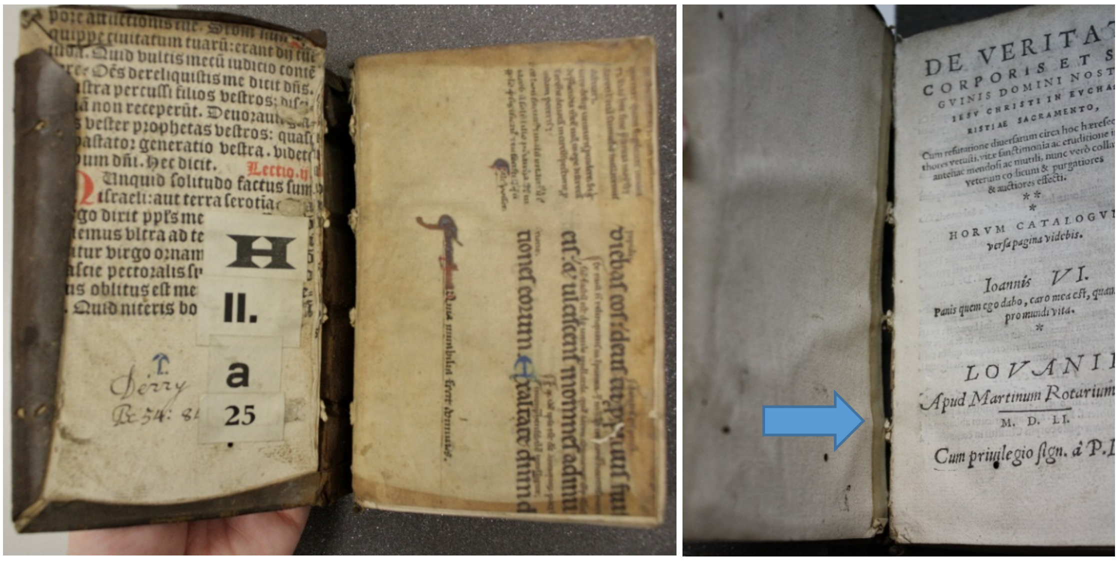


**Fig. 51. Endleaf-hook endleaf (Type ii)   - an inside hook endleaf.**
Left: A board made from laminated printed waste faces a parchment manuscript-waste fragment endleaf.
Right: The stub of the endleaf-hook endleaf is folded around a blank paper endleaf and faces the title page
Derry & Raphoe Diocesan Library: HII. a25.(Louvain, 1551).

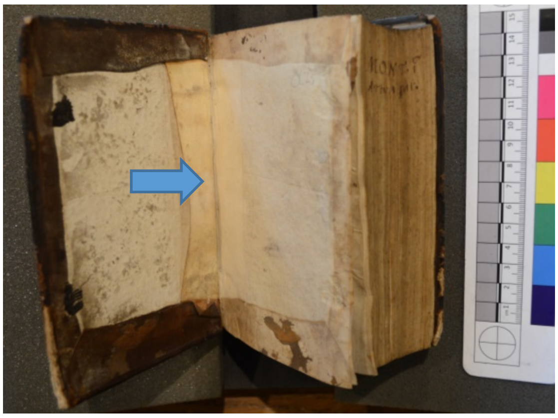


**Fig. 52. Outside-hook endleaf (Type iii).**
The stub is facing the right board. It is folded back to sit on top of the leaf element of the endleaf.
Derry & Raphoe Diocesan Library: C1. k19 ([Heidelberg?], [1576]).

**Fig. 53. Outside-hook with cut-stub endleaf (Type iv).**
The stub of this paper endleaf sits under the pastedown. The cuts at the head and tail of the fold in the endleaf enable the turning-in of the cover over the boards.
Merton: 73.g.6 (Venice, 1554).

#### 4.3.1.2. The relevance of the endleaf-type

> 'The importance of describing endleaf types in detail comes from association between certain endleaf formats and different types of binding, national provenances and even individual owners and binders.'[222]

In terms of Oxford bindings, Ker found that the endleaf used up until 1540 is the inside-hook endleaf,[223] after which there was a switch to the outside-hook endleaf.[224] In Cambridge, however, based on what Ker admits was a limited survey, this change did not happen until a decade later and the outside-hook endleaf was not used universally in the 1550s or 60s. Ker's conclusion is that an outside-hook endleaf, in an English context, is more likely to be from an Oxford than a Cambridge binding.[225]

The outside-hook with a cut stub endleaf, which Ker does not refer to, is, as stated earlier (4.3.1.1.), possibly Flemish.[226] The Westminster fragments MS 36, 1 & 2, discussed 2.2.2, were cut-stub endleaves but the source binding has been identified, by its tooling, as an Oxford binding. The text within this binding was printed in Florence 1556. A Flemish-style endleaf in an Oxford binding could be explained as

i. the bookblock having been sewn with the endleaves on the continent (p.16) and put in boards and covered in Oxford.
ii. the bookblock having been sewn in Britain by immigrant binders.

Identifying the endleaf type, therefore, can help with dating the source binding and provide some clues as to its origin.

#### 4.3.1.3. Identifying the endleaf type when removed from a binding

When endleaves made from manuscript-waste fragments have been removed from a binding they can still be identified as endleaves by their shape - a leaf, the same shape as the textblock which had been folded so that it could be sewn through (Fig. 55, 54). When these fragments have been

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222 http://w3id.org/lob/concept/1573

223 Ker did not use the term 'inside hook endleaf' but described this type of endleaf in the following way 'The parchment pastedown and the accompanying paper flyleaf are cut a little wider than the book in which they are to be used. The extra width is folded and taken round the end sections, or projects as a narrow turned-up strip opposite the title page'. Ker, 2nd edn., 2004, p.226-7.

224 Ker described this type of endleaf in the following way, 'The parchment pastedown and paper flyleaf are cut, at first, a little wider and later, considerably wider, than the book in which they are to be used. The extra width is folded back to produce a double thickness of material along the part of the cover next to the back.' Ker, 2nd edn., 2004, p.227.

225 Ibid.

226 Pickwoad, personal communication. 29/07/18.

conserved or inserted into a guardbook, however, the fold may have been opened out resulting in a crease in the fragment. With fold endleaves the crease is in the middle of the fragment, as the fragment was folded equally in two (Fig. 49). With hook endleaves the crease will be closer to one side, as the stub is significantly narrower than the leaf-element of the endleaf. Evidence of the binding, in the form of staining or impressions from inner surface of the cover of the binding, may be present on the side of the leaf and the side of the stub that faced the inner surface of the cover – always presuming that there was no other element of the endleaf unit which the fragment had been folded around and which had been between the board and the fragment. (No examples were found where the leaf-element of the endleaf had been pasted to the board before the board had been covered.) This evidence can be used to identify the type of hook-style endleaf.

(All images used in the following sections show fragments from bindings that had been covered in tanned skin as the staining from this material is more visible than impressions from a parchment cover.)

**4.3.1.3.1. Inside-hook endleaves**

With inside-hook endleaves, the stub faces the textblock while the leaf faces the cover and only the latter will have been in contact with the inner surface of the board or cover. Evidence from the board or cover, then, will have transferred to the leaf and not to the stub. It will extend right up to the fold (Fig. 54), unless the binding had laced-in endbands in which case the turn-ins of the cover will have been cut away at the joint to allow for the lacing-in of the endbands to the boards (Fig. 56).[227]

When inside-hook endleaves have been removed from bindings, it is not usually possible to identify from the evidence on the fragment whether it is an endleaf-hook or a text-hook endleaf. While the stub of an endleaf-hook endleaf may leave an indentation on the leaf section of the endleaf which could indicate that there was no quire between the two, the same evidence might be seen on a text-hook endleaf if the section the hook was folded around was not particularly thick. It may, however, be possible to see the evidence in the source binding, for example an indent from the stub on the recto of the title page (if it was an endleaf hook endleaf) or on the verso of last leaf of the first section (in the case of a text-hook endleaf).

[227] I am grateful to Prof. Pickwoad for identifying this feature.

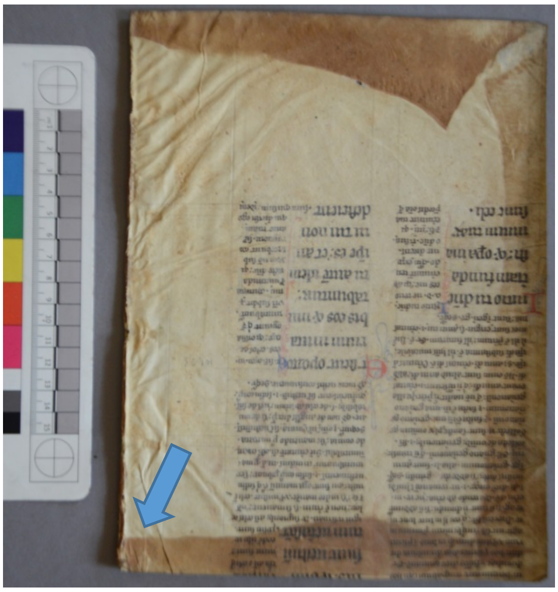
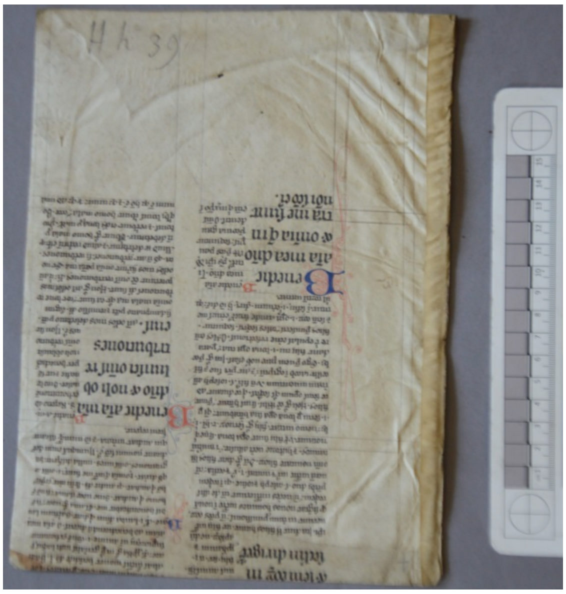

**Fig. 54. The outer face of an inside-hook endleaf removed from a binding, turn-in staining extends to the fold (image on the left).**

**Fig. 55. The inner face of the same endleaf – leaf and stub (image on the right).**
The stub, which has not been opened out, is visible on the inner face of the leaf. It is not possible to say definitively whether this is an endleaf or text hook. The parchment is quite stiff and there is little room between the stub and the endleaf which suggests it might be an endleaf-hook endleaf.
Clare 3b faced the left board of A.6.8. (Hijar, 1485).

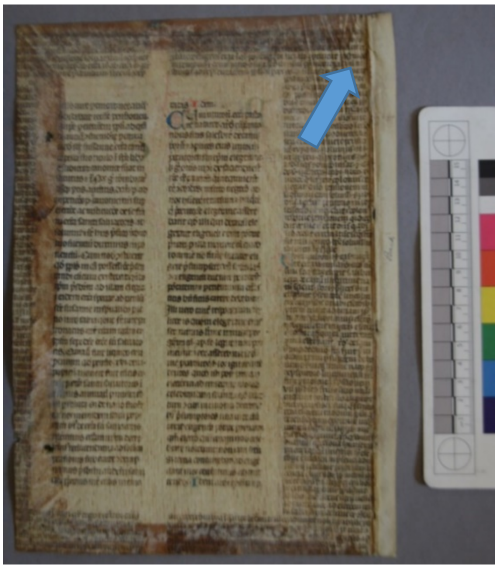
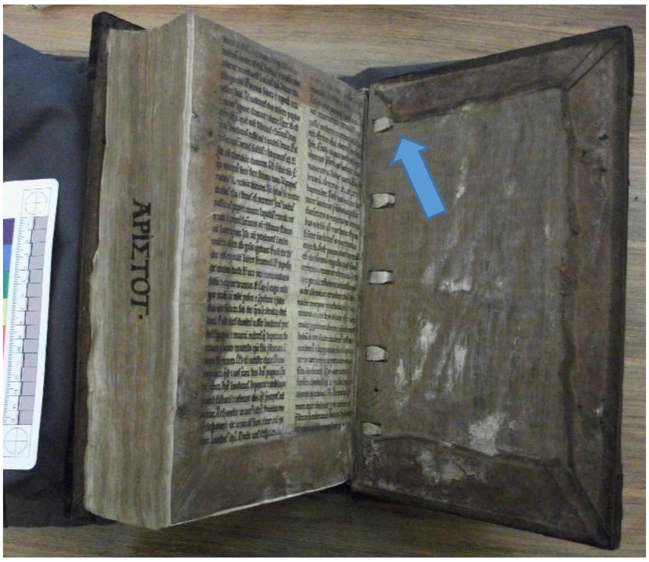

**Fig. 56. Fragment with turn-ins shaped at the joints (image on the left).**
The outer face of an inside-hook endleaf, with the stub folded out – showing that the source binding's turn-ins were cut away at the joint
Clare 2c faced the right board of K.5.5. (Strasbourg, 1529).

**Fig. 57. Turn-ins cut away at joint (image on the right)**.
This allows the endbands to be laced in to the board. Endleaf still *in situ*.
Clare: Q.3.9 (Basel, 1539).

#### 4.3.1.3.2. Outside-hook endleaves

With outside-hook endleaves, the stub faces away from the textblock and towards the inner surface of the cover and is folded back to sit on top of the leaf-element of the endleaf. If the stub and the leaf of the endleaf were in contact with the inner surface of the cover, evidence from the binding will have transferred to both. When the fragment is removed from the binding and the fold opened out, the binding evidence appears on both the leaf and on the stub but on opposing sides of the opened-out leaf (Fig. 58). The turn-in stain on the leaf does not extend to the fold but rather to where the stub would have folded back on to the leaf. This gap in the turn-in stain corresponds to the width and shape of the stub.

However, if there had been another endleaf component, folded around the manuscript-waste fragment, the stub of the fragment would not have been in contact with the inner surface of the cover. The binding evidence would have transferred to the stub that was in contact with the inner surface of the cover. [228] In this case,

i. the leaf-element of the manuscript-waste fragment endleaf will have the binding evidence up to the point to which the stub would have been folded back and not to the fold (Fig. 59).
ii. the stub-element of the same endleaf will not have binding evidence.

#### 4.3.1.3.3. Outside-hook with cut stub endleaves

The staining pattern on a manuscript-waste fragment which had been an outside-hook with cut-stub endleaf is different again. The full width of the leaf-element of the endleaf would have been in contact with the board as the stub was positioned under the turn-in rather than, as with an outside-hook endleaf, on top of it. When the outside hook with cut-stub endleaf is removed from a binding and the fold opened out the binding evidence is visible on the leaf up to the crease and across onto the stub. The stain, then, extends continuously across one side of the opened-out leaf as the stub was stained as it sat under the turn-in and the leaf was stained as it sat on top of the turn-in (Fig. 60). There is no stain on the other side of the fragment. There is also a slit at head and tail along the crease. However, depending on the way the fragments are housed, this may be difficult to identify, as it was with Lanhydrock 96i, ii which was secured to the leaf of a guardbook using a heavy paper which obscured the cut (Fig.75).

[228] Lanhydrock 19, 20, for example, had a wide outside hook but the stub had no staining from the turn-ins presumably because there was another element to the structure.

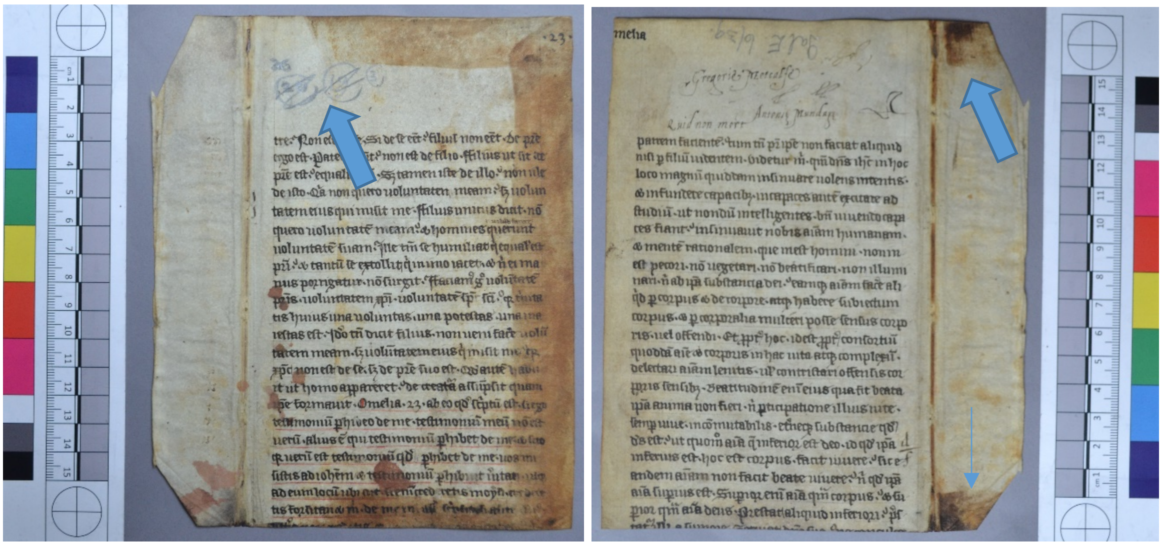

**Fig. 58. Outside-hook endleaf removed from a binding.**
With staining on the leaf but the stub, with canted corners.
Left: outer face of the fragment.
Right: inner face of the same fragment.
Westminster MS36 3. Left endleaf from M.6.80 ([Geneva], 1564), (3.2.1).

**Fig. 59. Outside-hook endleaf with evidence of another endleaf component.**
Left: The outer face shows staining and a gap where the stub sat. (Blue arrow shows fold.)
Right: The inner face shows other side of this endleaf. The staining has penetrated through but there is no stain on the stub. This suggests that there was another component in the endleaf unit which protected the stub from staining.
Clare 4di. Left endleaf from A.2.3. (Basel, 1552).

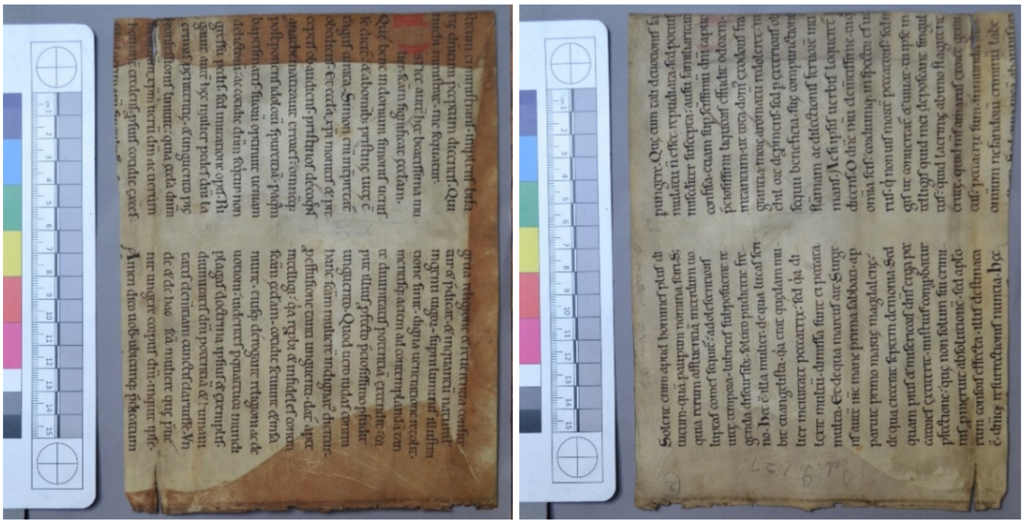

**Fig. 60. Outside-hook with cut-stub endleaf.**
The staining is on the stub as it sits under the turn-in and the leaf up to the fold, both on the same side of the fragment.
Westminster MS36 1 (3.3.2). Left endleaf from CD.82. (Florence, 1556), (3.2.2).

#### 4.3.1.3.4. Hook endleaves minus stubs – A damaged endleaf

During this research several hook-style endleaves were found which no longer had a stub attached to the leaf (Fig. 61). This may indicate that the endleaf had been removed from its source binding by cutting the leaf away from the stub. This would enable the endleaf to be

i. removed without disturbing the sewing - a concern if the endleaf had been hooked around a section of the textblock - or,
ii. removed without lifting the stub from the board - in the case of an outside-hook with cut stub endleaf

An endleaf fragment without a stub which has turn-in staining up to what would have been the fold could then either have been

i. an inside hook endleaf minus its stub.
ii. an outside-hook with cut-stub endleaf, minus its stub.

No cases of an outside-hook endleaf without a stub were found – these would have been distinguishable from the other two cases cited above as the turn-in stain would not have extended to what was once the fold. As outide-hook endleaves are not sewn in with a section of the textblock, they could be removed with the stub intact without disturbing the textblock. A *separate pastedown,*[229] a leaf which is pasted down to the inner surface of the board but not sewn in with the textblock, would also have the same shape as a fragment minus its stub. This is a late seventeenth-century feature and is made of paper. No examples were found in this study.

[229] http://w3id.org/lob/concept/1575.

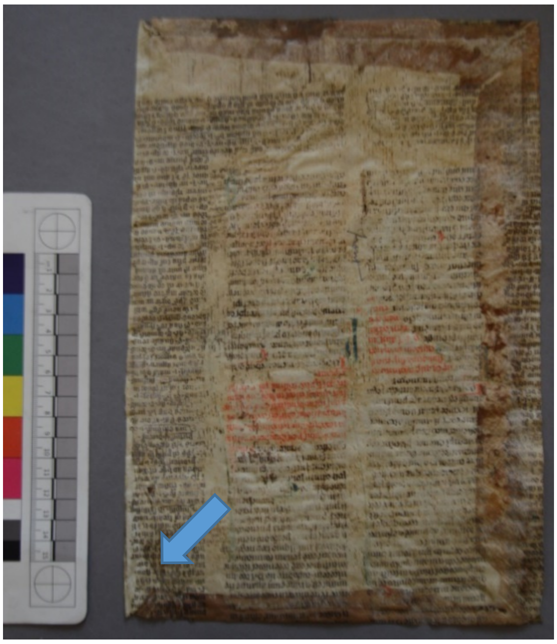
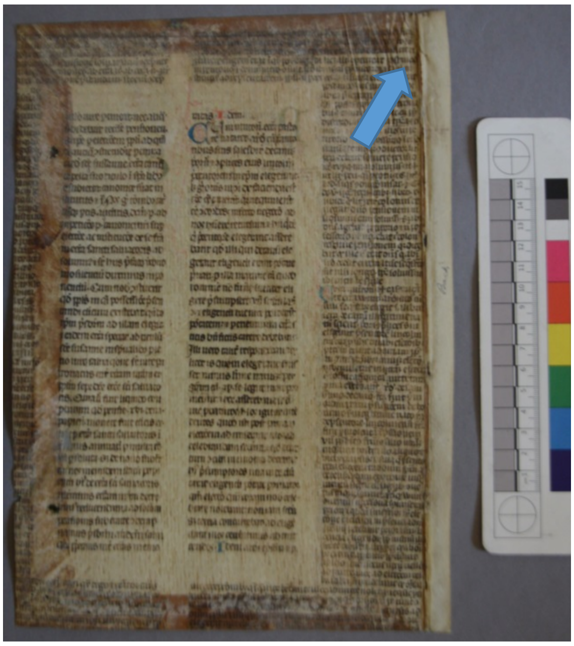

**Fig. 61. An endleaf with a stub and its pair minus its stub.**
Left: Clare 4c, now lacking its stub - faced the left board of K.5.5. (Strasbourg, 1529).
Right: Its pair Clare 2c with stub, faced the right board of K.5.5.
This is a pair of inside-hook endleaves with the turn-ins cut away at the joint to allow the endbands to be laced in (see Fig. 56).

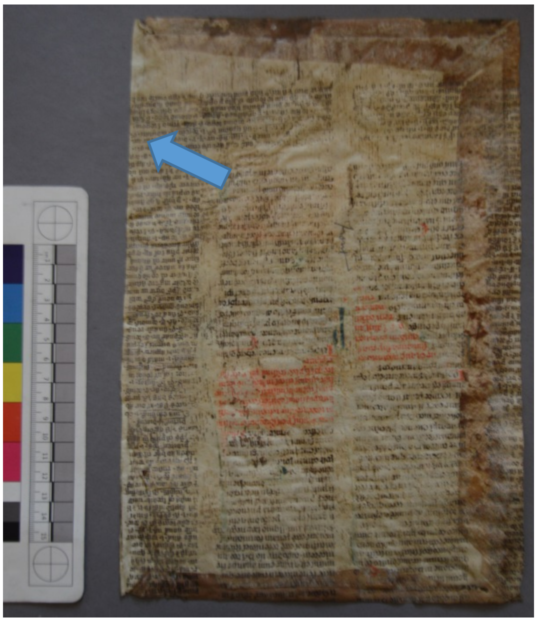
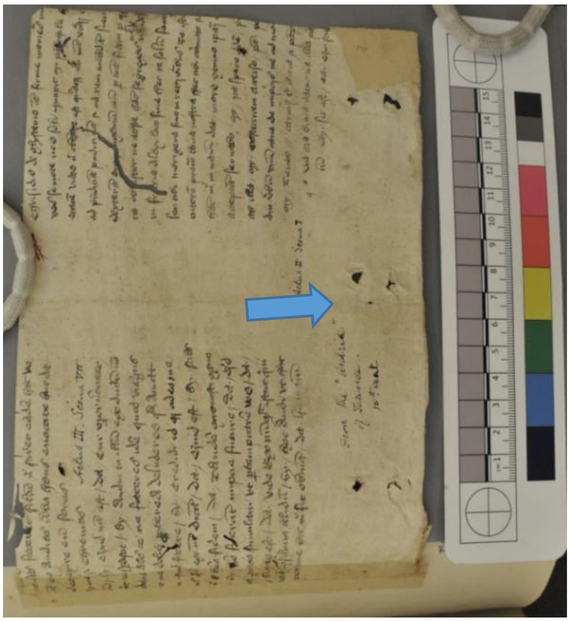

**Fig. 62. Comparing an endleaf minus its stub and a paper layer of a laminate board.**
Left: Clare 4c, the pair of 2c - minus its stub - faced the left board of K.5.5. (Strasbourg, 1529).
Right: Lanhydrock 126ii with lacing-in holes. From the board of A.21.5 (Paris, 1518).

#### 4.3.1.4. Distinguishing a damaged endleaf from a layer of a laminated board

Manuscript-waste fragment endleaves lacking their stubs are not to be confused with the fragments, usually of paper, which were used to make a layer of the board material (board laminates)[230] or to cover the board material (board linings).[231] They are both the same shape in that neither has a spine fold or a stub. However, fragments used to make layers of the book's board will have holes punched in them (Fig. 62) through which the supports were laced. This contrasts with an endleaf which will have staining or impressions from laced-in slips but not holes. Lanhydrock had two examples of fragments used to make boards (126i, ii and 141, 142), both made of paper. Lanhydrock 126i, ii did not have evidence of the cover material even though their source binding (A.21.5: Paris, 1518) had a tanned skin cover. This means that these fragments must have been one of the inner layers of the board. Lanhydrock 141, 142 did have turn-in evidence which would suggest that these were the uppermost layers of the board and had sat immediately under the turn-ins. (The source binding was not identified for these fragments.)

#### 4.3.1.5. Comparing hook-type endleaves removed from their source binding

As seen, manuscript-waste fragments used as endleaves can still be identified as inside or outside-hook endleaves based on the turn-in evidence which transferred from the inner surface of the cover of the source binding onto the leaf and stub. While it may not be possible to distinguish the two inside-hook endleaves (an endleaf-hook and text-hook endleaf) from each other, an outside-hook endleaf can be distinguished from an outside-hook-with-cut-stub endleaf again by examining the pattern of staining and identifying a slit at the head and tail of the fold.

All the examples above have evidence of the transference of staining from the tanned-skin cover to the endleaf and were from in-board bindings. In the case of endleaves from a parchment-covered laced-case binding, while it might be possible to identify an inside-hook endleaf from an outside-hook endleaf by the absence of an indentation from the turn-ins of the cover on the stub of the inside-hook endleaf, it can be more complicated. The turn-ins, if there were any, may not leave a mark, as with Lanhydrock 44, 45. A better gauge may be the width of the stub – outside hooks tend to be wider than inside hooks. In addition, if adhesive is visible on the spine-side of the fold (5.4.3.2) it will indicate which way the stub was folded, and this too will indicate the type of hook.

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[230] http://w3id.org/lob/concept/1218

[231] http://w3id.org/lob/concept/1219

#### 4.3.1.6. Summary of hook-type endleaves

In attempting to classify a manuscript-waste fragment as hook-type endleaf it should be considered whether there is

i. staining on the leaf.
ii. staining on the stub – and which side of the stub, whether it is on the opposite or same side as the staining on the leaf.
iii. a gap in the staining between the fold and leaf-element of the fragment
iv. a cut at the head and tail of the fold.

In the case of

i. an inside hook endleaf: there will staining on the leaf and not on the stub
ii. an inside-hook endleaf from a binding with laced-in endbands: the staining will not extend fully to the fold but is cut away and there will be no staining on the stub.
iii. an outside-hook endleaf: there will be staining on the leaf but there will be a gap in the staining between the fold and the leaf element of the fragment. There will be staining on the stub but on the side of the leaf where there is no other turn-in stain.
iv. an outside-hook endleaf which had another endleaf element: there will be a gap in the staining between the fold and the leaf element of the fragment but there will be no staining on the stub.
v. An outside-hook with a cut stub endleaf: there will be staining on the leaf and the stub and it will appear continuous. There will also be a cut at the head and tail of the fold. (Table 7).

When the stub is present, the identification of an endleaf as an inside or outside-hook endleaf is quite straightforward as the presence or absence of staining on the stub will indicate whether it faced the textblock or the cover. However, when the stub is missing, the evidence can have several interpretations, for example:
an endleaf with a turn-in stain that has been cut away at the joint could be an

i. inside-hook endleaf from a binding which had the endbands laced in (Fig. 56).
ii. outside-hook endleaf which had a stub with canted corners (Fig. 57).

an endleaf with a turn-in up to the where the fold would have been could be an

i. inside-hook endleaf (with endbands not laced in) (Fig. 54).
ii. outside-hook with cut-stub endleaf (Fig. 59).

Details such as whether the stub has canted corners[232] or not will affect the staining pattern and can also be used to link fragments and bindings (4.3.3.). However, it should always be born in mind that there might be another element of the endleaf structure influencing the staining pattern. This may be seen when the shape of the stub does not correspond to the shape in the gap in the turn-in staining. [233]

An outside-hook endleaf may be removed quite easily, without disturbing the rest of the bookblock, by cutting the sewing thread that secures that leaf. To remove an inside-hook endleaf, on the other hand, if it is a text-hook endleaf would involve disturbing the section it was hooked around and it might be more likely that it was removed  by a binder. (It could, though, also be removed by cutting off its stub.) An endleaf, then, even while dissociated from its source binding, may, in its form and condition, have evidence as to whether its source binding has been repaired or not.

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[232] Lanhydrock 19,20, for example, have straight corners while Lanhydrock 47 is shaped.
[233] Lanhydrock 56, 109, p.271.

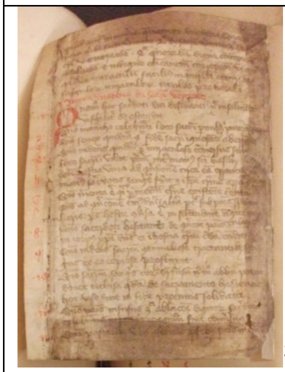
| Image | Endleaf Type | Turn-in stain on Leaf | On Stub |
|---|---|---|---|
|  234 | inside -hook endleaf | Turn-in stain up to fold | No stain on stub |
|  235 | outside-hook with cut stub | Turn-in stain up to fold | Stain on stub on same side as stain on leaf /cut at head and tail of fold |
|  236 | inside-hook, endbands laced in | Turn-in stain cut away from fold | No stain on stub |

**Table 7. Comparison of turn-in staining patterns on endleaves** (continued next page).

[234] Lanhydrock 111i. Source binding: A.4.35 (Nuremberg, 1561).
[235] Westminster MS36 1. Source binding: CD82 (Florence, 1556).
[236] Clare 2di. Source binding: A.2.2. (Basel, 1529).

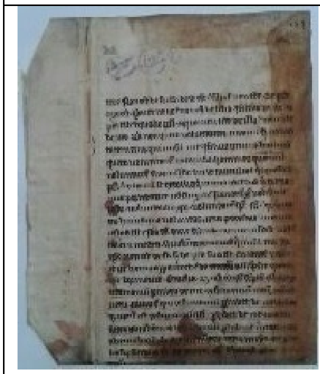
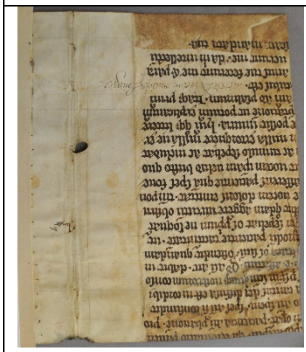
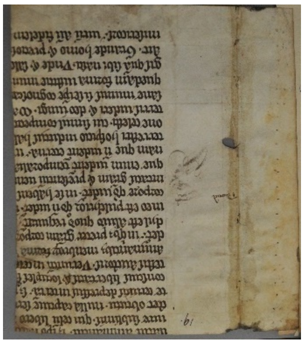
| Image | Endleaf Type | Turn-in stain on Leaf | On Stub |
|---|---|---|---|
|  [237] | outside-hook endleaf | Turn-in stain does not extend to the fold - the gap in the stain is the same shape as stub | Stain on stub (verso) |
|  **Outer face**  [238] **Inner face of same fragment** | outside-hook with another element | Turn- in stain with gap from fold, same shape as stub | No stain on either side of stub |

**Table 7. Comparison of turn-in staining patterns on endleaves.**

[237] Westminster MS36 3. Source binding: M.6.80 ([Geneva], 1564).
[238] Lanhydrock 19. Source binding: D.8.33 (Antwerp, 1566).

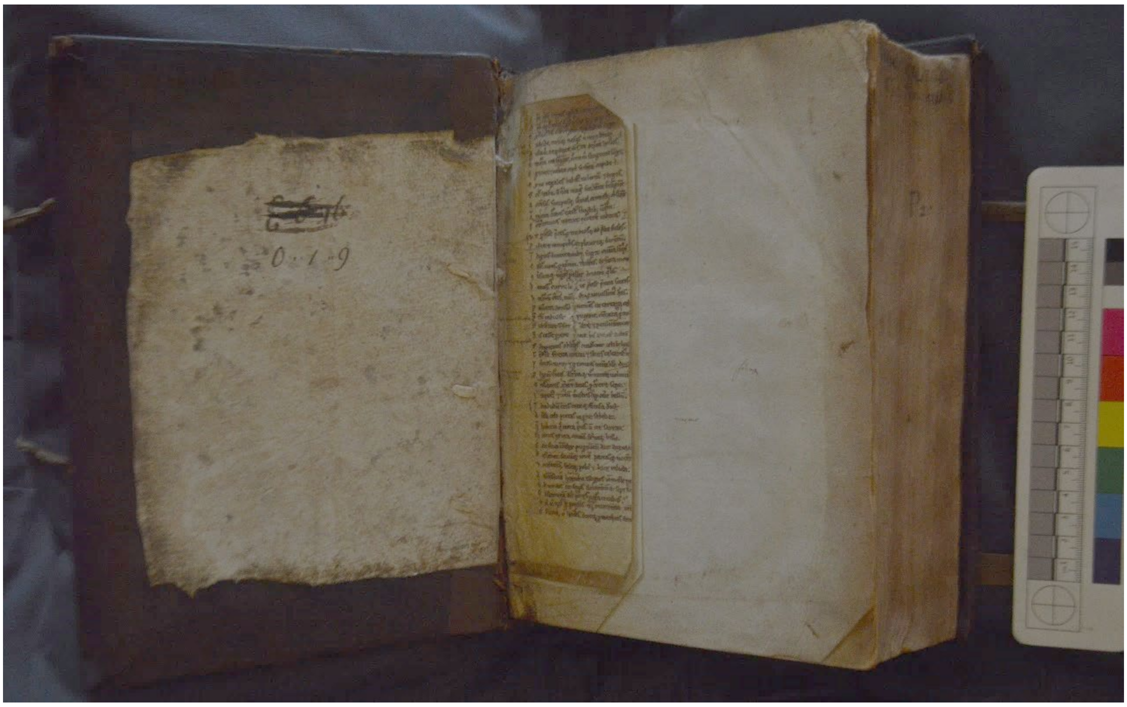


**Fig. 63. Endleaf guard in a binding.**
Clare 0.1.9 (Leiden, 1605). The guard does not extend to the full height of the textblock and has only a small turn-in stain as it was not in contact with the full turn-in. The wide stub of this guard faces the title page

**Fig. 64. Guard removed from a binding – a narrow stub and a wider stub on either side of a fold.**
Lanhydrock 51 set into the guardbook leaf, outer face of the fragment (left) and inner face (right). The narrow stub is to the extreme left of the image on the left, separated from the leaf by the fold on which a line of adhesive and sewing holes can be seen.
Source binding: C.1.18 (Paris, 1512).

#### 4.3.2. Guards

A second type of endleaf component is the guard (Fig. 63). Guards are narrower than endleaves but like endleaves, they are folded down the long side and sewn to the rest of the textblock through this fold. In the case of guards which are *sewing guards*, which were inserted either inside or outside a quire, this fold lies between two narrow stubs.[239] (No sewing guards were examined in this study.) However, in the case of guards found at the extreme ends of a bookblock, the fold is between

i. a wider stub (the corners of which may be shaped), which faces the inner surface of the board, and
ii. a narrower stub, which faces the textblock (Fig. 64).

These guards fall into three categories based on what the guard is folded around:

i. *text guard* - where the guard is folded, often in conjunction with paper endleaves (which may be printed waste endleaves), around the first and last text sections, and so sewn in with those sections.[240]
ii. *endleaf guard* - where the guard is folded around endleaves, either a fold endleaf or, more rarely, a hook-style endleaf (Fig. 63).[241]
iii. *separately-sewn endleaf guard* – where the guard is sewn on its own. This is a French feature which begins in the late sixteenth century. [242]

In cases where the guard has been removed from the binding, it has not been possible to distinguish between these three types of guards as in all cases the wider stub is in contact with the inner surface of the board (and therefore staining or impressions from the turn-ins are visible on the wider stub) while the narrower stub is hooked around either an endleaf or a text gathering or simply on its own. For the purposes of this thesis, the three are not distinguished and all are referred to as guards.

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[239] http://w3id.org/lob/concept/3282
[240] http://w3id.org/lob/concept/3697
[241] http://w3id.org/lob/concept/1313
[242] http://w3id.org/lob/concept/1577

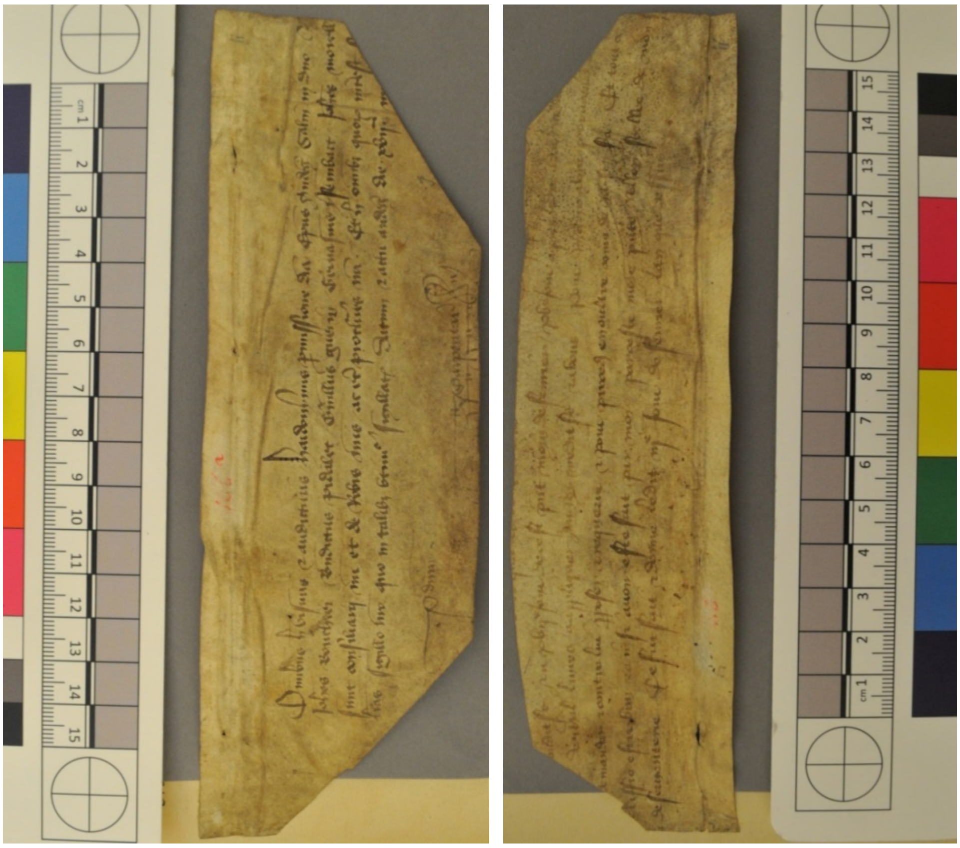

**Fig. 65. A pair of endleaf guards from a parchment-covered binding.**
Left: Lanhydrock 134ii.
Right: Lanhydrock 139ii.
Source binding: C.3.29 (Milan, 1509 & Paris 1512), a parchment-covered laced-case binding.
These guards were on different leaves of the guardbook but were identified as a pair based on their shape. Neither have evidence of staining from the covering material. (Grey card has been placed under the guards for the photograph.)

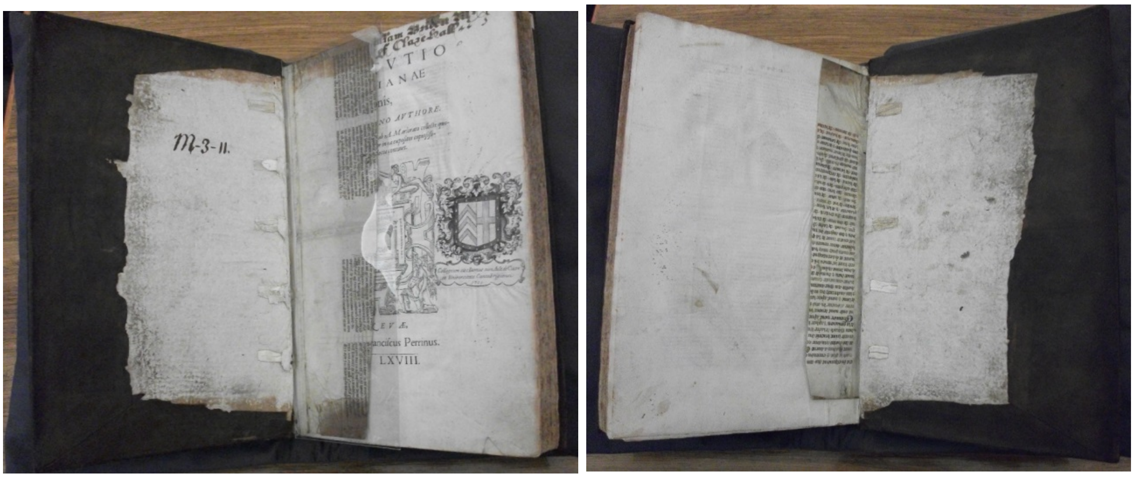

**Fig. 66.A pair of endleaf guards of different height.**
Left: Endleaf guard the same height as the textblock, with evidence of the turn-in. The staining on the board indicates where some of the leather turn-in has broken off.
Right: Endleaf guard, in situ in the same binding, too short to have evidence of turn-ins.
Clare M.3.11 (Geneva, 1558). (Source binding identified by shelfmark on the fragment.)

**4.3.3. Identifying pairs of endleaves and guards**

Endleaves and guards usually occur in pairs in a binding on either side of the textblock and it seems logical that both the left and the right fragments would be removed at the same time. However, this was not always the case. Merton D.3.10 (12), for example, was removed from its source binding 75.d.10 (Paris, 1542) where it had been the right endleaf while the left endleaf remained *in situ*.

Clearly, when attempting to identify the source binding, there is an advantage to working with pairs of fragments as there is more evidence on which to base a selection of candidate matches. In a guardbook or fascicule fragment pairs may be kept together and placed side by side. However, it should not be assumed that fragments placed beside each other in a guardbook were necessarily from the same source binding. As the nineteenth-century guardbooks were often created to display various types of scripts or texts, the fragments were at times organized along those lines. The system used to house the fragments, then, can frustrate the record. Even if both endleaves were removed from their source binding, they may become dissociated from each other as a result of the new housing system. Lanhydrock 56 and 109, for example, were from the same source binding (F.5.8: Oppenheim, 1640) but were not together in the guardbook (neither were Lanhydrock 47, 49). Fragment pairs that are not secured in a guardbook or fascicule, may also become separated. In Clare College endleaves 2c and 4c (source binding: K.5.5: Strasbourg, 1529), were not at first identified as a pair as they were kept in different boxes. Pairs of fragments which have become separated can be identified based on shape (for example, Lanhydrock 134ii and 139ii, Fig. 65) and their features, such as ties (see Lanhydrock 47, 49, Fig. 67). A pair of fragments should not be expected to be exactly the same size (Fig. 66) nor should sewing holes be expected to be in exactly the same position on both fragments as the position of the sewing holes can alter slightly as the bookblock is sewn (Fig. 110, 5.4.3.6)

Identifying fragment pairs based on the script or the *mise-en-page* of the manuscript is not as reliable as using the binding evidence as it cannot be assumed that fragments used in a binding were from the same source manuscript. Identifying pairs based on their endleaf format is also not wholly reliable as while it may be usual for both endleaves to have the same format, this is not always the case. Westminster Abbey MS36 6[243] , for example, which had been the left endleaf in Q.1.8 vol. 3/7(Paris, 1542) had an outside hook while its pair, the right endleaf, MS36 7, had an

[243] Ker 735a: Ker 2nd edn., 2004, p.68.

inside hook. The date of the source binding for these fragments is close to the date when, according to Ker, the endleaf type changed (1540).[244]

The ease with which separated fragment pairs could be identified at Clare College (where the fragments were not bound into a guardbook and so could be easily manipulated) and Lanhydrock, (where all the fragments were in one book) can be explained by the fact that both collections were small, contained and easy to manage. The fragment collection at Merton College, however, comprised several fascicules and sorting the fragments was not easily done. It may be that some of the single endleaves examined in Merton have their pair in another fascicule. The housing system can, then, compromise the record and pairs may not be identified until the whole collection has been examined.

**Fig. 67. Identifying binding pairs** - when fragments are not housed side by side. The turn-in stains are uniform and there are ties at head and tail as well as at the fore-edge**.**
Left: Lanhydrock 47, the left endleaf.
Left: Lanhydrock 49, the right endleaf.
Source binding: A.21.5 (Paris, 1518).
Both images show the inner faces of these fragments as the stub is visible – the stub of the outer face was not visible as it was adhered on the underside of the guard**.** Grey card has been placed under the fragments to photographing them clearly.

244 Ibid., p.227. Ker also noted one Oxford binder, the binder who used rolls V and VI, using mismatched endleaf formats in one volume (Ker, 217).

## 4.4. Spine linings

The third type of fragment examined in this thesis is the spine lining. Spine linings are

> 'pieces of sheet material placed on the spine, and either adhered to it or held in place without adhesive on the spine either by attachment to the boards or the endbands. Adhesive linings were used to reinforce and preserve the shape of the spine and also to control flexibility and thus the opening characteristics of the bookblock. They were made in a variety of different types and combinations of types and may be placed within the width of the spine or overlap it and be used to reinforce cover attachment and board attachment. Linings can be made from single pieces of sheet material (continuous, overall, and slotted), matched pairs (comb) or multiple pieces, not always of the same type (transverse, panel and patch), attached to different parts of the spine.'[245]

Spine linings were used as early as Carolingian times[246] and were in regular use on the Continent by the fifteenth century.[247] In Britain, however, they did not become widely used until the late eighteenth century, though they were used on larger books before this.

Spine linings were not well represented in the collections examined – possibly because many of these linings are made up of multiple small pieces which, as stated earlier, are generally not found in fragment collections (3.2.2). Even if a panel spine lining (neat squares or rectangles of material placed between the joints and the panels created by the sewing supports),[248] or a patch spine lining (similar to panel linings but more irregular in shape and they do not fill the whole panel)[249] had been retained, it still might not be possible to tell whether these pieces comprised a complete spine lining. This is because fragments without text written on them or of paper (which were often used in conjunction with parchment panel linings) might have been thrown away. In cases where, for example, three fragments were retained, there is no way of knowing whether there had been only ever been three linings or whether only three had survived. Only those spine linings made from a single piece of material could be used to identify a source binding. However, one-piece linings

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245 http://w3id.org/lob/concept/1619,
246 Szirmai, 1999, p.126-7.
247 Ibid., p.194-5. They were present in the majority of Gothic bindings examined by Szirmai.
248 http://w3id.org/lob/concept/1479
249 http://w3id.org/lob/concept/1494

(continuous[250], over-all[251] or slotted[252]) were also not found in the collections examined. This might point to the fact that fragment collections where the fragments were removed from British bindings are unlikely to have spine linings as they were not commonly used there until the late eighteenth century.[253] Comb spine linings, though, were found in the fragment collections at Westminster Abbey (3.2.4.), St Canice's and The Wren Library.[254]

#### 4.4.1. Comb spine lining

Comb spine linings (Fig. 68 and 69) have a very distinctive shape being

> "made of two parts, each of which is slotted along one edge to allow it to be adhered to the spine on each side of the sewing supports, but retaining a continuous lining extension in each joint, giving them the appearance of a comb with very wide 'teeth'. The teeth lie over each other in the spine panels, creating two thicknesses of lining… The unslotted, outer halves of each lining, the lining extensions, in the joints, can be found adhered to the inside of the boards of inboard bindings or left unadhered in laced-case bindings."[255]

There are two variants which are also sewn in to the textblock, neither of which were found in the collections examined:

i. the comb guard with folded stub "between the outermost and the next gathering at the joint, thus allowing the outermost gatherings to be sewn through the lining"[256]
ii. the tabbed comb spine lining, a South German type of the late fifteenth and early sixteenth centuries "in which small tabs of parchment are left at the inner end of each of the slots cut across the lining for the sewing supports and which are folded around the outermost gatherings on both sides of the bookblock to act as external sewing guards."[257]

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250 'Spine linings cut to the width of the spine and which extend from (or close to) the head to the tail of the spine. Such linings were often used on smooth spines created by unsupported sewing or recessed-support sewing, but are occasionally found over raised supports, in which case the lining will be moulded over the supports.' http://w3id.org/lob/concept/1259

251 'The lining is cut to the height of, but wider than, the spine, thus creating a lining extension on each side which can be adhered to the board or cover… Overall linings with the extensions adhered to the outside of the board are a typical of Greek-style and Islamic bindings.' http://w3id.org/lob/concept/1468

252 'A piece of sheet material cut wider than the spine (to provide lining extensions) and to or close to the height of the spine, with slots cut out of it of the same size as the sewing supports to allow it to fit over the supports and lie flat against the spine-folds of the bookblock between them. Slotted linings should not be confused with comb linings which create a lining of a similar pattern but from two pieces of sheet material which overlap each other across the spine, rather than one.' http://w3id.org/lob/concept/1461

253 http://w3id.org/lob/concept/1619,

254 The Wren Library and St.Canice's were selected for this research because they had these spine linings.

255 http://w3id.org/lob/concept/1255

256 http://w3id.org/lob/concept/4225

257 http://w3id.org/lob/concept/4223

Comb spine linings were not a feature of British bookbinding. They were used

i. in Germany from the late middle-ages until the early sixteenth century.
ii. in Italy from the late middle-ages until the late sixteenth century.
iii. in France from the second quarter of the sixteenth century until the mid-eighteenth century.

They can, then, be indicative of provenance and date.

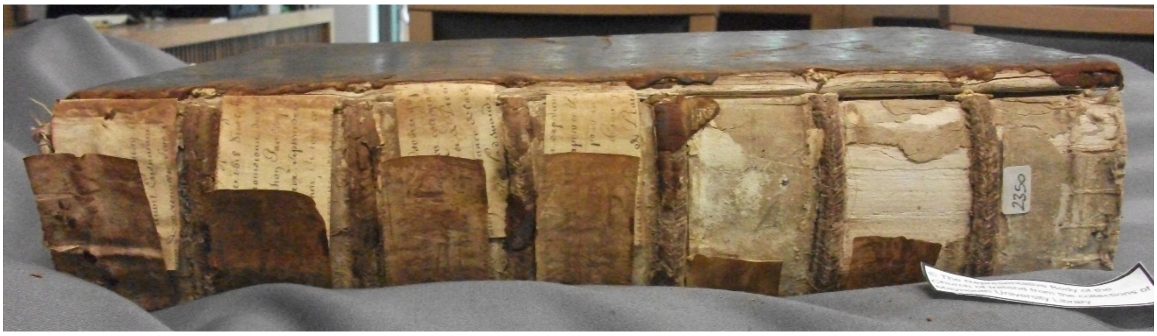


**Fig. 68. A comb spine lining *in situ*.** (The lower three panels are damaged.)
The two teeth of the comb can be seen to be overlapping here.The paste has failed. The other part of the lining – the extension - sits against the inner surface of the board
St Canice's, 2332 (Paris, 1555) - 2350 label visible in tail panel an error..

**Fig. 69. Comb spine lining removed from a binding.**
Left and Middle: Two parts of the comb lining shown separately.
Right: The whole lining with teeth overlapping as they would have been positioned on the spine panels between the sewing suppports.
The Wren Library, R.11.2/21. Source binding not identified.

## 4.5. Covers

A fourth category of manuscript-waste fragments consists of those which were used to make covers for a bookblock. Covers made from a fragment of a book leaf will have text on both the outside and the inside. With covers made from a fragment of a document it is more likely that the text-side of the fragment was on the inside and the unwritten side was the outside of the cover. In both cases, the title or author of the text within the binding may be written on the sides or on the spine of the cover, either up or down it - or across it, if it is sufficiently wide.

There are two distinct types of covers. Both are case bindings, that is they are 'complete in themselves before they are attached to bookblocks'[258] and they are distinguished from each other by how they are attached to the bookblock, whether that is a

i. stitched through a cover binding or a
ii. laced-case binding.

(The terms *limp,*[259]to signify that there were no boards under the cover, or *semi limp*, to mean that there were thin, flexible boards in conjunction with the cover, are not used in this thesis.)

### 4.5.1. Stitched through a cover binding

In this binding, the cover is wrapped around the bookblock and the two are stitched together, parallel to the fold (Fig. 70).[260] The stitching is visible on the exterior of the sides of the cover, parallel to the joint. When detached from its bookblock, this cover will be identifiable (Fig. 71) as having

i. two parallel lines running close to the centre of the fragment, which mark the spine (Fig.71)
ii. to the outer side of each of these parallel, a row of holes. These are the holes through which the cover and the textblock were stitched together.
iii. to the side of each of the parallel lines there may also be a slightly depressed, and cleaner, line running between the holes and this is where the sewing thread was positioned.

Stitching a cover and textblock together like this is a quicker, and therefore less expensive, way of making a book and so indicates a book from the lower end of the market.[261] There are no sewing supports used in this structure.

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258 http://w3id.org/lob/concept/1242
259 http://w3id.org/lob/concept/1423
260 http://w3id.org/lob/concept/1643
261 Pickwood, 1994, p.89.

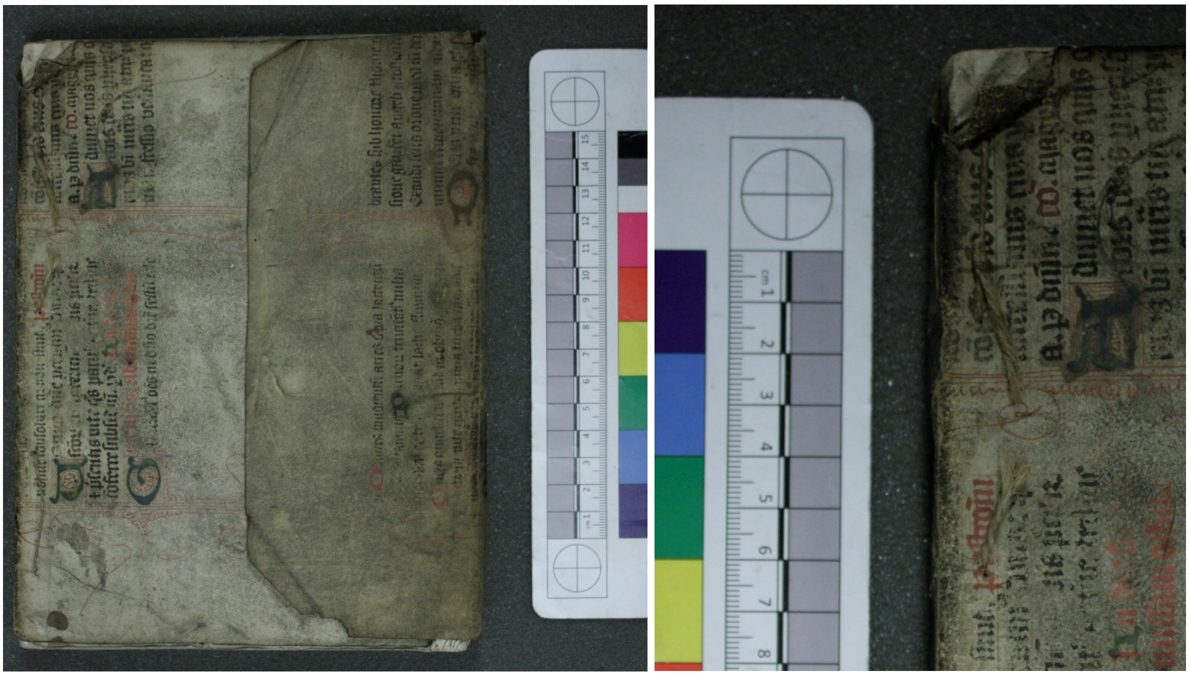

**Fig. 70. Stitched-through-a-cover binding attached to its bookblock.**
Left: The spine is to the left where the thread is visible. The fore-edge flap extends from the other side, over the fore-edge to nearly the middle of the front cover.
Right: A detail of the thread between the stitching holes on the cover
Derry & Raphoe Diocesan Library. HII. b2. (Antwerp, [1566]).

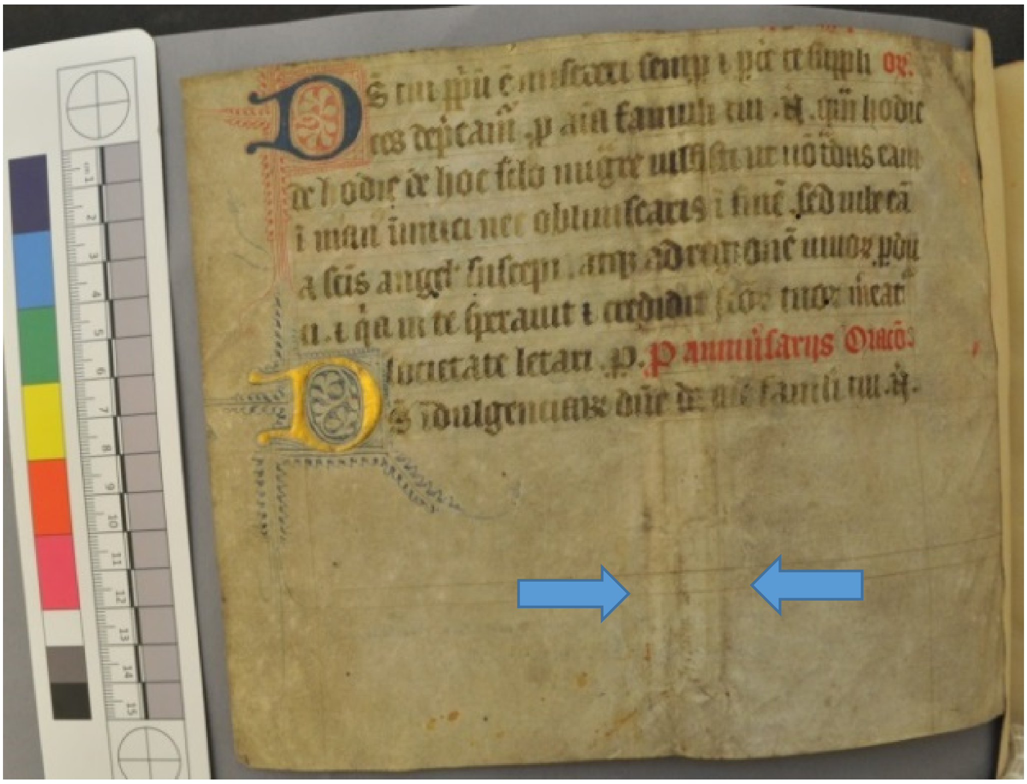

**Fig. 71. Stitched through a cover binding removed from its bookblock**.
The outside cover with the title on the spine (at tail edge). The two sides of the cover are separated by the parallel lines delineating the spine.
Lanhydrock 92. Source binding: A.4.7 (Herborn, 1612), identified by note on fragment.

### 4.5.2. Laced-case binding[262]

This second type of cover found in collections is

> 'a case which is attached to a bookblock by means of lacing either sewing support and/or endband slips or secondary tackets through the cover'[263] (Fig. 72).

They are found with or without turn-ins - the absence of a turn-in would suggest a Germanic/Low Countries origin, though English binders used this model into the second half of the sixteenth century.[264] They are also found with envelope flaps,[265] the form of which can be country-specific – English bindings, for example, have the flap from the left side to the right side.

When removed from the bookblock, the cover can be identified as being a laced case by the presence of its lacing-in holes found on either side of what was the spine (Fig. 73 and 74). As with the stitched binding, the spine is marked by two parallel lines just off the centre of the fragment. For each entry hole there will be an exit hole - the sewing supports were taken through the entry hole to the exterior of the cover and then back inside the cover through the exit hole.

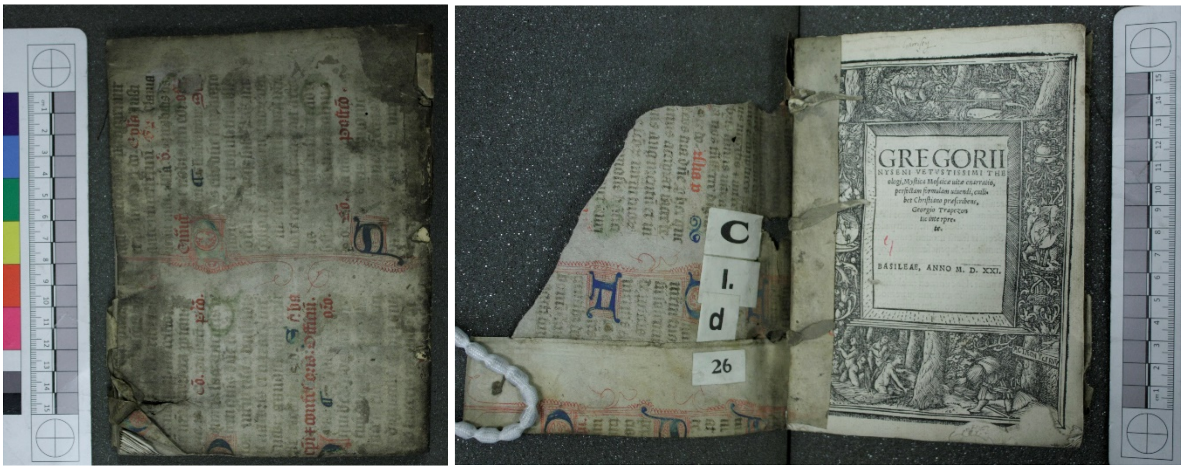


**Fig. 71. Laced-case binding attached to the bookblock.**
Left: Right side of the cover with the three alum-tawed supports laced in at the joint (on the right side of the image).
Right: The damaged left side of the cover, with turn-in, and the title page.
Derry & Raphoe Diocesan Library CI.d26 (Basel, [1521]).

262 http://w3id.org/lob/concept/4392
263 http://w3id.org/lob/concept/1412
264 Pickwood, personal communication, 29//07/18.
265 http://w3id.org/lob/concept/1343

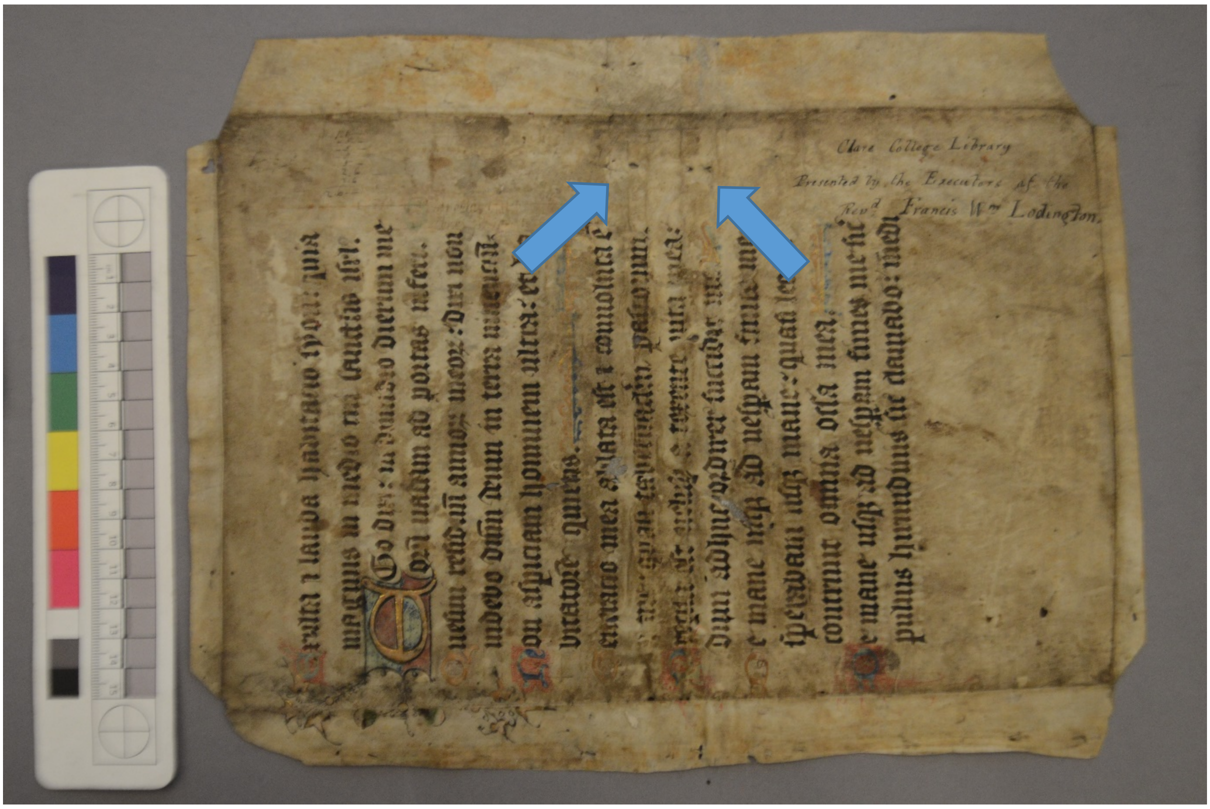


**Fig. 73. A laced-case cover removed from its bookblock. The outer side of the cover.**
Clare 2b. The lacing-in holes are less visible here due to soiling.
The source binding for this fragment was not identified.

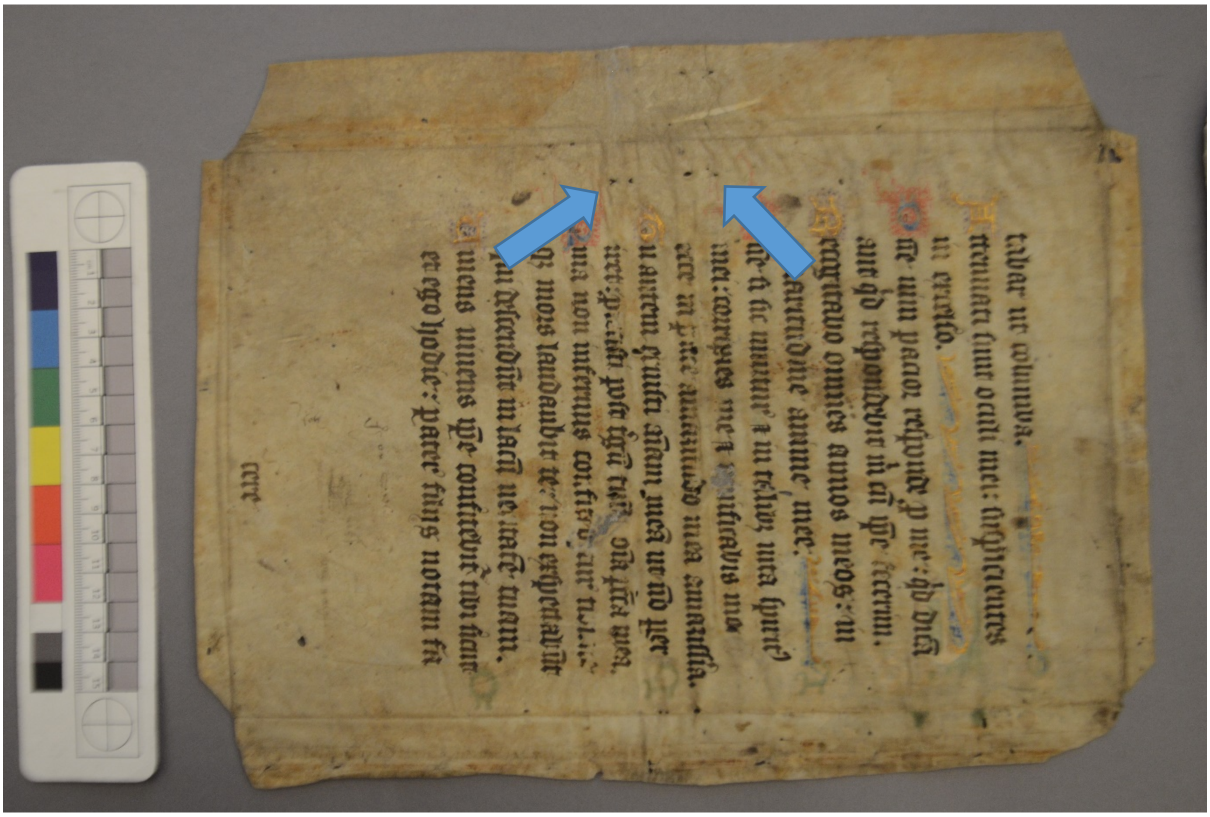

**Fig. 74. A laced-case cover removed from its bookblock. The inner side of the cover.**
Clare 2b. The lacing-in holes are more visible here than on the outer side of the cover but they are still difficult to identify when next to the black ink.

## 4.6. How housing and display impacts on the identification of the binding component

The shape of a manuscript-waste fragment can identify it as a binding component. However, this shape may not be immediately apparent due to the way the fragment has been housed. In guardbooks or the more modern fascicules, and also on websites, fragments are generally presented as the detached leaves of a manuscript, that is, they are orientated so that the text can be read. However, the 'right way up' for the fragment as it would have been within a manuscript many not have been the 'right way up' for the fragment as it was positioned in the binding. This means that some manipulation of the guardbook, fascicule, or online image may be necessary before the fragment is seen as it would have been within the binding and the binding shape of the fragment becomes more apparent (Fig. 75). When the fragment is housed in archival-quality polyester sleeves or an archival paper folder, it can be handled and rotated more easily. However, the text on the fragment may still impede its recognition as a component of a binding as the observer may automatically align the fragment in respect of the text rather than the shape of the fragment. It is necessary, then, to look beyond the script on the fragment and focus instead on its shape for the binding component to become evident.

A more complicated case can occur when the endleaf is made from a bifolium. The pair of endleaves, Lanhydrock 63, 64, both bifolia from the same source manuscript, were placed in the guardbook as they would have been placed in the source manuscript, that is, 63 folded around 64, giving four leaves of the source manuscript (Fig. 76, the uppermost leaf is 63, beneath it is 64). To see both fragments as they would have been in a binding requires some figuring out. Fig. 77 shows the textblock-facing sides of both endleaves, 63 and 64, facing each other (leaves 2 and 3) while Fig. 78 shows the complete outer face of endleaf 63 (leaves 1 and 4). The housing-system can also obscure features of the binding component as with Lanhydrock 96i, ii, where the cut-stub of these outside-hook endleaves is difficult to see (Fig. 75).

The completeness of the record should also be considered. One fragment may not represent a 'complete' element of the binding structure. For example, a guard may have been made up of two pieces of parchment but only one may have survived (for endleaves made of more than one fragment see 5.4.2.1). The case of spine linings made of multiple pieces has already been discussed (4.4). It should also be remembered that there might be other elements from the endleaf unit (such as blank or printed-waste leaves) that may be necessary to completely understand the endleaf and that these other elements may be housed elsewhere - the Lanhydrock printed waste fragments, for example, are in another guardbook, in another country (see 3.4.1.).

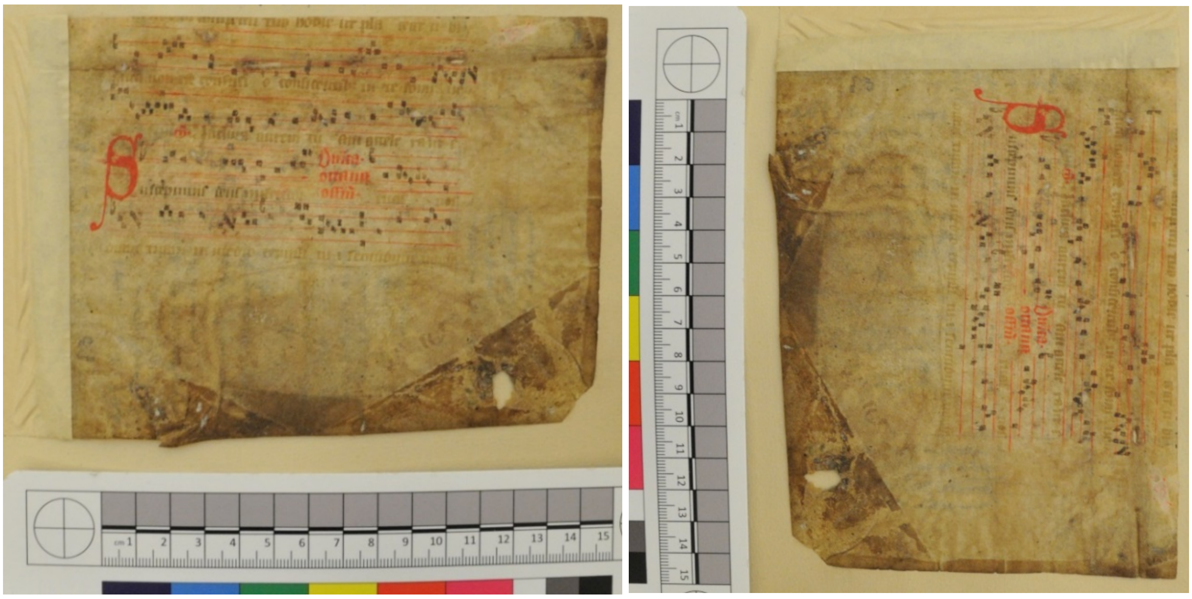

**Fig. 75. The orientation of the fragment.**
Left:The fragment as it was orientated in the source manuscript.
Right: The same fragment as it was orientated in the source binding.
This fragment as it is positioned in the guardbook must be rotated to the right to be seen it would have been positioned in a binding. This is an outside-hook with cut stub endleaf. The cut is visible on one edge but obscured on the other by the paper adhering it to the leaf of the guardbook.
Lanhydrock 96ii. Source binding: A.19.11 (Pairs, 1559).


**Fig. 76. Two bifolia, one folded around the other.**
The fragments are attached to the guard on the left (the grey paper underneath is being used to block out the other fragments visible on the next guards).
Lanhydrock 63 is folded around the bifolium 64. The edge of 64 is visible behind 63.
Source binding: D.4.11 (Paris, 1515).

63 – leaf 2, the verso of leaf 1 in Fig. 68

64 – leaf 3 (seen in Fig. 68 behind 63)

**Fig. 77. The inner faces of two bifolia**.
Lanhydrock 63 and 64, (both inner faces that faced the textblock in the source binding.

63 – leaf 4 (upper, the verso of leaf 3 above) and leaf 1 (lower, as in Fig. 68 )

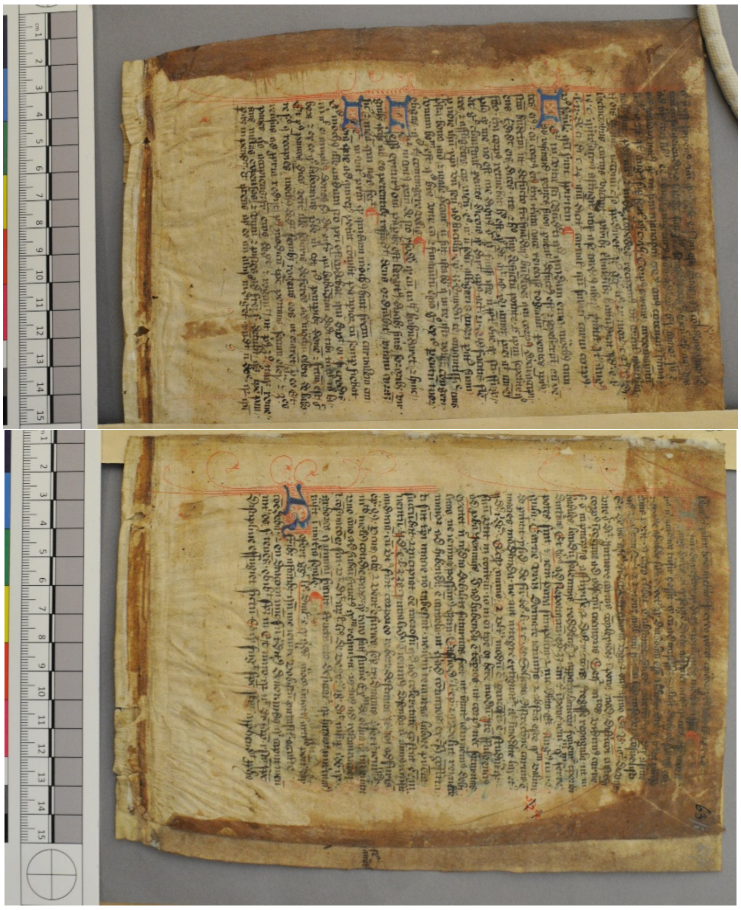

**Fig. 78. The outer face of Lanhydrock 63**.
This faced the inner surface of the left board of the source binding.

### 4.7. Summary

Currently, even when manuscript-waste fragments are still *in situ* in bindings, different terms are applied to describe them and the meaning of those terms may vary according to the cataloguer. The *Lost Manuscripts' Project*, for example, uses the term 'binding strip' for a *guard,*[266] and 'reinforcing piece' for a spine lining.[267] However, for Oldham, a 'reinforcement strip' is a fragment 'on which, for greater strength, the backs of some or all of the sections are often sewn'.[268] This would be a *sewing guard* (following Ligatus' Language of Bindings terms, *LoB*) or possibly a *guard*, if Oldham intended that they were only present on the first and last sections of the bookblock. It could only be a spine lining if Oldham had misunderstood the function of a spine lining, as sections are not sewn to spine linings, rather the lining is pasted to the sewn bookblock. Therefore, in the current literature, a 'binding strip' would be a guard but a 'reinforcement strip' may either be a sewing guard or a guard, or a spine lining - depending on the vocabulary preferred by the cataloguer. Using the controlled vocabulary provided by the *LoB* thesaurus eliminates this confusion.

As has been shown, manuscript-waste fragments can be identified as parts of a binding structure even when they have been removed from the binding. This chapter has proposed that *LoB* terms be also used for these removed manuscript-waste fragments. These differ from the terms used by Gumbert[269] who classifies fragments as

i. flyleaves.
ii. covering material ('the material covering the boards of a stiff binding'[270]).
iii. covers ('a limp binding'[271]).
iv. 'strips in binding' ('smaller pieces anywhere in a binding'[272]).

In this thesis, following the *LoB*,

i. 'flyleaves' is replaced by 'endleaves' and no differentiation is made between those endleaves that were pasted down to the inner surface of the board and those that remained 'free' (1.2),
ii. 'covering material' is not included as no examples of this were found. A fragment that was used as covering material over boards will not have sewing evidence.

266 http://www.lostmss.org.uk/fragments/colchester-university-essex-library-harsnett-hd4-ii; Gameson also uses the term 'strip' to describe guards (2018, p.466)
267 http://www.lostmss.org.uk/fragments/colchester-university-essex-library-harsnett-ha34-iv
268 Oldham, 1952, p.66 – use of term 'reinforcement strips'. These are more likely to be guards, and if all sections were sewn on to them, the sewing guards.
269 Gumbert, 2009, p.15.
270 Ibid.
271 Ibid.
272 Ibid.

iii. ‘covers’ is used as described earlier (4.5.).
iv. ‘strips in binding’, is a rather more ambiguous term suggesting a smaller fragment but whether this describes a guard or a spine lining is unclear.

## 4.8. From a classification of manuscript-waste fragments to the new method

While it may be possible to identify in which part of the binding the fragment was used, the question remains as to whether there would be enough evidence of the binding on that fragment to identify that binding. The question is not solely about the size of the fragment but also the form of the fragment and what its function had been within its source binding. Some larger fragments, for example covering material on the boards of quarter bindings, may have very little binding evidence due to their position on the binding (2.8).

However, all the fragments examined in the case studies were closely integrated into the structure of the binding. For example

i. endleaves and guards were sewn in with the textblock and so have evidence of the sewing structure.
ii. while comb spine linings were not sewn in, they were positioned on the spine panels between the sewing supports and so have some evidence of the sewing structure.
iii. laced-case bindings have evidence of the lacing-in of the supports. However, the textblocks associated with these cases will have been given new covers and the sewing contemporary with the removed case may have been replaced.
iv. stitched cases have no evidence of sewing supports and, having been removed from the associated textblock, that textblock is likely to have been re-sewn using a new sewing structure which the old cover will bear little relation to apart from an approximation of its height and width.

**Having classified the manuscript waste fragment as a binding component, the next step in the process (3.7) is to examine the binding evidence on the fragment and to use this evidence to attempt to identify the source binding.**

# Chapter 5

## Stage One. The Spine

### 5.1. Overview

The method developed to identify the source binding using binding evidence on the fragment is organised over three stages (3.3). These relate to

i. the spine.
ii. the sides of the cover.
iii. the inner surface of the boards and the textblock.

This method was developed as the fragments from the case studies were examined and worked through. All the work was carried out in the libraries' reading rooms. No microscope or specific lighting was used.

The process will be presented in three separate chapters (5, 6 and 7) corresponding to the three stages listed above.

> **Stage One is the key to this process as it focuses on how bindings should be *selected* for examination**, **namely, by using the features on the spines of the bindings**.

Previously, archival evidence was used to select bindings but the process presented here is based solely on an analysis of the binding evidence on the fragment. The discussion that follows in this chapter

i. details how the evidence is recorded (5.2).
ii. identifies the features that are visible on the spines of bindings (5.3) (also discussed in 3.2).
iii. assesses whether these features may be sufficiently unusual to be used for the process of selecting bindings (5.3).
iv. examines whether these features are likely to be visible on the four categories of manuscript-waste fragments identified in Chapter 4 (5.3).
v. explains how to identify spine features from the binding evidence of the four categories of manuscript-waste fragments (5.4 – 5.7).
vi. explains the process of using this binding evidence to select candidate matches (5.8 – 5.10).

## 5.2. Recording the evidence

The first stage of data collection is to photograph the fragment. Fragments housed in modern fascicules were on occasion difficult to photograph as when the fragment had to be turned to see its reverse side, it often did not lie flat. Unconserved fragments at Merton were also difficult to photograph as the stub on the endleaves could not be fully opened out.

Images were taken of both sides of the fragment. These, when the fragments are endleaves or guards, are referred to as the 'outer face of the fragment' and the 'inner face of the fragment' (p.8). This is to avoid the use of the term 'recto' and 'verso' which might be misinterpreted as referring to the recto and verso of the fragment as it would have been in source manuscript or the recto and verso of the fragment as it is displayed in the fascicule or guardbook.

The second stage of data collection is to make a drawing, to size, of both sides of the fragment (Fig. 79). This drawing can then be used as an accurate representation of the fragment for the purposes of comparing it against the spines of bindings. This was particularly necessary when the fragments were bound in guardbooks or fascicules and when the fragments were in a different library to the source bindings, as with Lanhydrock.

The third stage involves recording details of the features of the fragment, both binding evidence and non-binding evidence (stains, wormholes), on an Excel spreadsheet. The features were divided into the same three groups recorded above (5.1). When the evidence has been recorded, the next step is to look specifically at the features of the spine.

**Fig. 79. Westminster MS 36 1. The drawing of the endleaf and the actual endleaf.**

## 5.3. Features which are visible on the spine

Spine features are

> 'all the features relating to the formation, function, decoration and titling of the spine of a book and the spine covering'[273]

As was seen in the control sample in Westminster Abbey library, evidence for the following features can be found on manuscript-waste fragments (3.2)

i. the covering material.
ii. the height of the spine of the binding.
iii. the number- and position - of sewing supports.
iv. the width of the spine.

What was not determined at Westminster was whether the spine features could be used as criteria for *selecting* the source binding for removed manuscript-waste fragments. For this to be possible, the spine feature(s) would have to be sufficiently distinctive that only a small number of volumes in the library could be considered a match.

### 5.3.1. Covering material

National preferences could determine whether a book was covered in tanned skin, alum-tawed skin or parchment and the ratio of one covering material to another could vary depending on the location of the library in question. Italian libraries, for example, may have more parchment-covered volumes than a British library. If a parchment-covered volume is being sought in a library where the majority of bindings are covered in tanned skin, then the covering material might be a significant criterion for the selection of candidate matches as it would reduce the number of bindings to be examined. If, on the other hand, the source binding being sought is known to have a tanned skin cover and the majority of the books in the library in question are covered in tanned skin, then selecting volumes based on the covering material will not be effective.

The majority of the books in the case-study libraries were covered in tanned skin – and those that were in parchment tended to be of a smaller format. It may be the case that a combination of covering material and size could be used as selection criteria.

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273 http://w3id.org/lob/concept/2350

### 5.3.2. Height of the spine of the binding

The height of the spine of the binding is greater than the height of the textblock it covers (Fig. 80). This is because of the 'squares' on the exterior edges of the binding (head, tail - and also fore-edge) add several millimetres to the height of the textblock (Fig. 81).[274] Squares are usually present on inboard bindings and may be present on laced-case bindings, particularly when the cover has turn-ins.

The height of endleaves, guards and comb spine linings - which are all related to the height of the textblock - is shorter than the height of the binding. However, it is not possible to express this as a formula (such as 'the height of the binding equals the height of the textblock or endleaves plus a specified number of millimetres to account for the squares') that will be uniformly applicable as the size of the squares varies. However, it can be taken that the height of spine of a source binding for a manuscript-waste fragment used to make endleaves, guards or comb spine linings will be greater than the height of that fragment.

A cover made from a manuscript-waste fragment may originally have been taller, the same height, or even slightly shorter than its textblock but, its dimensions may also have altered due to environmental conditions. The only indication that this fragment type can give to the height of the new cover that replaced it is that the height of the new cover should be the same or greater than the fragment – always providing the textblock was not trimmed when it was rebound.

Given that,

i. the height of the spine of the binding cannot be precisely determined from the manuscript-waste fragment beyond saying that it is taller than the fragment, and
ii. libraries frequently have large numbers of books within the same height range

the height of the spine of the binding is unlikely to be, on its own, a feature which can be used to identify the source binding.

274 http://w3id.org/lob/concept/3816 and http://w3id.org/lob/concept/1631

**Fig. 80. The height of the spine of the textbock versus the height of the spine of the binding.**
The height of the textblock is visible on the left where the tanned skin cover is damaged (blue arrow). The height of the textblock (147mm) plus the endbands (green arrow) at either end of the spine, is height of the spine of the binding (154mm).
Merton 73.a.11 (London & Antwerp, 1560-82).

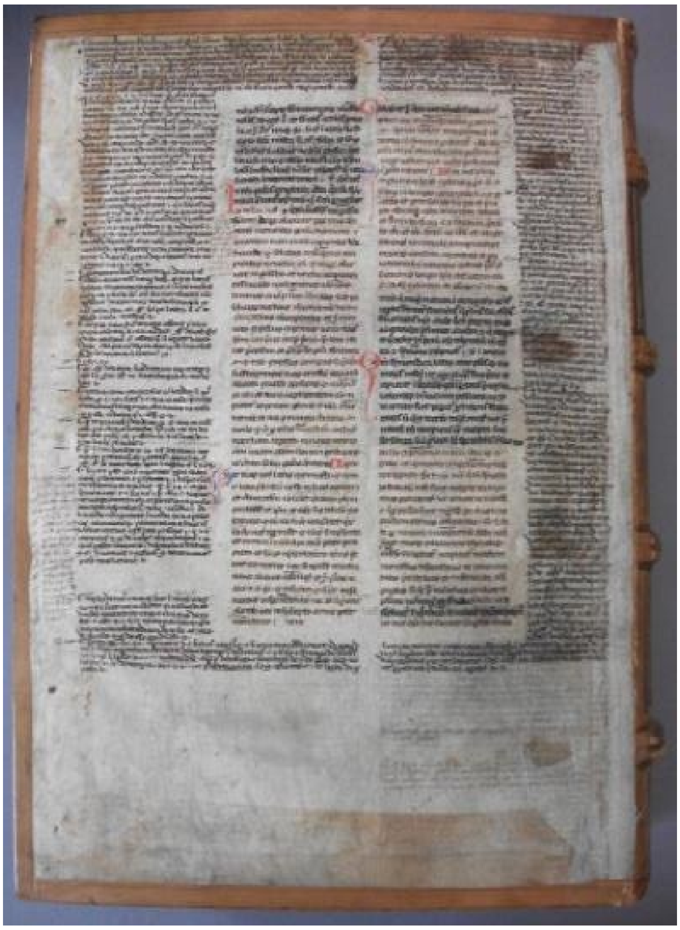


**Fig. 81. Large squares on a re-covered volume with new boards.**
The fragment is significantly shorter than the boards. The squares measure 10mm at head and also at the tail making the boards and the spine of the binding 20mm taller than the endleaf.
Clare 2di ii, right board with source binding A.2.2, Index volume (Basel, 1529).

### 5.3.3. Sewing supports

The third feature visible on the spine is the sewing supports.

Gatherings of a bookblock (that is, the textblock and endleaves combined) are sewn to one another using either

i. an unsupported structure, that is, one without sewing supports[275]
ii. a supported structure, that is, one with sewing supports.[276]

With the former, the spine is smooth. With the latter, the sewing support stands raised from the spine-folds (Fig. 82).[277] On inboard bindings, the covering material is stretched over the boards and spine. On the spine it is moulded across the sewing supports by tying cords on either side of the supports and sometimes across their centre.[278] This results in the supports standing in sharp relief on the spine. These *raised bands* (Fig. 83),[279] visible on the spine of a binding, then, are the external indicators of the sewing structure. Each raised band corresponds to one sewing support (3.2).

In a straightforward case, the number of raised bands on the spine indicates the number of sewing supports. However, kettle stitches (or 'change-over stations') where 'the sewing thread passes from one gathering … to another in the course of sewing'[280] (Fig. 82), found at the both ends of the spine, can also be formed into a raised band called a *kettleband* (Fig. 83).[281] There may then be, in addition to the sewing supports, another two, possibly smaller raised bands, at either end of the spine, which indicate the kettle stitches. Added to this, *false bands*,[282] which bear no relation to the sewing structure and are simply pieces of leather or cord placed across the spine, can also be present. These were added for decorative purposes (for example to substitute for a poorly-positioned kettle stitch so that the profile of the spine would be more balanced) or deceptive purposes[283] (to make cheap books appear more expensive by giving the impression that they were sewn on more supports).

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275 http://w3id.org/lob/concept/1703
276 http://w3id.org/lob/concept/2508
277 http://w3id.org/lob/concept/2525
278 http://w3id.org/lob/concept/4561
279 http://w3id.org/lob/concept/1533
280 http://w3id.org/lob/concept/1250
281 http://w3id.org/lob/concept/1407
282 http://w3id.org/lob/concept/1326
283 'an occasional feature of French and English bindings from the mid-sixteenth century to the early eighteenth century', http://w3id.org/lob/concept/1326

**Fig. 82. The sewing supports on an un-covered binding.**
The kettle stitches are to be seen on either side of the first and last sewing supports.
St. Canice’s CK2577 (Paris, 1620).


**Fig. 83. An in-board binding with raised bands and kettle bands.**
Sewn on four sewing supports, the kettle stitches have also been made into a band, decorated with diagonal lines (red arrow). The supports on this volume are not equally spaced along both joints and appear slanted.
Lanhydrock C.14.1 (Cambridge, 1585).

Falsebands are found on German bindings,[284] from the last quarter of the fifteenth to the end of the sixteenth century, and Italian bindings, from *c.*1535 to *c.*1565, and so coincide with the period when manuscript waste was being used in bindings. No examples, however, were found during this research. *Halfbands* are a further complication. These were

> 'originally created by single sewing supports (genuine halfbands) placed between larger double sewing supports on 15th-century German bindings, but by the 1480's the single supports began to be replaced by false bands (false halfbands), a practice found also in Italy in the mid-15th century.'[285]

Since genuine half-bands went out of use before the 1480s, they will only feature on a small number of bindings that may be relevant for this research, and in fact were not found on any of the examples here. False halfbands were also not found.

From the mid-sixteenth century, books were sewn on supports placed in recesses cut across the spine of the textblock. These recessed sewing supports[286] may be visible on the spine when they are larger than the recesses cut to hold them and so stand out above the recesses. These will appear as less pronounced ridges on the spine as the covering material will not have been moulded over them.[287]

Sewing supports are also less visible on the spines of laced-case bindings than they are on inboard bindings. This is because with laced-case bindings the covering material was not tied up around the sewing supports or kettle stitches. However, the supports still sit proud of the spine and can be discerned through the cover particularly when the parchment has contracted around them (Fig. 84). They can also be seen on the outer joint of the cover where the slips of the supports are laced into the cover (Fig. 85). While these are not as immediately visible as raised bands, they can still be identified on the shelf.[288] Laced-case bindings may be the source bindings for some of the manuscript-waste fragments as they were in use in the relevant periods - they were common in Italy and France from the end of the fifteenth century and across Europe through the sixteenth century up until the mid-seventeenth century (and even longer in Spain and Italy).[289] It is, therefore, for the purposes of this research, important that the sewing supports are visible on the spine of this type of binding.

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284 Szirmai records examples on a German binding of the mid-fifteenth century (1442); Szirmai 1999, p.187.
285 http://w3id.org/lob/concept/2534
286 http://w3id.org/lob/concept/2527
287 Pickwoad, personal communication, 22/12/18.
288 Tackets, that is, lengths of parchment, alum-tawed or tanned skin, can also be laced through or around the sewing supports and then used to secure the bookblock to the cover. No examples were found in this study. http://w3id.org/lob/concept/1565
289 http://w3id.org/lob/concept/4103

**Fig. 84. Laced-case bindings with the sewing supports visible on the spine and at the joints.**
It is possible to identify the sewing supports in all these examples, even though the covering material was not tied up around the supports. The sewing supports are particularly pronounced in the furthest left volume where the parchment has shrunk.
Lanhydrock C.3.29 (Milan, 1509 & Paris 1512), furthest left.

**Fig. 85. Laced-in slips visible at the joints.**
The same five bindings showing how the laced-in slips are visible on the joint.

**Fig. 86. A shelf of quarto volumes in Lanhydrock, all with a different sewing support distribution pattern.**

The distribution of sewing supports, then, can be seen on the spines of both inboard and laced-case bindings from the fifteenth to the seventeenth centuries. However, sewing supports are less visible on books sewn on recessed supports as the spines lack the raised ridges made by the sewing supports and are not present on unsupported structures *i.e.* those without sewing supports. In both cases, as the spines of the bindings have a smooth appearance, this method will be more difficult to use, thought it might be possible to still see ridges from the sewing on the spine.

Evidence of the sewing supports, as seen on the Westminster sample, is visible on endleaves (3.2.1 – 3.2.3) - and it follows that it will also be visible on guards which were similarly sewn in with the textblock. Both the endleaves and endleaf guards are likely to have been sewn in an all-along fashion (that is, all the supports are used, none are skipped)[290] even if the rest of the textblock is sewn in an abbreviated manner, that is not sewn around all the supports.[291] As also seen in Westminster, the comb spine linings also have evidence of the position of the sewing supports (3.2.4). Fragments which were laced-case covers will have lacing-in holes to indicate where the sewing supports were positioned but stitched on covers will have no sewing evidence as they were not sewn on supports (4.5)

Looking at a shelf of books of a similar height covered in tanned skin, the variation in the distribution of the sewing supports on the spines of the bindings is noticeable (Fig. 81). This suggests that this is a spine feature that could be used to distinguish one binding from another.

#### 5.3.4. Width of the spine

The fourth spine feature is its width. Evidence for the thickness of the book is visible on fragments which were used as covers or comb spine linings (3.2.4), though the latter may be more difficult to determine accurately (5.4). It is not visible on endleaves or guards. Its use, therefore, as a determining feature will not be applicable to all fragments but, when present, could be used.

#### 5.3.5. Identifying the potential ‘key selection feature’

When evidence for the spine features of the binding are combined (height, covering material, sewing support distribution and, where available, width), a profile of the spine is created that seems very specific. If the spine profiles of bindings in a library are sufficiently varied, when the spine evidence on manuscript-waste fragments is compared with them

i. large numbers of bindings that could not be candidate matches would be eliminated.

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290 http://w3id.org/lob/concept/1196

291 http://w3id.org/lob/concept/3744

ii. a sufficiently small number of candidate matches that could be checked for further matching features (Stage Two and Stage Three of the process) would be identified.

**However, one spine feature alone may act as the ‘key selection feature’ (3.3.). While the covering material and height would be too general, and the width is only applicable to two types of fragments, the distribution of the sewing supports may be sufficiently specific to be this ‘key selection feature’. In a case where a group of bindings are the same height and covered in the same material, the number and distribution of the sewing supports can distinguish one binding from another (Fig. 82). This may then be the feature which is the key to the process of identifying the source binding.**


**Fig. 87. A row of bindings of similar height and covering material but a different sewing support distribution pattern.**
A row of volumes, all re-covered with new tanned skin over new boards but retaining the original sewing supports.
Clare: A.2.2 (Basel, 1528-29).

**The next section of this chapter looks at how evidence for these four spine features can be identified on manuscript-waste fragments. The following chart gives an overview of how this information will be presented. Each individual section is preceded by a flowchart which demonstrates how the evidence is assessed.**

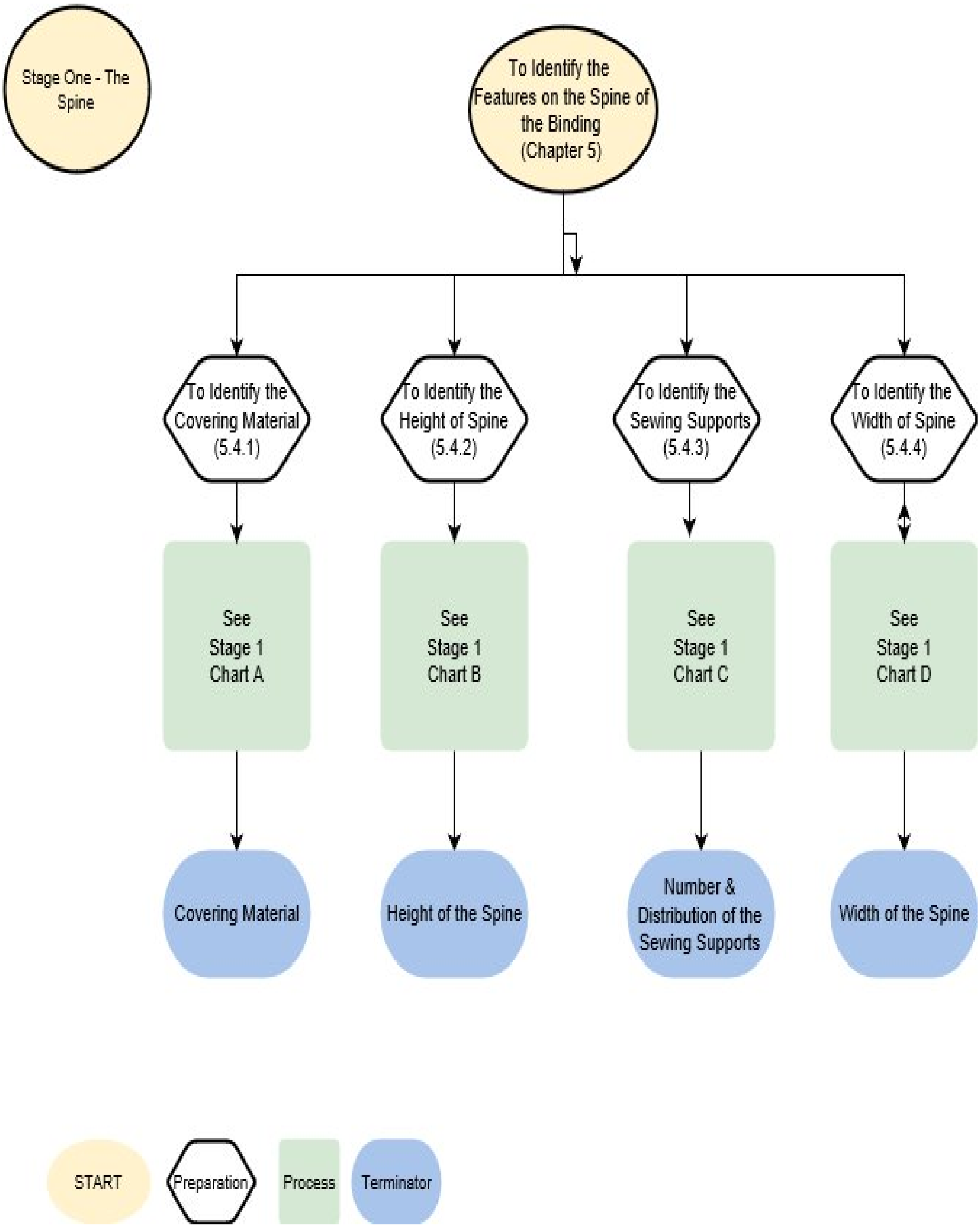


**Chart 1. To identify the features on the spine of the binding**

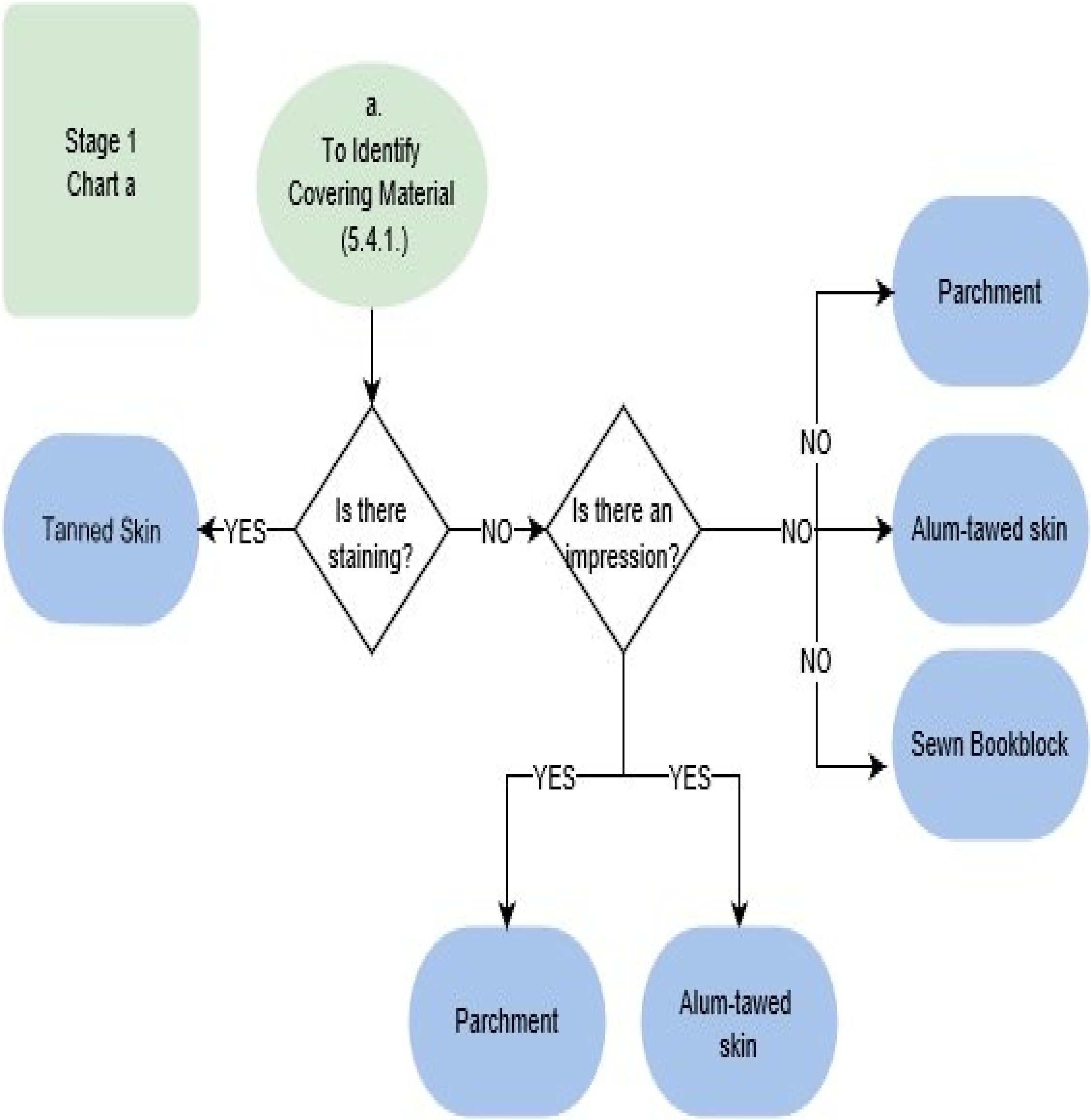



**Chart 1a. To identify the covering material**

## 5.4. Identifying the spine features on endleaf and guard fragments

As noted earlier, the manuscript-waste fragments in the case-study collections were predominantly endleaves, with a smaller number of guards, covers and comb spine linings. As endleaves and guards are both sewn in with the textblock and are in the same position in the binding, they exhibit similar features and as a result, in the discussion that follows, they will be grouped together. Spine linings will be discussed at the end, followed by covers.

### 5.4.1. Identifying the covering material

Both endleaves and guards sit adjacent to the inner surface of the cover. Evidence of the covering material will be present on these fragments if

i. the fragment was in contact with the covering material present on the inner surface of the cover (*i.e.* if the fragment is one part of an endleaf unit and this was the component that faced the board.)
ii. the material of the cover can transfer a stain or an impression to the fragment.

With an inboard binding, the covering material of the binding is present on the inner surface of the board where it was turned in over the board's edges. If the covering material is tanned skin, the migration of the tannins from this skin, but also the wash that is put on the skin when it is on the boards (Fig. 90), will stain the leaf adjacent to it. This stain may penetrate through to the inner face of the fragment, particularly if the parchment of the fragment is thin (Fig. 88), but it will be stronger on the outer face. The colour of the staining on the manuscript-waste fragment varies from a very dark brown to a more yellowish colour. However, this should not be taken as evidence of the colour of the covering material on either the boards or the spine as

i. it indicates the colour of the tanned skin when it was wet and therefore darker.
ii. the colour of the covering material on the spine may also have deteriorated due to light damage.
iii. if the binding has been repaired, the new covering material may be a different colour to the original.

When the covering material is parchment it will not stain the fragment. However, the edge of the turn-in on a parchment-covered laced case binding may leave an impression along the edges of the fragments which was in contact with it. This edge will be raised on one side and impressed on the other (Fig. 89). The depth of the impression will be dependent on the thickness of the parchment of both the cover and the fragment.

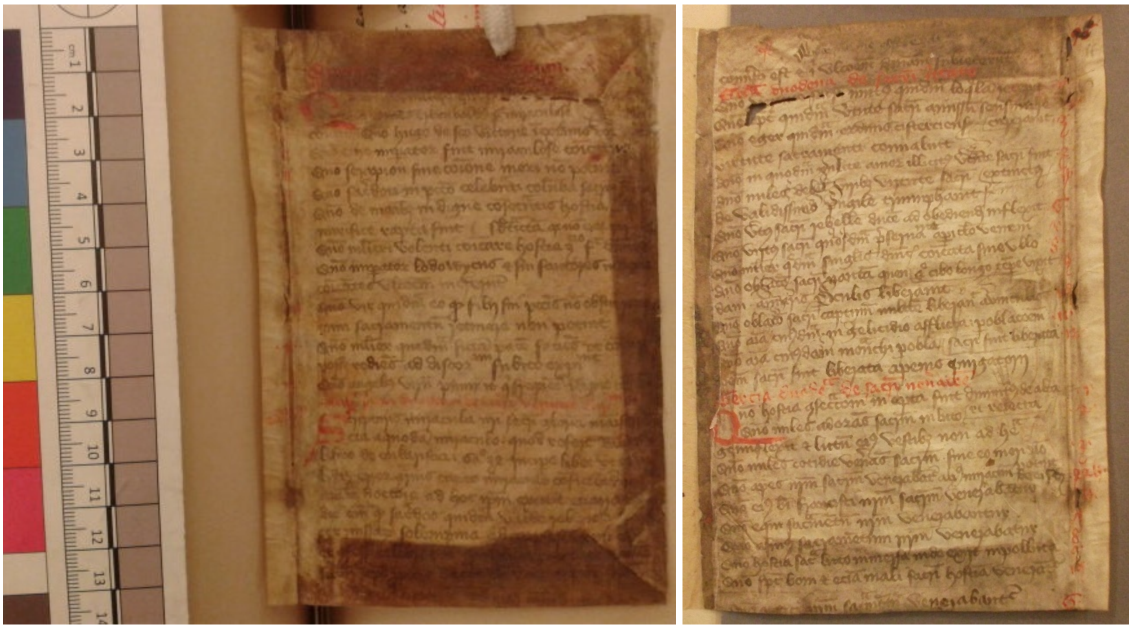

**Fig. 88. Outer face of the fragment with a stronger turn-in stain than the inner face.**
Lanhydrock 111ii, left endleaf from A.4.35 (Nuremberg, 1561),

**Fig. 89. The impression from the turn-in**
Left: Outer face. Right: Inner face.
Lanhydrock 105, a guard (source binding not identified). This is indented on one side of the fragment (outer face) and raised on the other (inner face).The darker stain is on the lower edge of the left image is adhesive from the guard.

Other reasons for a lack of evidence of the covering material might be because the source binding did not have a cover – for example, if it was a sewn bookblock (see p.16) - or because the fragment was too short to be in contact with the turn-in. While not an English phenomenon,[292] guards were sometimes cut shorter than the textblock (Fig. 90), either because

i. they were to be pasted to the board to stabilise it[293] and the cover had to be turned in over the boards without being obstructed by the guard, or
ii. for reasons of economy, or
iii. because the guard is there only to support the sewing.

The way the fragment is housed may also make it difficult to determine whether a stain is a turn-in stain or not. In-setting fragments into the leaves of guardbooks may leave an adhesive stain along the edges, as it does in the case of Lanhydrock 105 (Fig. 89), which might be mistaken for a turn-in stain.

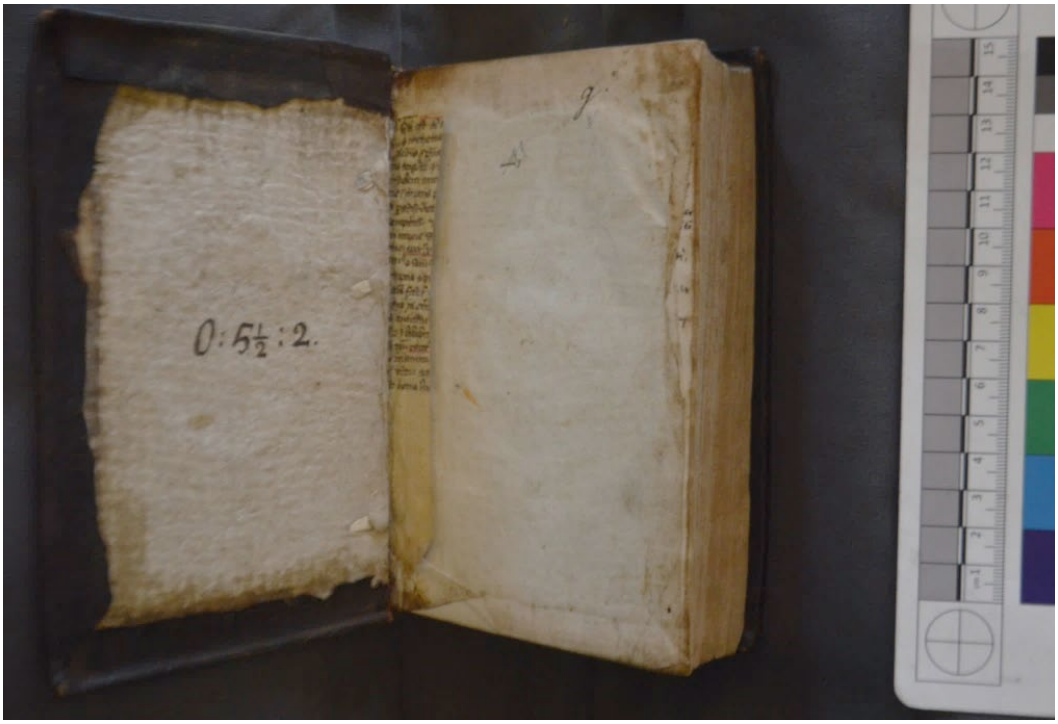

**Fig. 90. A guard too short to have evidence of the covering material.**
The stain that is put on the leather is also visible here beyond the edges of the turn-in where it was rubbed onto the board when the cover was being turned in.
Clare: 0.5½.2 (Paris, 1585).

292 Pickwood, personal communication, 23/5/17.
293 http://w3id.org/lob/concept/1220

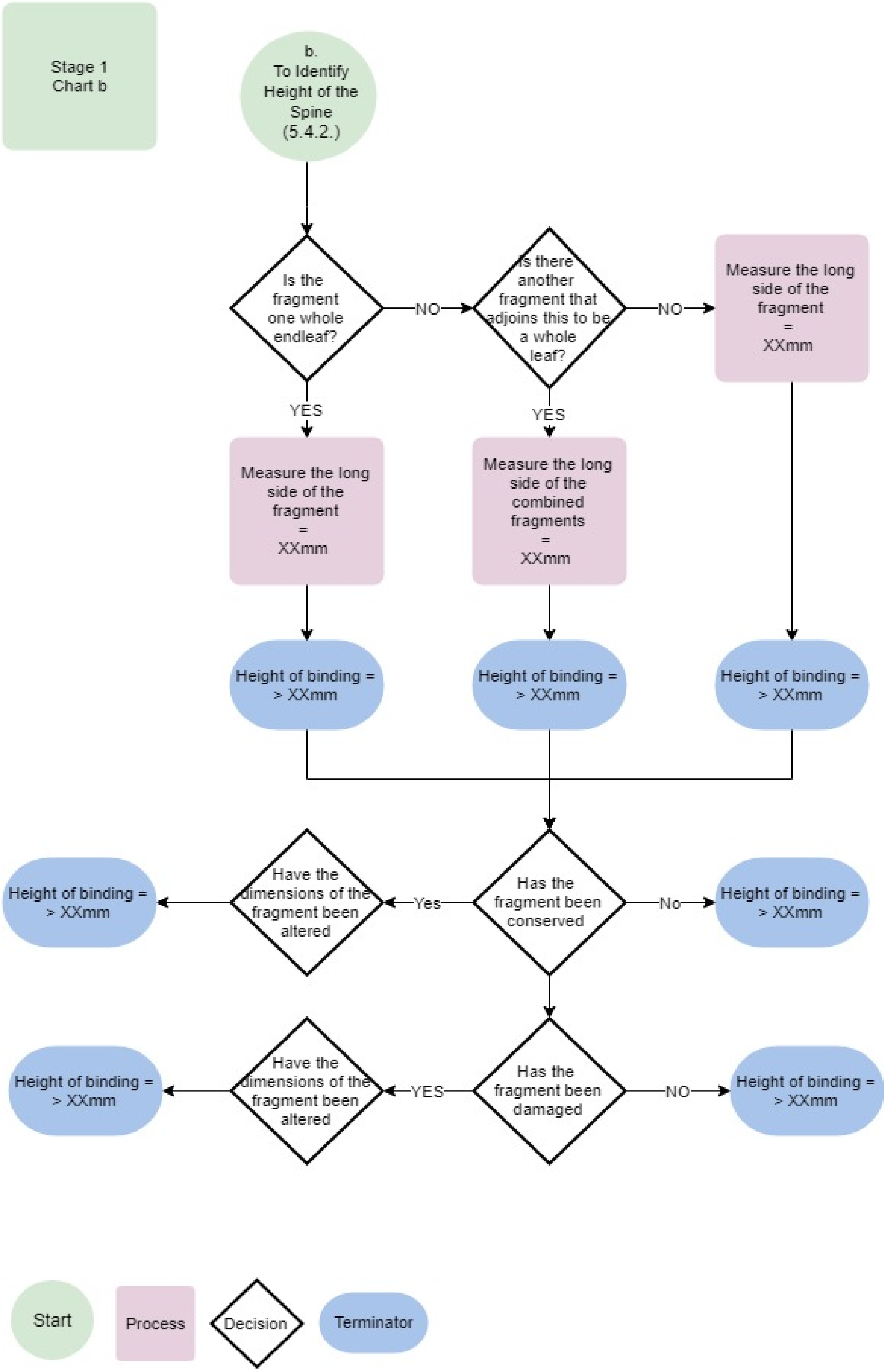


**Chart 1b. To identify the height of the spine**

### 5.4.2. Identifying the height of the spine

As discussed earlier (5.3.2), the height of the fragment is the minimum height of the spine of the binding and as also stated earlier, it is not possible to determine a universally applicable formula for calculating how many millimetres greater than the fragment the height of the binding would be. However, when estimating how much greater than the height of the fragment the height of the binding is likely to be in individual cases, it is helpful to determine the relationship between the height of the fragment and the height of the textblock. This can be done by examining the

i. turn-in evidence
ii. edge evidence and
iii. alterations in the dimensions of the fragment

#### 5.4.2.1. Turn-in evidence

Endleaves are sewn in with the textblock from the first sewing station, the kettle stitch (5.3.3), along the supports to the final sewing station, also the kettle stitch. The height of the fragment, then, is at least the portion of the textblock between the first and the last sewing stations and, at most, the height of the textblock. Whether the endleaf extended to the full height of the textblock can be indicated by whether there is evidence on the fragment of the corners of the turn-ins - the more complete the corner, the closer the fragment was to the size of the textblock. In this study, no endleaf fragment for which the source binding was identified was significantly shorter than the textblock. Estimating the textblock-height from a guard is more problematic as the guard may not have extended to the full height (Fig. 88) - and there is no evidence on the fragment of the corners of the turn-in to help indicate whether it did or not.

This is the case when one fragment constitutes one endleaf. However, in some cases, the endleaf may be made of two fragments conjoined to make the required size of endleaf (Fig. 86). These fragments, though, may become separated. Lanhydrock 1-4, for example, were four separate fragments which had constituted two endleaves (Fig. 88). The housing of these fragments on four consecutive leaves of the guardbook, assisted in their identification as two full endleaves. (If the fragments had been dispersed in the guardbook, the connection may have been more difficult to make.) The turn-in staining pattern, which extends to only two sides of the fragment, as well as the size of the fragment in relation to the sewing evidence, indicates that one fragment could not have been used on its own as an endleaf. The height of the endleaf in cases such as this is the height of the two fragments conjoined (Fig. 93). Guards may also be pieced together in a similar way. In these cases, if evidence from the turn-in is present, it will only be on one edge (either the head or the tail).

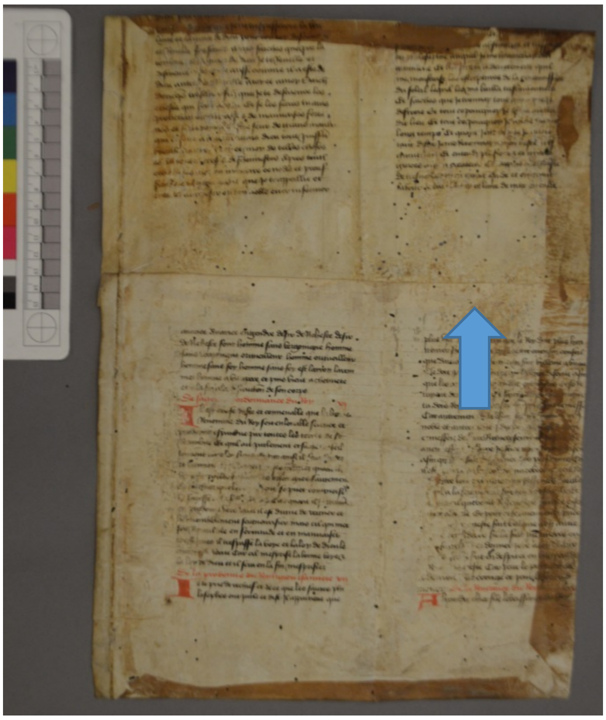

**Fig. 91. A pieced endleaf.**[294]
The turn-ins' corner evidence shows that this fragment was close to the full height of the textblock.
The blue arrow points to the join between the fragments.
Source binding Clare F.1.2 (Lyon, 1512).

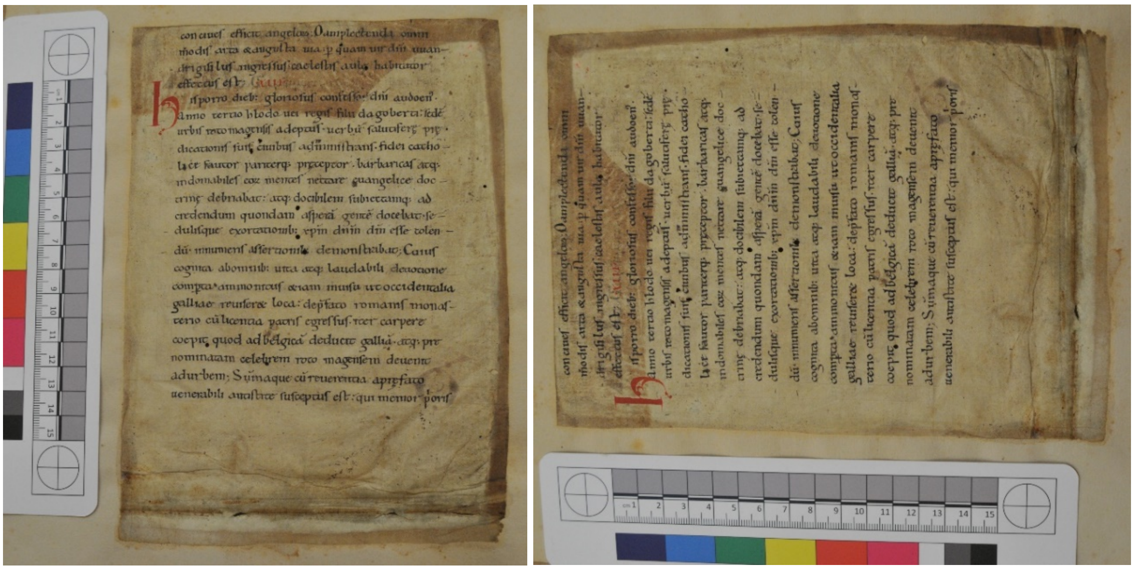

**Fig. 92. One half of a pieced endleaf.**
Left: Lanhydrock 1 as it is inset into the leaf of the guardbook.
Right: Lanhydrock 1. Rotated to show how it sat in the binding, opposite the right board.
The spine-fold and stub are visible to the right. There is staining from the cover on only two sides of the fragment.

294 http://w3id.org/lob/concept/1500

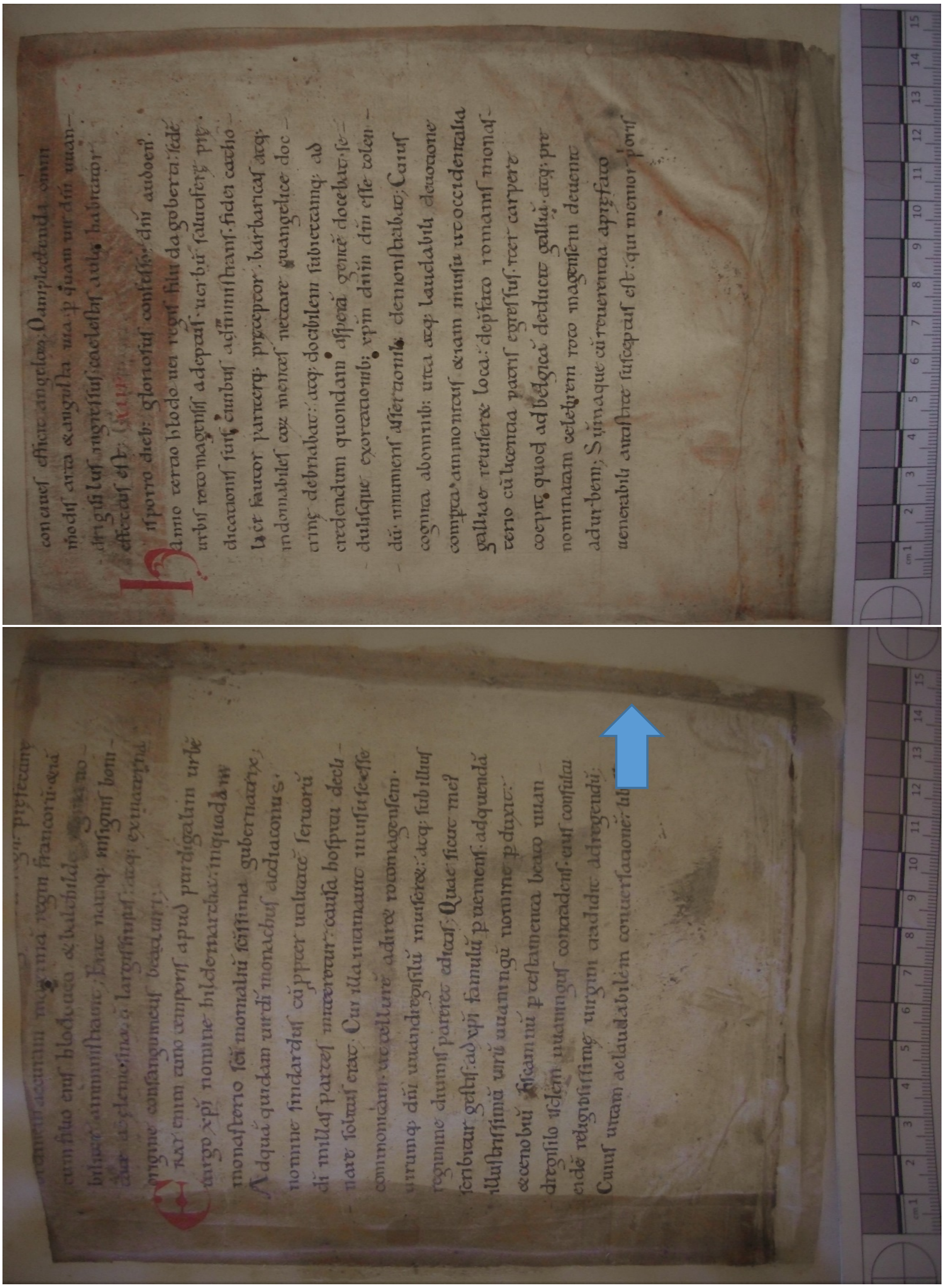

**Fig. 93. Lanhydrock 1 and 2 together making one endleaf.**

The turn-in stains join on the left edge. The darker line visible at the top of the fragment in the lower image (blue arrow) is a line of adhesive where the fragment is set into the guardbook leaf, not a turn-in stain. The full height of the endleaf is 304mm.

Source binding: Lanhydrock D.11.18 (Cologne, 1548).

**Fig. 94. Red edge-colour visible at the head and tail of the fragment.**
Lanhydrock 56.

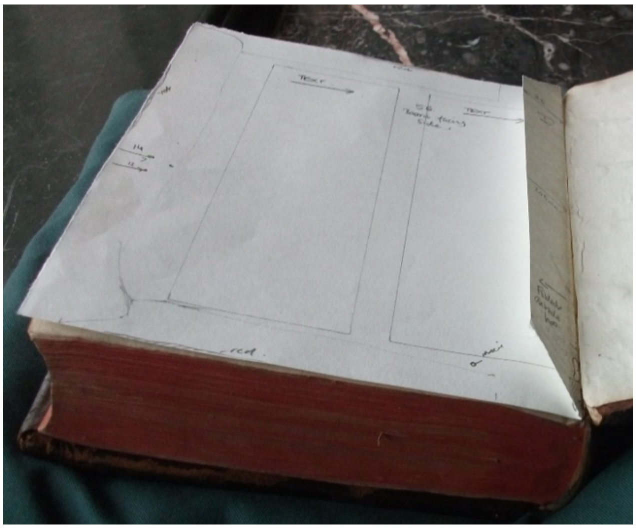

**Fig. 95. Red edge-colour on the source binding.**
A drawing of Lanhydrock 56 with its source binding (F.5.8: Oppenheim, 1640) showing that the fragment and the binding were the same height.

#### 5.4.2.2. Edge evidence

Colour on the edges of the fragment could also indicate that the fragment had been aligned with the edges of the textblock and was coloured when the textblock's edges were coloured. For example, red staining on the edges on the pair Lanhydrock 56 and 109 (Fig. 94) matches their source binding (Fig. 88). If the staining is present on both short edges of the fragment, then the fragment must have been the full height of the textblock. (Edge colour is discussed further in Stages Two and Three.)

However, colour on the edges of a fragment could also be related to its source manuscript. Westminster MS36 6 (Fig. 96), for example, has a green stain on one corner but the edges of the source binding (Q.1.8 vol. 3/7: Paris, 1542) are uncoloured. This fragment has large margins on three sides and seems to be a full leaf which was not trimmed when it was used as an endleaf. It is important, then, when determining whether edge colour on the fragment relates to the *source manuscript* or the *source binding* to note whether the edges of the fragment could also have been the edges of a leaf in a manuscript.

#### 5.4.2.3. Alterations in the dimensions of the fragment

##### 5.4.2.3.1. Due to the nature of the material

The size of the fragment today may not be the same as it was when it was first sewn in with the textblock. Parchment will, under certain environmental conditions, contract or expand (4.3.1, note 206) and the dimensions of the fragment could have altered when it was still within the binding - although the parchment will be restrained to some extent along its height by the sewing[295] (Fig. 97) - after it had been removed from the binding or not at all, as in the case of Clare 2ai & ii (Fig. 98).

##### 5.4.2.3.2. Due to conservation treatments

The dimensions of the fragment may also be altered as part of a conservation treatment. Merton 75.d.10, for example, retained one of its endleaves *in situ* while the other was removed and conserved and is now D.3.10 (12). The *in situ* fragment, which retains its creases around the turn-ins, is 3mm shorter than the conserved fragment (Fig. 99). Both are still shorter than the height of the textblock.

| Shelfmark | Height mm | Width mm* (minus the stub) |
|---|---|---|
| D.3.10 (12) -conserved | 166 | 100 |
| In situ endleaf | 163 | 98 |
| 75.d.10 - textblock | 167 | 97 |
| 75.d.10 - board | 175 | 105 |

295 Bent and Klugseder, 2012, p.73.

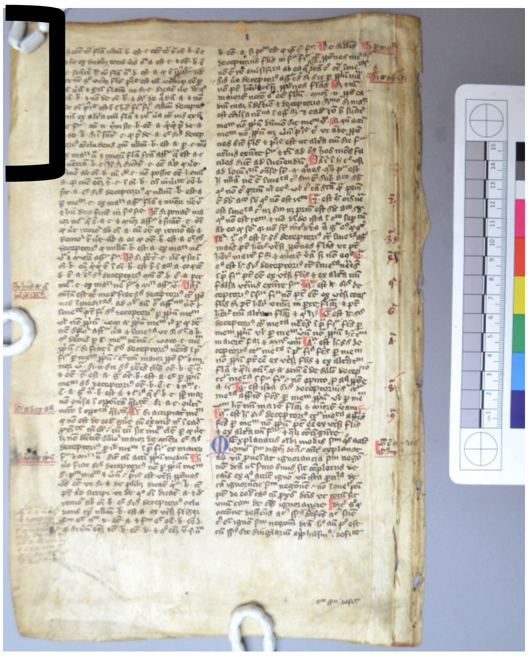 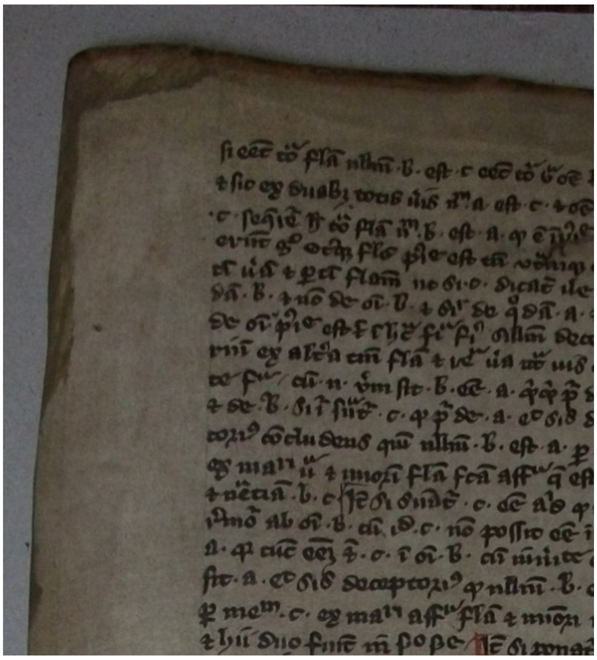

**Fig. 96. Green edge colour from the source manuscript.**
Right: A detail of the green edge colour.
Westminster MS36, 6, the left endleaf for Q.1.8 3/7 (Paris, 1542).

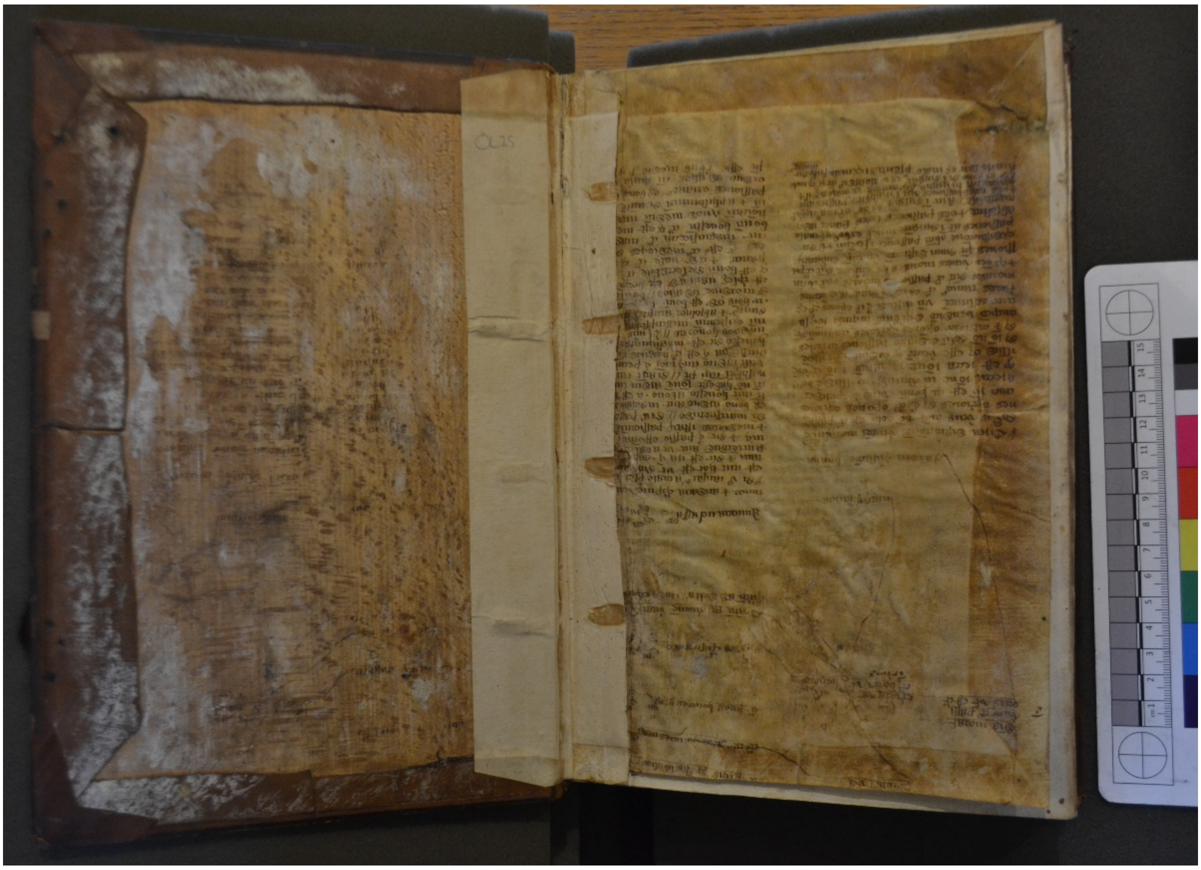

**Fig. 97. An endleaf which has contracted *in situ*.**
The paper guard visible on the board and on the endleaf is part of the rebacking of this binding.
Merton 46.C.14 (Basel, 1543).

**Fig. 98. An endleaf the same size as the textblock.**
Clare 2aii, a removed fragment, and its source binding 0.5½.6. (Hagenau, 1534). The boards of the binding are made from printed waste.

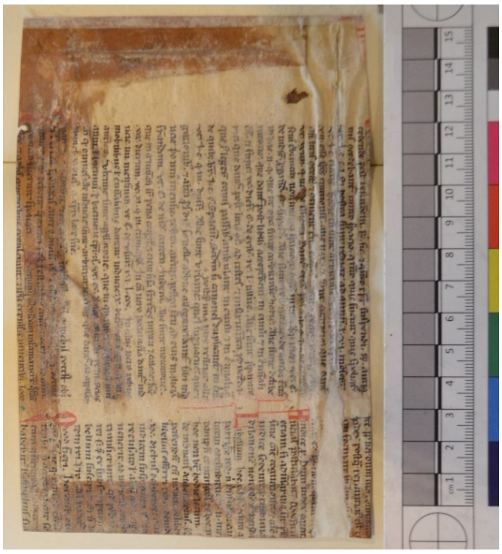

**Fig. 99. Comparing the dimensions of a removed fragment with its *in situ* pair.**
Merton 75.d.10 (Paris, 1542) with fragment still *in situ* and fragment D.3.10 (12) which had been adjacent to the right board of this binding.

**5.4.2.4. Summary**

When estimating the height of the spine of the binding from the height of the fragment it is necessary to note that

i. as an endleaf or guard was sewn in with the rest of the textblock, it will be at least the height of the textblock from above the first kettle stitch (the stitch closest to the head edge) to below the last kettle stitch.
ii. the endleaf or guard may have been the same height as the textblock – and there may be evidence of this in the shape of edge colour and, in the case of endleaves, the presence of corners in the turn-in stains.

The height of an endleaf or guard fragment is, then, the same as or shorter than the full height of the textblock. This relates to the spine of the binding in the following way

i. the height of the spine of the binding is the height of the textblock plus squares and therefore
ii. the height of the spine of the binding is *at least* the height of the fragment plus squares.

There are several issues which add to the difficulty of estimating the height of the spine

i. the squares vary in size and so cannot be estimated accurately - the largest squares encountered in this research were on a re-covered volume and measured 10mm at both head and tail (Fig. 81).
ii. the fragment may have been shorter than the textblock but it will not be possible to say precisely how much shorter.
iii. the endleaf or guard may have been made up of more than one piece of parchment. This may be more likely when looking at larger size books.
iv. the dimensions of the parchment of the fragment may have been altered by damage or conservation treatment.

As a result, it is difficult to specify a figure which should be added to the height of the fragment that would give an accurate height of the spine. In some cases, the difference between the fragment before and after changes to its dimensions (through damage or conservation) may be only a couple of millimetres but in smaller books this may equate to the size of the squares. Therefore, the dimensions of the fragment may have altered to the point that it is now the same size as the binding. It might be more judicious, then, to specify simply that:

**the height of the fragment is equal to the minimum possible height of the spine of the binding. Therefore, the height of the spine of the binding is equal to or greater than the height of the fragment.**

This would apply to endleaves and guards, though it is more likely that guards rather than endleaves would be shorter than the textblock (p.125).

The measurements of fragments when they are being considered as binding components may differ from those usually provided for fragments in catalogues where they are often measured as leaves of a manuscript and the dimensions given either refer to the full size of the fragment or the text area.[296]

[296] Dobcheva and Mackert, 2018, p.87.

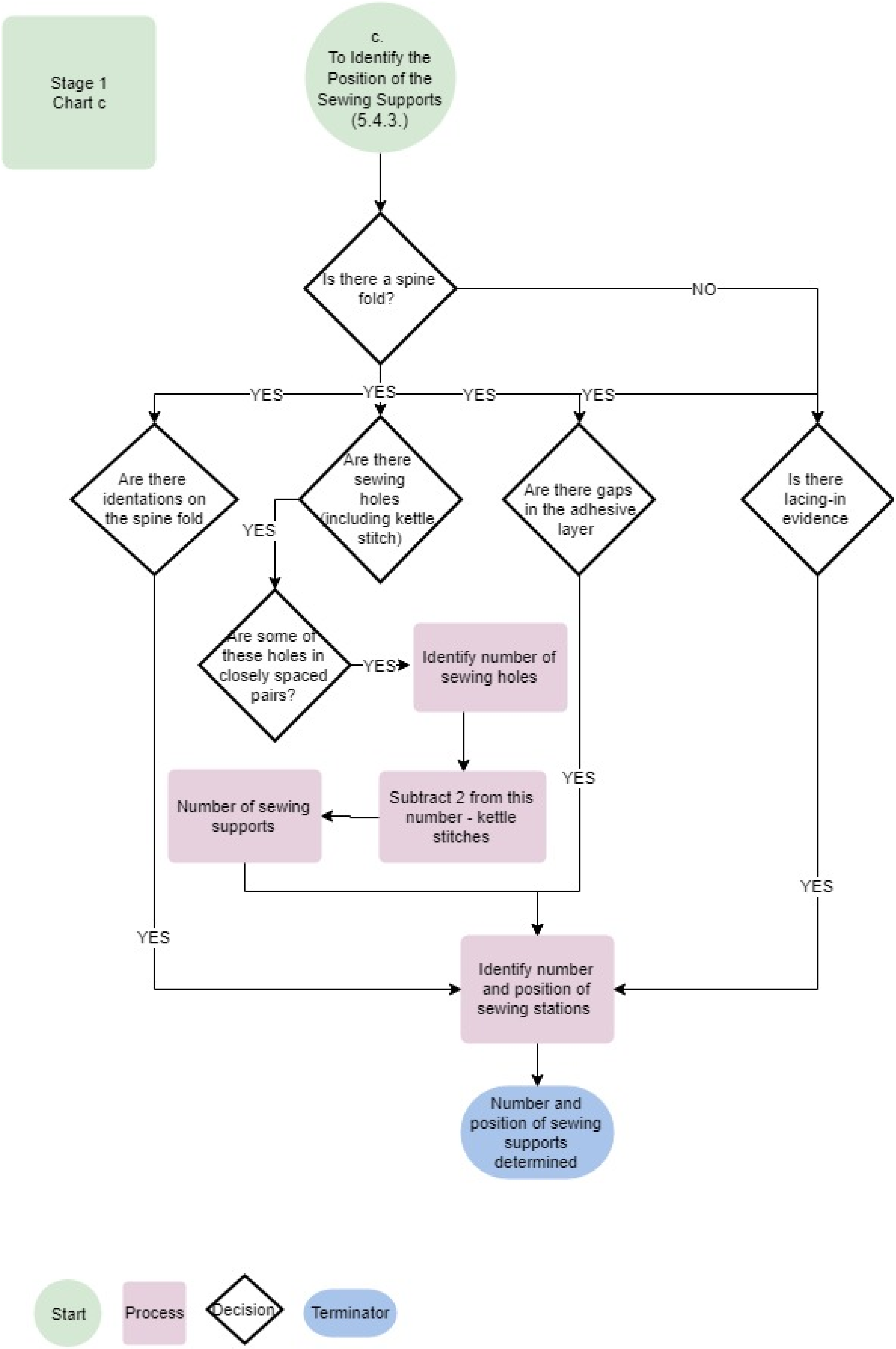


**Chart 1c. To identify the position of the sewing supports**

### 5.4.3. Identifying the position of the sewing supports

The third spine feature (5.3.3), and the one that is possibly the 'key selection feature' and the key to identifying the source binding, is the position of the sewing supports (5.3.5). Evidence for the sewing supports is visible on endleaf and guard fragments in the form of

i. sewing holes (5.4.3.1).
ii. gaps in the adhesive layer on the spine-fold (5.4.3.2).
iii. indentations on the spine-fold, when the fold has not been opened out (5.4.3.3.).
iv. lacing in evidence (5.4.3.4).

#### 5.4.3.1. Sewing holes

The sewing hole could be formed by

i. knife-cuts made prior to sewing. This is a technique which survived into the early sixteenth century.[297] These knife-cuts appear as slits perpendicular to the spine-fold. With Lanhydrock 27, it would seem that for each sewing station there were two knife cuts and the parchment between those slits was damaged (Fig. 100).
ii. piercing by a needle[298] either on the fold or slightly off the fold (Fig. 101).

While the kettle stitches at the extreme ends of the endleaf or guard always have one sewing hole, the number of holes per sewing-support station can vary. Examples of both one-hole and two-hole sewing stations were found in the samples[299] and even a three-hole example (Fig. 101).[300] The number of holes per support will not necessarily indicate the type of support. Single sewing supports, which have only one element of a support, will have one hole, but so do double sewing supports which consist of two elements sewn, in this period, by taking the thread between the two, [301] and so using only one sewing hole.[302] Paired single supports, however, will have two holes. These are

> 'single supports arranged in closely-spaced pairs on the spine, but still sewn individually and not as double supports. Paired single supports were often used on southern German [bindings] in the late 15th and early 15th centuries, and resurfaced briefly in London in the mid-18th century'[303]

297 http://w3id.org/lob/concept/2521
298 http://w3id.org/lob/concept/2519
299 Lanhydrock endleaves 95i, ii and the guard Lanhydrock 51
300 Westminster MS36, 3a,b from M.6.80 ([Geneva], 1564).
301 http://w3id.org/lob/concept/1292
302 Triple sewing supports were not encountered in this research. There is one single example known from a late 15th century German binding http://w3id.org/lob/concept/1587
303 http://w3id.org/lob/concept/1477

Single supports are likely to appear on the spine as thinner bands than bands from paired single or double supports (Fig. 105) but as stated, it may not be possible to tell from the number of sewing holes on the fragment which kind of supports the source binding had. Lanhydrock 134ii, for example, has one sewing hole per sewing station but it is not clear whether this is a double support (Fig. 102, 103).

The sewing holes on these fragments may often be torn. The severity of the damage may be dependent on the quality of the parchment of the manuscript fragment with thicker parchments more resistant to tears. The area between two sewing holes may be broken through to create one large hole. Similarly, a single hole may be stretched or torn to the extent that it looks as if it may have been two holes at one point. How many holes were used to sew the support and what that suggests about the type of support may, then, be difficult to ascertain. In any case, the aim here is to identify the number of sewing stations in order to identify the number of bands on the spine and regardless of whether the sewing support stations have one, two or three sewing holes, they are counted as one band on the spine.

It seems unlikely that the tearing around a sewing hole is always caused by tear back while sewing the endleaf to the textblock. Sewing holes in endleaves and guards positioned at the beginning of the volume are likely to come under strain when the book is being opened. The stretching and elongating of these holes may indicate that the endleaf was pasted down and that with repeated opening of the boards, or more accurately the front board (whether that might have been the left or the right board) the endleaf came under strain and tore horizontally. The downward drag on the textblock from gravity may also be responsible for damage to the sewing holes. A textblock bound in boards that have squares will not be supported by the bookshelf as it does not sit on the shelf – rather the boards of the book sit on the shelf. It is instead supported by the sewing supports and this, with gravity and over time, will cause the textblock to drop. The severity of the drop would be determined by the thickness of the textblock, the number of sewing supports in relation to the height and thickness of the book and the height of the squares on the boards, that is how may millimetres above the shelf the textblock is suspended. The larger the book, then, the more likely it will have been affected by this dragging which will pull the parchment downwards, tearing it. It is, however, still possible even when the sewing holes have been elongated in this way to identify where the sewing hole would have been originally - the top point of the sewing hole would be the original hole. The breakdown of adhesives on the spine which allows the textblock to move more and also the handling of the book may also be factors that contribute to the damage to the sewing holes.

On the other hand, sewing holes which have not been damaged can sometimes be difficult to see. This was the case with the endleaf pair Lanhydrock 56 and 109 and the guard pair Lanhydrock 134ii and 139ii (Fig. 98). The condition of the sewing holes may mean that that these fragments were never pasted down to their covers or that the volumes were rarely opened or that the parchment was very robust.

Sewing holes on the fragment may also relate to the source manuscript. Both the endleaf Merton D.3.7 (1) and the guard Lanhydrock 105 (Fig. 89) have evidence for two sewing systems and it was necessary to look at other evidence to determine which one related to the source binding. (In neither case was the source binding identified.) On occasion, sewing holes may also relate to old housing systems – fragments at Corpus Christi College Oxford were once sewn into guardbooks and while now removed and in new fascicules, they still retain these sewing holes. These holes, however, are likely to be around the edge of the fragment and not on the fold. Pricking holes relating to the earlier use of the fragment as part of a manuscript may also be seen on a fragment but these will be closely spaced unlike sewing holes.

In cases where the sewing holes have been damaged, other evidence may be present which would indicate the position of the sewing supports, such as gaps in the adhesive, indentation from the support, and impression or staining from the lacing-in slips.

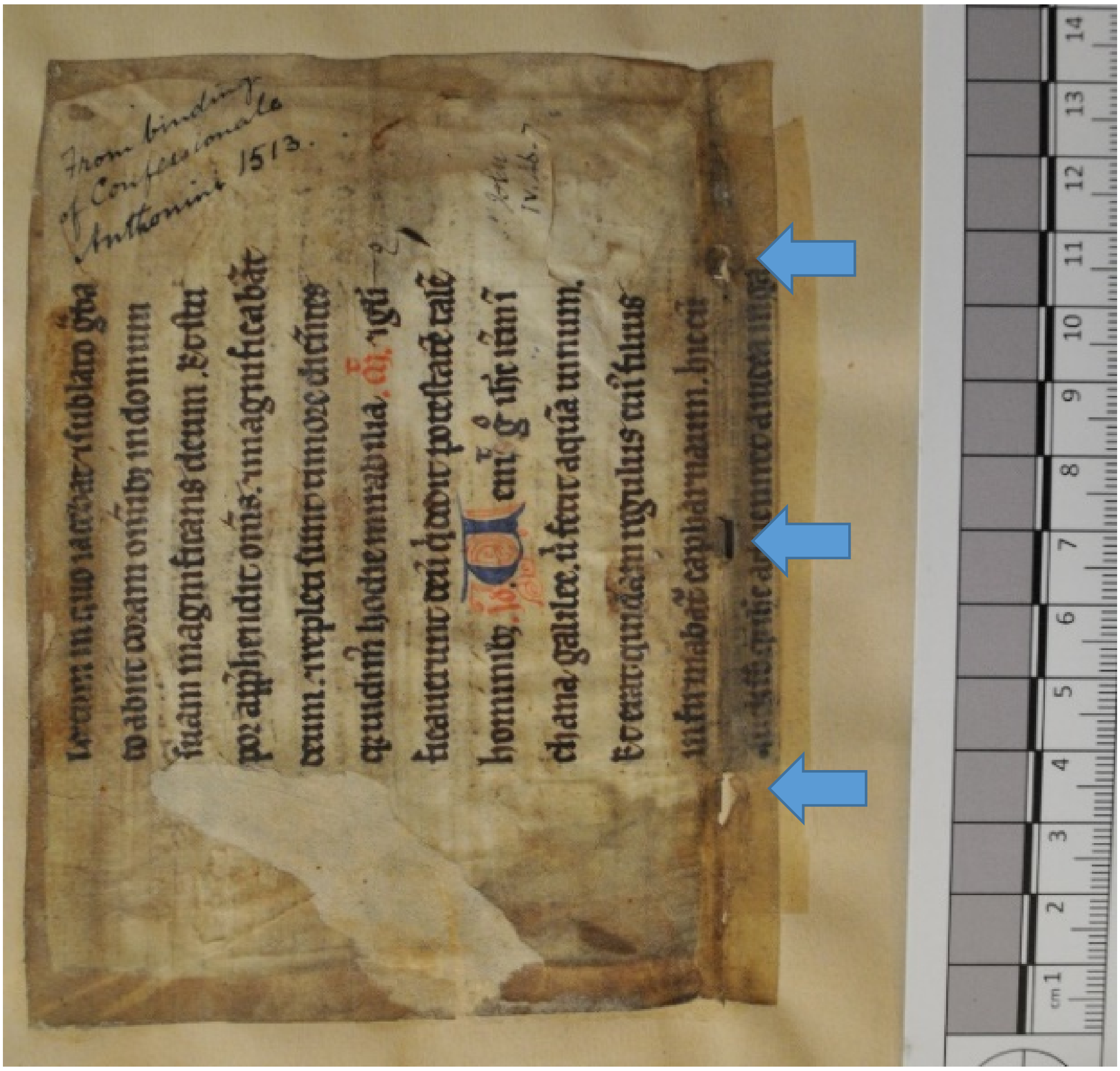

**Fig. 100. Knife cuts which have stretched.**
Lanhydrock 27, inner face of the fragment. Source binding: C.1.23 (Paris, 1511-1513).

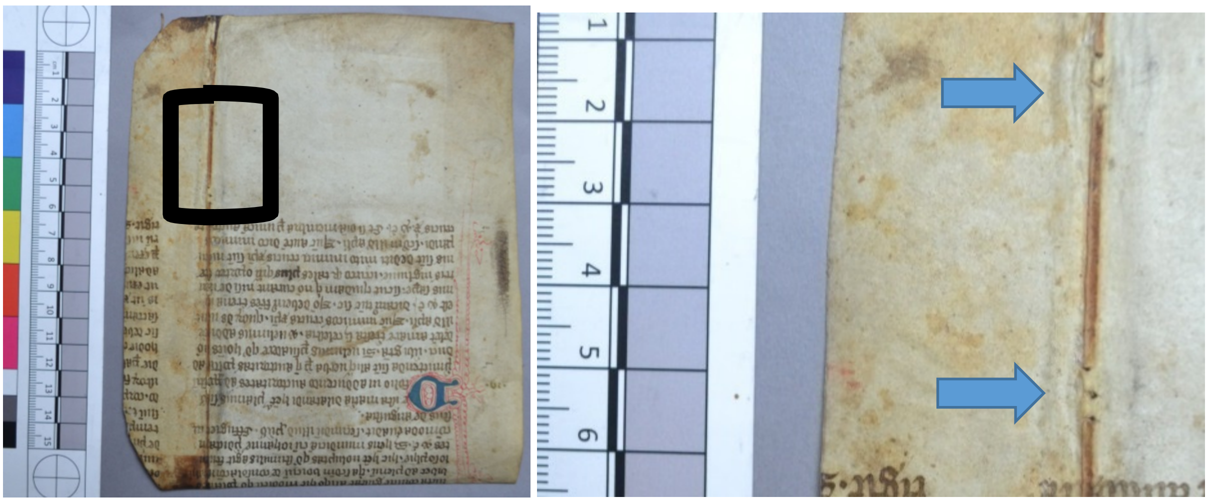

**Fig. 101. Three pierced holes per sewing station.**
Westminster 3b, right endleaf from M.6.80 ([Geneva], 1564).

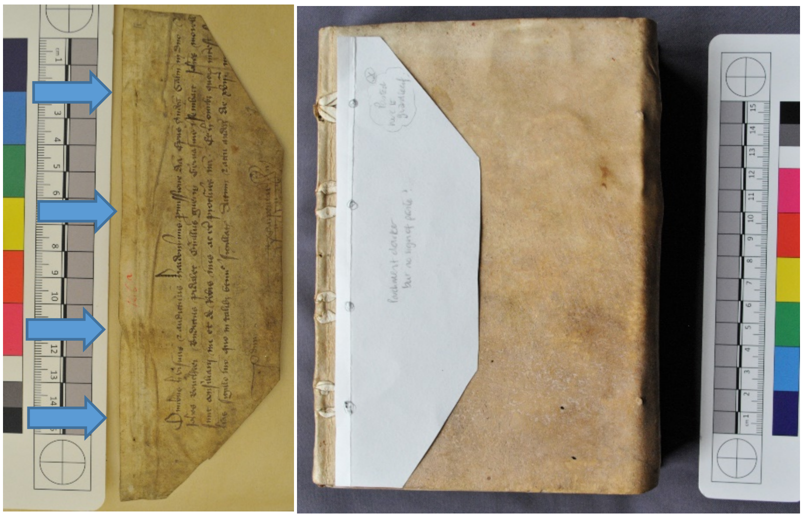

**Fig. 102. The sewing holes of Lanhydrock 134ii.** The arrows mark the position of the sewing holes. Lanhydrock 134ii with its source binding C.3.29 (Milan, 1509 & Paris 1512).

**Fig. 103. Lanhydrock 134ii: Inner surface of the left cover of C.3.29** (with new pastedowns) and supports laced in.


**Fig. 104. Spines with double or paired support (centre) and single support - but all one band.** Clare Q.2.5 (Basel, 1532) (centre volume).

### 5.4.3.2. Gaps in the adhesive layer on the spine-fold

Gaps in the adhesive layer on the spine-fold can also indicate the position of sewing supports. Adhesive was applied to the spines of books to either consolidate the spine-folds, adhere spine linings or, in the case of tight-back bindings, to adhere the cover to the spine. Adhesive may be visible as a brown stain on the spine-fold of an endleaf or guard. The colour indicates that it is a protein—based glue, a feature of English, Flemish and German bindings. In other cases, adhesive may not have been used or it may not be visible because it was a starch-based paste, as used by French and Italian binders.[304]

Since the adhesive is applied after the book has been sewn, it is found in the spine panels between the supports and not under the supports (Fig. 105). This means that gaps in the adhesive on the spine-fold of a fragment indicate where the sewing supports had been. In cases where sewing holes have been damaged, as mentioned above, the gap in the line of adhesive can be used as additional evidence to identify the position of the supports. In these cases, the adhesive-gap can be a better indication of where the support lay than the sewing hole and should not be removed as part of a conservation treatment.

An adhesive stain may not always be present, regardless of the adhesive used. In cases where there was a second element to the endleaf unit which folded around the manuscript-waste fragment, the spine fold of the fragment would not have been exposed to the adhesive for it to leave a stain.

### 5.4.3.3. Indentations on the spine-fold.

A different type of evidence for the position of the sewing supports can be seen on fragments where the fold has not been straightened out (Fig. 106). In these cases, it can be difficult to see the sewing holes. However, the sewing supports often indent the endleaf or guard at the point at which they lay against its spine-fold. These indentations on the spine-fold, then, indicate where the raised support was positioned (Fig. 104, 105). They are less likely to be visible when the fold of them manuscript-waste fragment has been flattened out.

[304] Pickwoad, personal communication, 23/5/17.

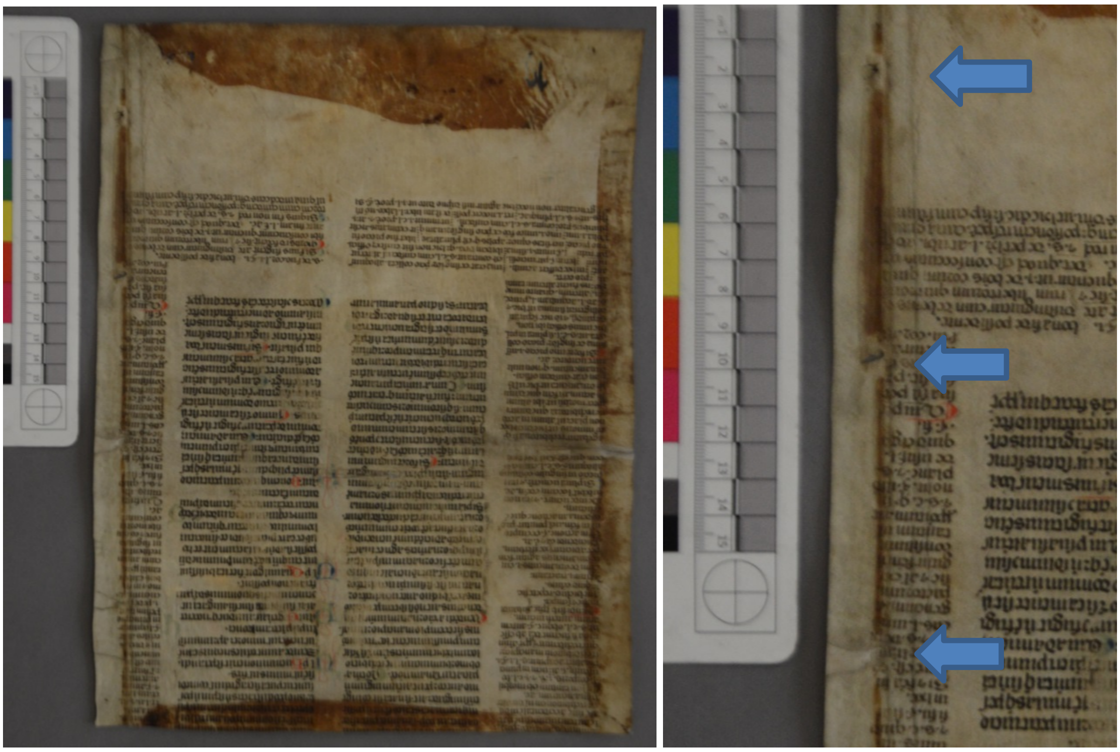

**Fig. 105. Adhesive gaps on the spine-fold indicating where the supports were.**
Right: A detail of the adhesive gaps.
The sewing holes are also visible in these gaps**.**
Clare 4ei. Source binding: U.1.5 vol. V (Lyon, 1520).

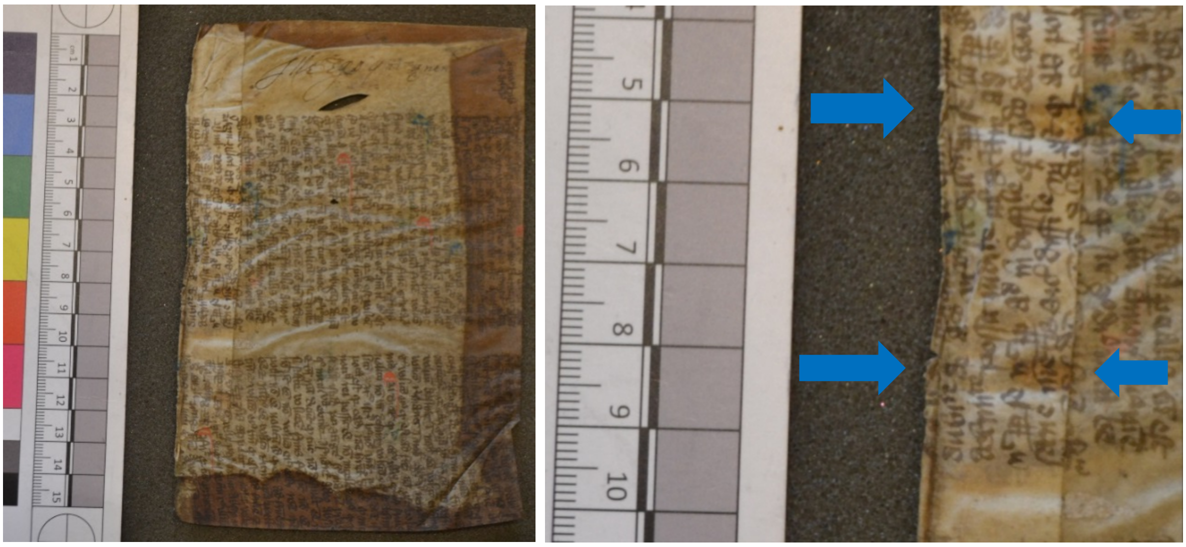

**Fig. 106. An unconserved pair of endleaves with the stub not folded out.**
Right: Detail of the fold with indentations from the supports.
Merton E.3.9 (16). Source binding: 75.c.19 (Lyon, 1553).

#### 5.4.3.4. Lacing-in evidence

Evidence of the lacing of the ends of the sewing supports (the slips[305]) into the boards or cover (by which the bookblock is attached to the cover) will also indicate the position of the sewing supports. Evidence of the laced-in slip can be seen on the manuscript-waste endleaf or guard in the form of

i. **staining**. If the support material was tanned skin, this might stain the adjacent fragment (Fig. 109). No staining on the fragment would indicate that either the support was of a non-staining material, such as alum-tawed skin, or that the fragment was not in contact with the support. This may be the case if the supports were recessed into deep lacing-in channels[306] cut into wooden boards and so were not flush with the surface of the board. It could also indicate that there was a second element to the endleaf unit that acted as a barrier and prevented the transfer of staining to the manuscript-waste fragment.
ii. **an impression of the shape of the lace-in slip**. Alum-tawed supports can leave a wide impression as the material can be beaten flat into paper boards but they may leave no impression if they are flush with the board.[307] Cord supports were not found to have left a mark on the examples examined here.
iii. **an impression of, or staining from, the edges of a lacing-in channel.** Deep lacing-in channels, as found in wooden boards, may result in sewing supports not being in contact with the endleaf fragment. However, the edges of the lacing-in channel may leave a mark (Fig. 107). The impression of the edge of the lacing in hole will be indented on the side of the fragment that faced the inner surface of the board.
iv. **pieces of the support material may also remain adhered to the parchment** (Fig.108).

Lacing-in evidence may not always correlate with the sewing hole evidence. Firstly, not all supports were laced in, so there may be more sewing holes than there are laced-in slips. This 'select lacing'[308] is found as early as the last quarter of the fifteenth century. Secondly, the sewing supports on a book do not all have to be of the same material and some may not leave a stain. Fig. 109 shows a fragment which has evidence of four sewing supports but evidence of only two laced in slips. In this case it is not clear whether this is as a result of select lacing or the middle two supports being made from non-staining alum-tawed skin (the source binding had been repaired and this evidence was not visible).

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305 http://w3id.org/lob/concept/1606
306 http://w3id.org/lob/concept/1251
307 Hammered slips: http://w3id.org/lob/concept/3496
308 http://w3id.org/lob/concept/1571

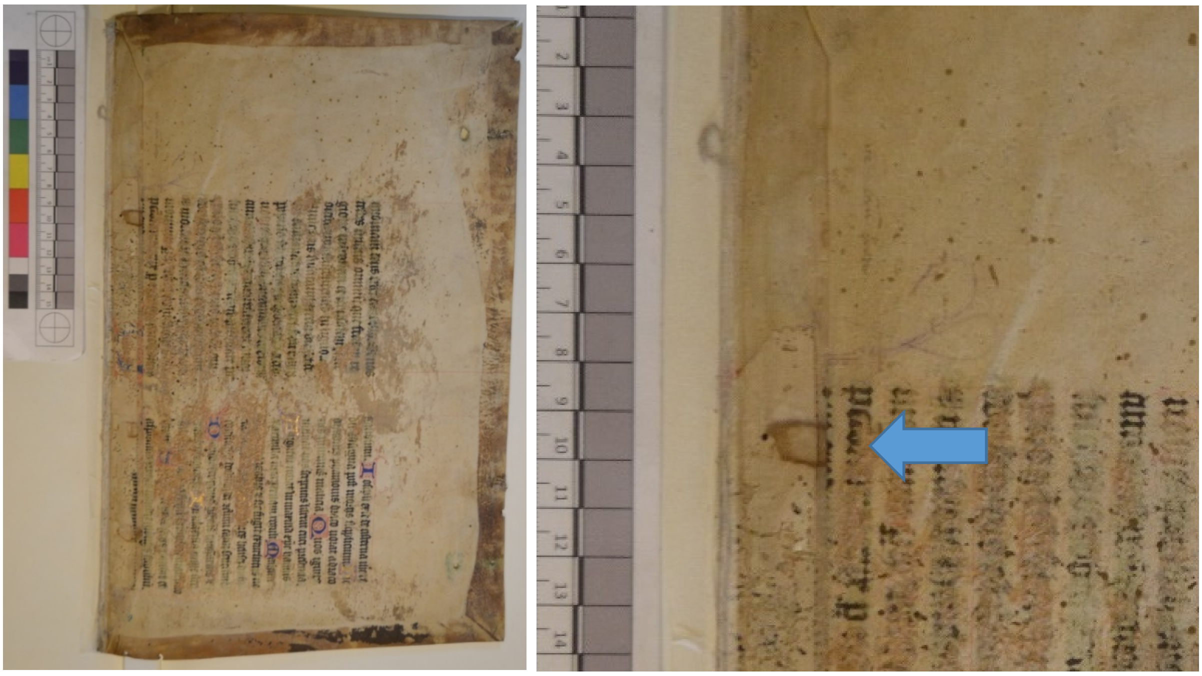


**Fig. 107. The stub of a paper endleaf which had been folded around the parchment endleaf.**
Right: Detail of the parchment stub and the paper stub folded around it.
Merton D.3.1 (1). Left endleaf from source binding: 95.jj.8 vol. II (Basel, 1571).

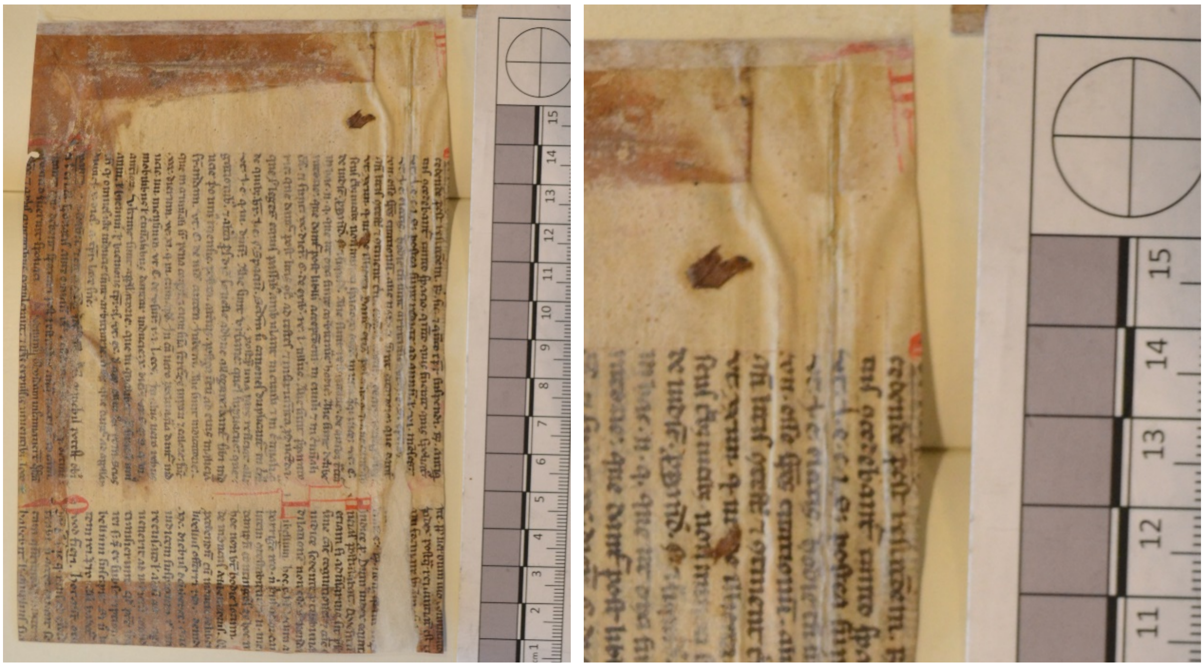


**Fig. 108. Support material adhered to the fragment.**
Right: Detail of the material.
Merton D.3.10 (12). Right endleaf from source binding 75.d.10. (Paris, 1542).

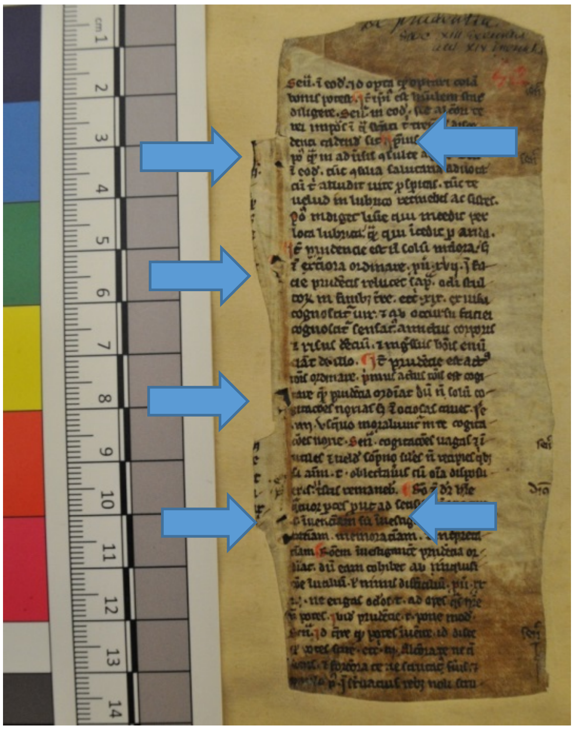


**Fig. 109. Select lacing or sewing supports of two different materials.**
Four sewing support stations (two holes per station, the kettles stitches are less visible due to the housing) but staining only from two supports.
Lanhydrock 51. Left guard, source binding: C.1.18 (Paris, 1512).

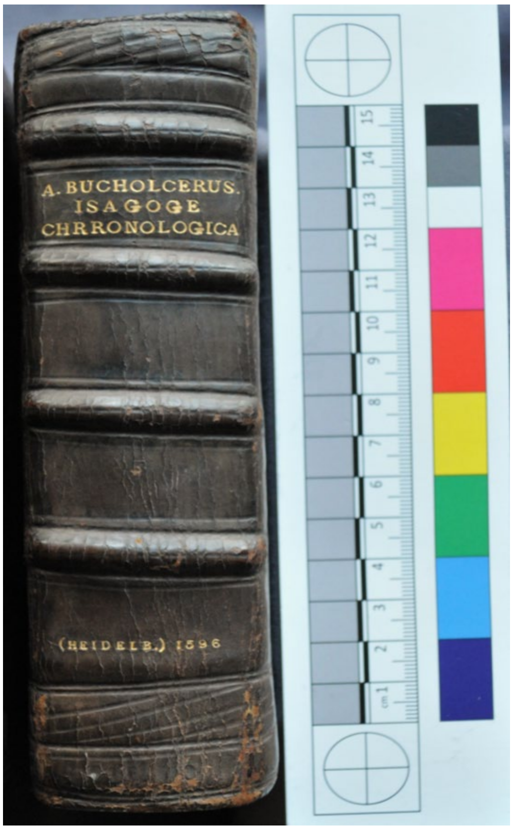



**Fig. 110. Uneven bands on the spine.**
Lanhydrock E.12.2 (Heidelberg, 1596).

**5.4.3.5. When the endleaves no longer have a stub**

There were several examples in the fragment collections examined of endleaves without their stubs. That there had once been a stub was clear in that the endleaf had to be attached to the textblock by sewing through the spine-fold but the fold was no longer present. The stub may have been cut off from the endleaf when the endleaf was being removed from the source binding as this may have been done by trimming the endleaf along the fold (4.3.1.3.3).

Even without the stub of an endleaf or guard, and so by necessity the spine-fold with the sewing holes and adhesive gaps, it could still be possible to identify the position of the sewing supports by the impression of the laced-in supports on the leaf. This was the case with Clare 2ai, ii which had only a small section of a guard still present on 2ai (Fig. 111) and none on 2aii.

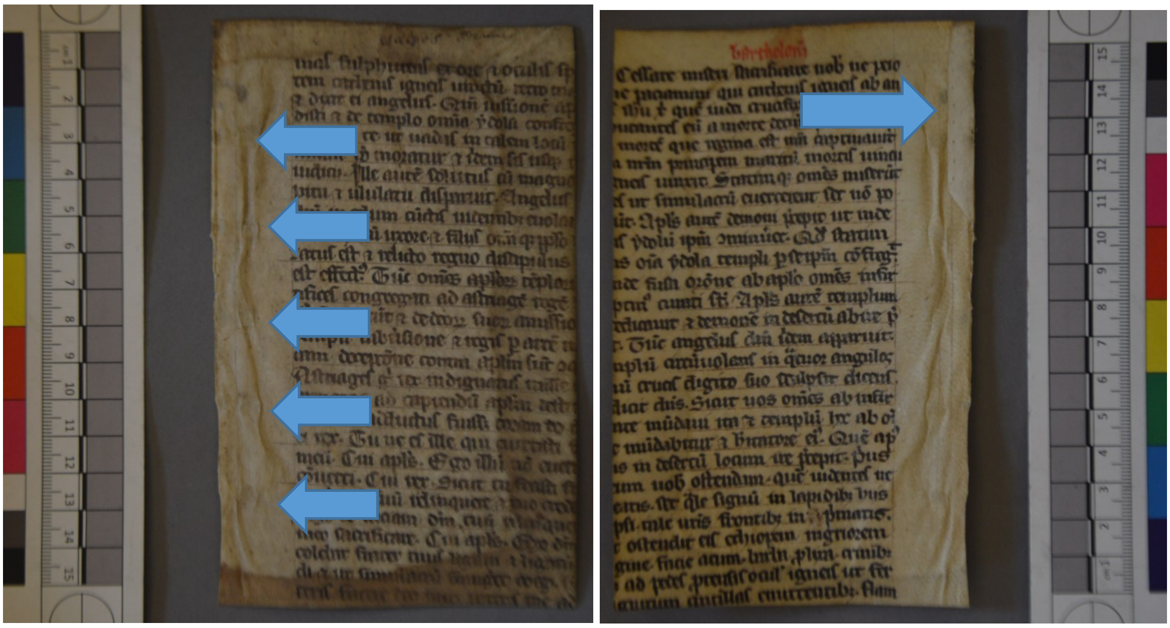


**Fig. 111. Endleaf without a stub.**
Left: Outer face of left endleaf.
Right: Inner face with small portion of stub.
Clare 2ai: Left endleaf, source binding O.5½.6 (Hagenau, 1534). (See also Fig. 98.)

#### 5.4.3.6. Summary

Evidence of the position of the sewing supports on the spine or the lacing-in holes at the joints can be seen on manuscript-waste fragments which were used as endleaves and guards. This evidence is not restricted to sewing holes but also includes gaps in the adhesive on the fold, indentations on the spine fold and lacing-in evidence.

Impressions of the sewing thread can also sometimes be visible on the parchment between the sewing holes – though it will not on its own indicate the position of the sewing holes. This thread trace may also relate to the source manuscript (as it does in the case of Lanhydrock 104, 105). In the case of Lanhydrock 134ii and 139iii which also have marks from sewing thread, as these were fragments from a document not a book, the thread cannot relate to its former use

While it might be expected that the sewing holes in a pair of endleaves would be in alignment with each other, this is not always the case. Sewing supports do not always lie straight across the spine. They can be slanted (Fig. 110) and in these cases the sewing holes in the right and left endleaf or guard are not aligned. This may indicate that the bookblock had not been marked up for sewing, a process which results in a more regular position of the sewing holes as it involves making the holes in the spine-folds prior to the sewing.[309]

It can, at times, be difficult to see the sewing holes, particularly when they have not been stretched. A grey-coloured card placed under the leaf, in the absence of a light sheet, was found to help when attempting to identify the holes.

### 5.4.4. Identifying the width of the spine

Neither endleaves nor guards have evidence of the width of the spine.

### 5.4.5. Summary

Evidence for three of the four spine features – covering material, height and sewing supports - can be seen in the binding evidence on manuscript-waste fragments used as endleaves and guards. Next, the remaining two fragment types, comb spine linings and covers, will be examined for evidence of the same four features.

[309] http://w3id.org/lob/concept/3653

### 5.5. Comb spine lining: Identifying spine features of the source binding from the evidence

Evidence of the covering material of the source binding might be seen on the extension element of a comb spine lining, the section of the lining that was positioned against the inner surface of the board. This will be in the form of turn-in staining or impression which, as with guards, will be limited because of the narrowness of this element of the fragment. Further evidence, in the form of staining or actual pieces of the material, may be seen on the spine section of the lining that sat directly under the covering material, if that material was tanned skin (Fig. 112).

The height of the spine of the binding can be determined from the height of the comb spine lining which will usually have extended to the full height of the textblock to which it was attached. Evidence of endbands in the form of holes or threads in the upper and/or lower panel of the lining would support this (Fig. 112).

The position of the sewing supports corresponds to the gaps in the teeth of the spine element of the lining (Fig. 113). A support, however, may not filled the entire gap. There may also be lacing-in evidence, as with endleaves or guards, on the extension element of the lining.

In contrast to endleaves and guards, the width of the spine, or an approximation of that measurement, may be seen on a comb spine lining. Each part of the lining does not have to extend across the full width of the spine. If the lower lining, which was adhered immediately to the spine-folds of the textblock, has retained an impression of or offsetting from the upper lining which lay on top of it, this may show where the upper and lower teeth overlapped (Fig. 113). From this, it may be possible to get a precise measurement of the width of the spine. However, in the absence of this impression it is more challenging. When only one element of the lining survives, the width of the teeth element gives the minimum width of the spine.

**Fig. 112. Comb spine lining - detail of the endband thread and tanned skin.**
Right: detail of endband threads on the lower panel.
Wren R.11.2/21. Source binding not identified.

**Fig. 113. The width of the spine from a comb spine lining.**
St. Canice's CK/MS/3 (lower) and CK/MS/ 9 (upper).
**Fig. 114. One side of the comb spine lining.**
St. Canice's CK/MS/3 with an impression from CK/MS/9 which shows where the upper teeth were positioned.

## 5.6. Covers: Identifying spine features of the source textblock from the binding evidence

The fourth fragment type, covers, present a different issue to the previous three fragment types. What is being sought in this case is not a source binding but the associated textblock which was covered by this fragment.

The style and material of this new cover will be dependent on when the book was repaired. Its height may be the same as the fragment, or possibly shorter if the textblock was trimmed as part of the rebinding. The sewing supports could be in the same position on the new binding, if the textblock had not been resewn as part of the rebinding. However, the examples from Lanhydrock had all been resewn. Evidence on Lanhydrock 162, for example, shows that the textblock was sewn on three supports. The new binding for this textblock (C.15.26, London, 1581) was sewn on four supports but the spine has five raised bands. Here, false bands were being used to make the spines look uniform for this gentleman's library.

While a fragment which was used as a cover will have a spine, there is a question as to how the width of the spine of the fragment might relate to the width of the spine of the new cover. The new binding for the textblock associated with Lanhydrock 157, D.7.38 (London, 1580),[310] for example, has a narrower spine (15mm) than the fragment (20mm). Evidence for the spine width, then, while present, may not be reliable. The thickness of the new sewing thread, if the volume was resewn, the addition of spine linings and the question as to whether the original volume had multiple texts that may have separated into individual bindings rather than kept bound together could all result in the new spine being of a different width to the old.

## 5.7. Summary

Having identified the features that are visible on the spine of books (5.3) and examined which of those features are visible on the four categories of fragments (5.4. – 5.6.), the next part of this chapter

i. describes the process of identifying candidate matches using the spine evidence on the fragment (5.8).
ii. assesses the impact of repairs to the bindings (5.9).
iii. identifies the 'key selection feature' (5.10).
iv. assesses whether the spine features may be used to identify the source binding (5.11).

[310] The source binding was identified using archival evidence.

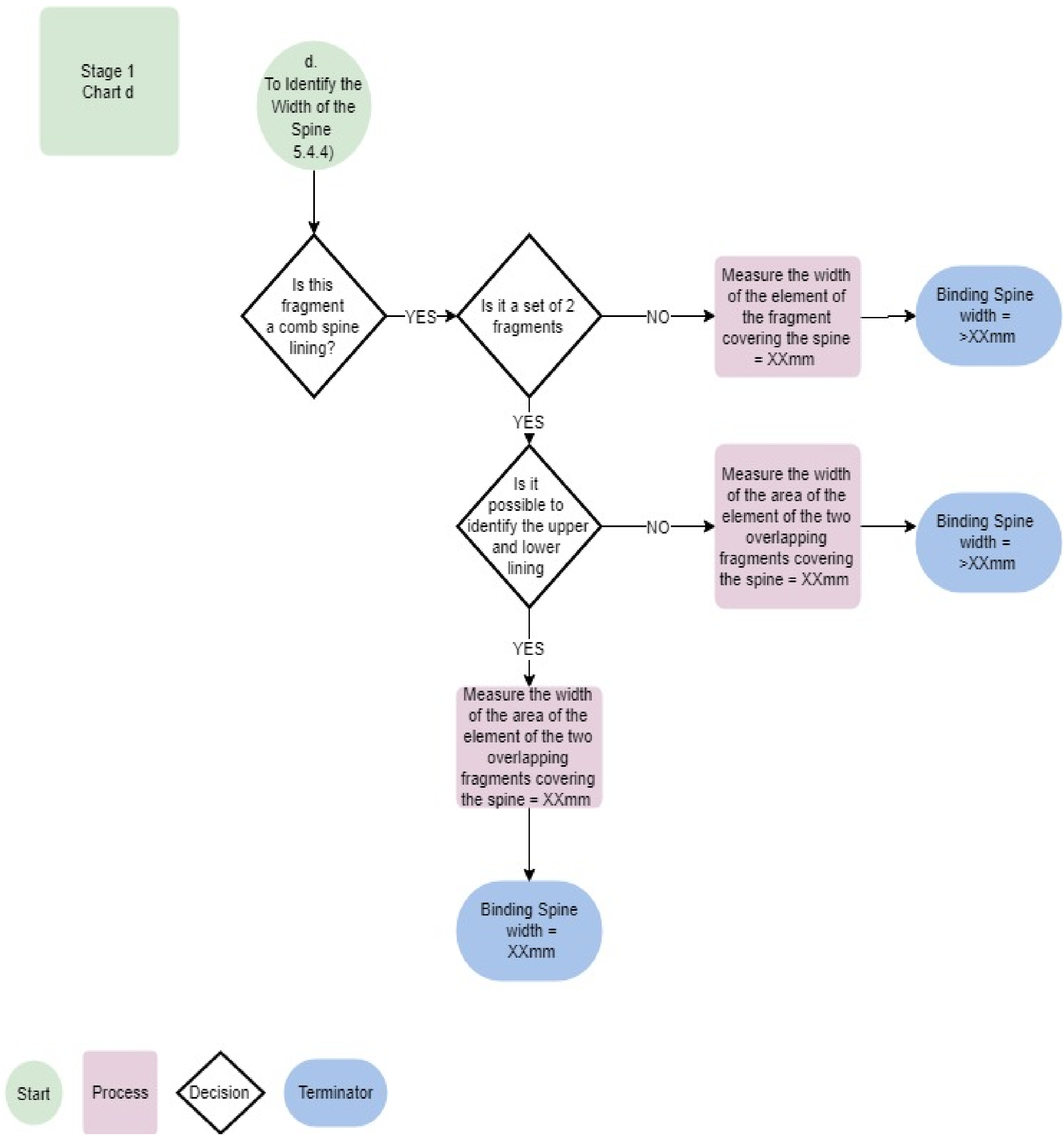



**Chart 1d. To identify the width of the spine from comb spine linings.**

## 5.8. The process of identifying candidate matches from the evidence on fragments

Having previously identified

i. the fragment as an element of a binding (4.3 – 4.5).
ii. whether there is an associated fragment to make a pair or not (4.3.3.).
iii. the features of the spine that are visible on the fragment (5.4 – 5.6).
iv. whether the fragment faced the board or the textblock (based on the turn-in stain or impression, 5.4.1.).

the next step is to identify whether the fragment was positioned on the left or right of the source binding.

### 5.8.1. Distinguishing the left endleaf or guard from the right endleaf or guard

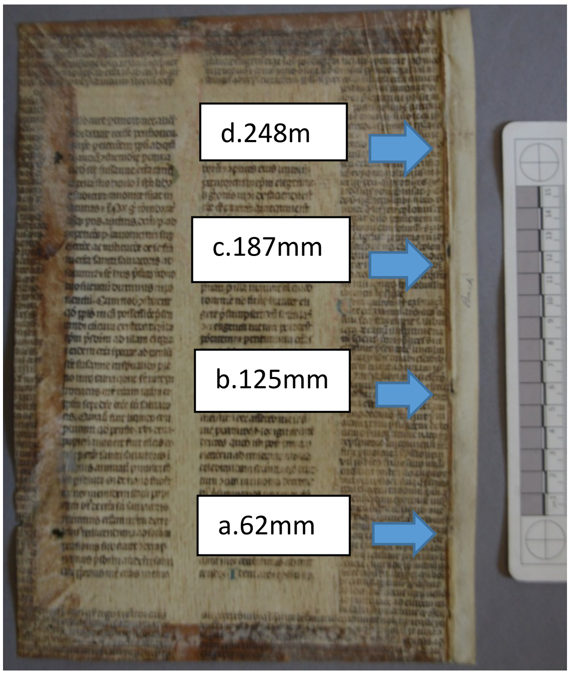
Of the fragments and bindings examined, it was found that the sewing supports at head and tail were often not equidistant from their respective edges. This means that the spacing of the bands will vary depending on which way up is considered the right way up for the fragment. For example, if Clare 2c is thought to be the right endleaf then the sewing supports are spaced in the following way (from the tail to the head) (Fig. 115):

| Height mm | a mm | b mm | c mm | d mm |
|---|---|---|---|---|
| 296 | 62 | 125 | 187 | 248 |

However, if the same fragment is taken to be the left endleaf, the sewing supports have this distribution (Fig. 116):

| Height mm | d mm | c mm | b mm | a mm |
|---|---|---|---|---|
| 296 | 48 | 110 | 170 | 240 |

Simply by turning the fragment 180 degrees the distribution of the sewing supports has changed. This means that the fragment could match the spine distribution of a particular volume if it is taken to be, for example, the right endleaf but not if it is taken to be the left (Fig. 117). It is therefore necessary to try to determine whether the fragment was on the left of the volume or on the right. Some endleaves may have shelfmarks, ownership inscriptions or bookplates which might suggest that they had been positioned at the beginning of the book. However, this is not always a reliable indicator of whether the fragment was from the left or the right of the volume. Firstly, ownership inscriptions *etc*. are not exclusively written at the beginning of the book – owners may write their name anywhere. Secondly, identifying that the fragment was positioned at the beginning of the book does not identify whether that is to the left or to the right of the volume - the Hebrew books examined in this study had their shelfmarks and bookplates at *their* beginning, that is, adjacent to the right board.



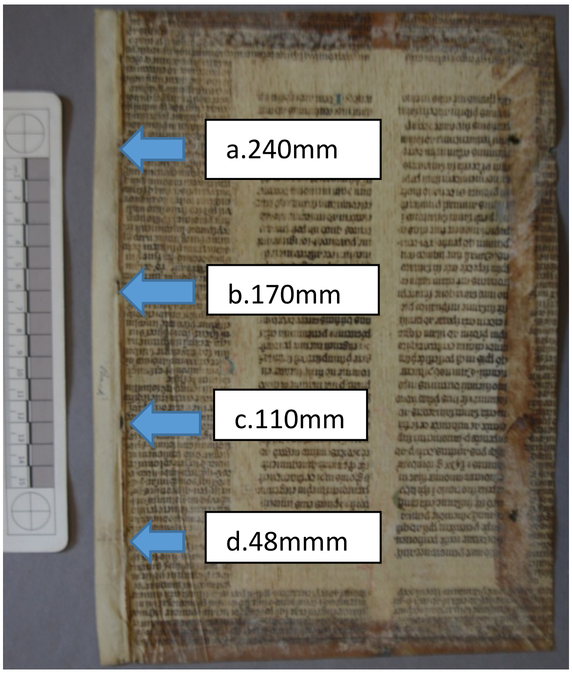




**Fig. 115. An endleaf positioned as if it had faced the right board.**
Left: if the endleaf faced the right board, the first support is 60mm from the tail edge (the measurement is taken from the middle of the support)
**Fig. 116. The same endleaf positioned as if it had faced the left board.**
Right: if the endleaf faced the left board, the first support is 50mm from the tail edge.
Clare 2c, paired with 4c, source binding: K.5.5. (Strasbourg, 1529).
Clare 2c is the right endleaf.

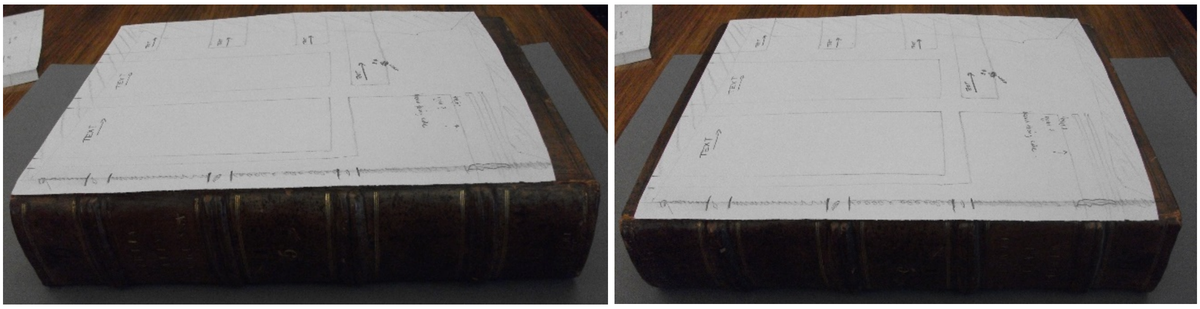


**Fig. 117. Why it is necessary to identify the tail of the fragment from its head.**
Left: the sewing distribution does not fit when the fragment is taken to be the left endleaf.
Right: the sewing distribution fits when the fragment is taken to be the right endleaf.
Clare 4ei and source binding. U.1.6, vol. V (Lyon, 1520).

There may, however, be other information on the fragment. Firstly, the turn-in staining or impression will indicate which side of the fragment faced the cover (5.4.1). Secondly, the distribution of the sewing supports can be relevant.

In the majority of the fragments examined the first support (the closest to the head) and the last support (the closest to the tail), were not equidistant from the short edge (that is, the head or tail edge) of the fragment (Appendix 3). The support closest to the tail edge was set further from that edge than the head support was from the head edge. This resulted in the spine panel from the tail edge to its closest support (the last support) being taller than the spine panel from the head edge to the first support. (No examples of bindings with short head and tail spacing – that is, where 'the sewing supports are arranged in order to create panels at head and tail that are shorter than the panels between the sewing supports' - were found during this work.[311])

This pattern, where the tail panel is taller than the other panels, is described as *vertical spacing* and 'is usually associated with the vertical storage of books in which equal spacing will make the tail-end panel look short' (Fig. 119).[312] Vertical spacing is, then, usually seen as being related to bindings being shelved with the spine facing outwards. Books began to be stored with the spine facing out (as opposed to the fore-edge out) on the European continent in the sixteenth century (from around 1540 in Paris) but in England only from the mid-seventeenth century.[313] The majority of the fragments examined in this research have this taller lower panel. If this taller panel is, in these cases, related to vertical spacing then this seems peculiar because if the bindings were sewn in England, where books were not being stored spine-out at this stage, there would be no reason for creating a taller panel. However, these books may have been sewn on the continent where, at least in Paris, books should have had vertical spacing from 1540 onwards. Alternatively, the taller tail panel may be due to how the textblock was trimmed. The first and the last sewing supports may have originally been the same distance from their respective edges but if the textblock was trimmed more from the head than the tail, this would result in the first support (at the head) being closer to the head edge than the last support (at the tail) is to the tail edge. This would give a taller lower panel which is not related to vertical spacing.[314]

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311 A feature of less expensive bindings in the sixteenth century. http://w3id.org/lob/concept/3019.
312 http://w3id.org/lob/concept/3089
313 http://w3id.org/lob/concept/3090
314 Pickwoad, personal communication, 23/5/17.

To determine whether the latter is the case, three examples where fragments and their source bindings had taller tail panels were examined and the distance of the kettle stitches from their respective closest edge was compared. One example (Lanhydrock 116i, ii) was sewn on three supports and had a textblock from the first quarter of the sixteenth century (Paris, 1518 – dating before the period when books were shelved spine out). The other two (Lanhydrock 56, 109 and Lanhydrock 124, 125) measured approximately the same height, were sewn on four supports and had textblocks dating from the end of the sixteenth century (Antwerp, 1582) and the beginning of the seventeenth century (Oppenheim, 1611) (Table 8).

It was found that

i. with Lanhydrock 116i, ii (Paris, 1518) and Lanhydrock 56, 109 (Oppenheim, 1611) the head kettle was closer to the edge than the tail kettle.
ii. with Lanhydrock 124, 125 (Antwerp, 1582) there was no significant difference between the kettles' distance from the edge.

The taller tail panel could be attributed to the trimming of the textblock in the example from the early group (Lanhydrock 116i, ii) and in one example from the later group (Lanhydrock 56, 109). The other example from the later group (Lanhydrock 124, 125) may be more likely to be an example of deliberate vertical spacing.

| **Endleaves** | **Height mm** | **Tail Kettle mm** | **Distance of support closest to tail from the tail edge mm** | **Distance of support closest to head from the head edge mm** | **Head Kettle mm** | **Conclusion** |
|---|---|---|---|---|---|---|
| i.<br>116i, left<br>116ii, right<br>(Paris, 1518) | 198 | 116i: 20<br>116ii: 20 | 116i: 45<br>116ii: 45 | 116i: 25<br>116ii: 33 | 10 | More trimmed at head |
| ii.<br>56 right 109 left<br>(Oppenheim, 1611) | 238 | 56:30<br>109:30 | 56: 56<br>109:50 | 56:46<br>109:45 | 56: 20<br>109:24 | More trimmed at head |
| iii.<br>124 left,<br>125 right<br>(Antwerp, 1582) | 240 | 124: 25<br>125: 23 | 124:53<br>125:52 | 124:40<br>124:38 | 124: 20<br>125: 25 | No significant difference in the distance of kettle stitches from the edges. |

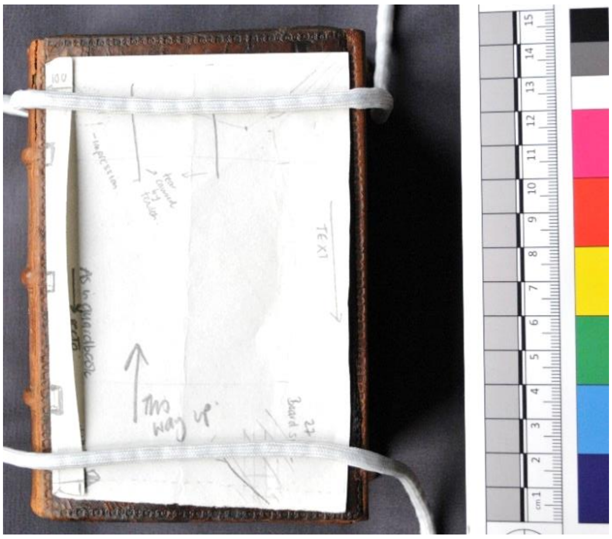
**Table 8. Comparing the height of the tail panel.**

**While reasons for how and why the taller lower panel exists may vary, its presence is noteworthy. It was found that when the fragment has evidence of a taller panel at the tail edge of the spine this can be used to identify the head and tail of the fragment and, combined with evidence which identifies the outer face of the fragment, this can indicate whether the fragment sat to the left or the right of the binding.**

However, there are cases where the first support and the last support are equidistant from their closest edge and there is no taller lower panel. One such example, Lanhydrock 27 (from the source binding C.1.23: Paris, 1513 – 1515 - predating the period when book spines were shelved spine-out on the European continent) – was sewn on three supports. The central support was positioned half way between the head and tail supports meaning that the distribution of the sewing supports was the same regardless of whether one edge was taken to be the tail edge or the head edge. Lanhydrock 27 was found to fit as the left endleaf (Fig. 118) but if it is turned 180 degrees, it could also fit as the right endleaf (Fig. 119). (Lanhydrock 27 was identified as the left endleaf in later stages of this process.). Lanhydrock 32i and ii, (from the source binding A.21.4: Lyon, 1517, again predating the period when book spines were shelved spine-out on the Continent) was a similar case, also sewn on three supports (Fig. 120). There is no substantial difference in the positioning of the two most extreme supports (27 and 30mm from the edge), and the central support was again halfway between these two outer supports. Each fragment matched the position of the bands on the spine as either the left or right endleaf. (Fig. 121).

However, in the case of a binding with four supports where the first and the fourth supports are equidistant from the edge, the distance between the first and the second support and the third and the fourth support may differ. The left and the right fragments may not match both sides of the binding. In this case, the fragment would have to checked both from the tail of the book up and from the head of the book down.

Fragments may also be damaged. In the case of Lanhydrock 63, 64 one fragment is shorter than the other at the fold (though it is the same size at the fore-edge) and this means that a small piece of the tail edge of one of the fragments is missing and this affects the measurements. Fortunately, there is a second endleaf from the same binding that is complete and this can give the full measurement of the endleaves.





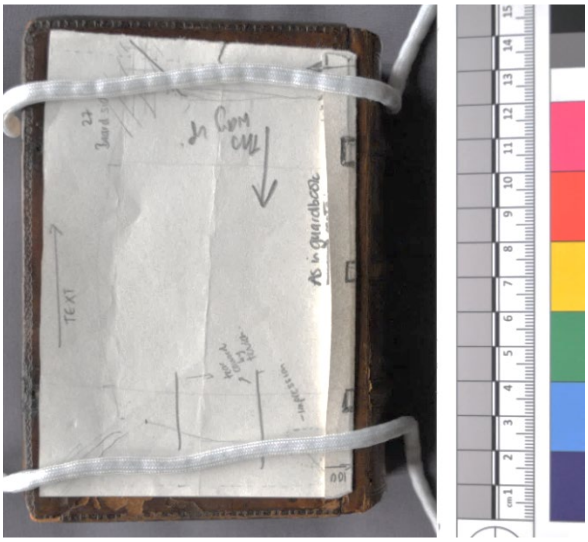
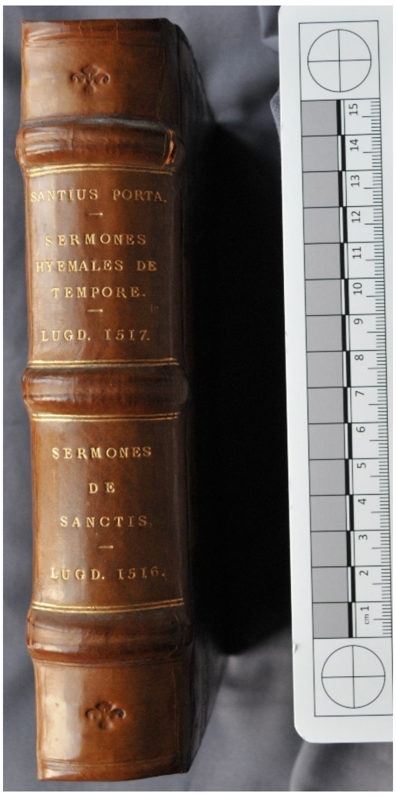




**Fig. 118. A fragment with sewing distribution that matches both the left and the right boards.**
Left: the fragment and the left board.

**Fig. 119. The same fragment and the right board.**
Lanhydrock 27 and source binding C.1.23 (Paris, 1513-1515). See also Fig.96.





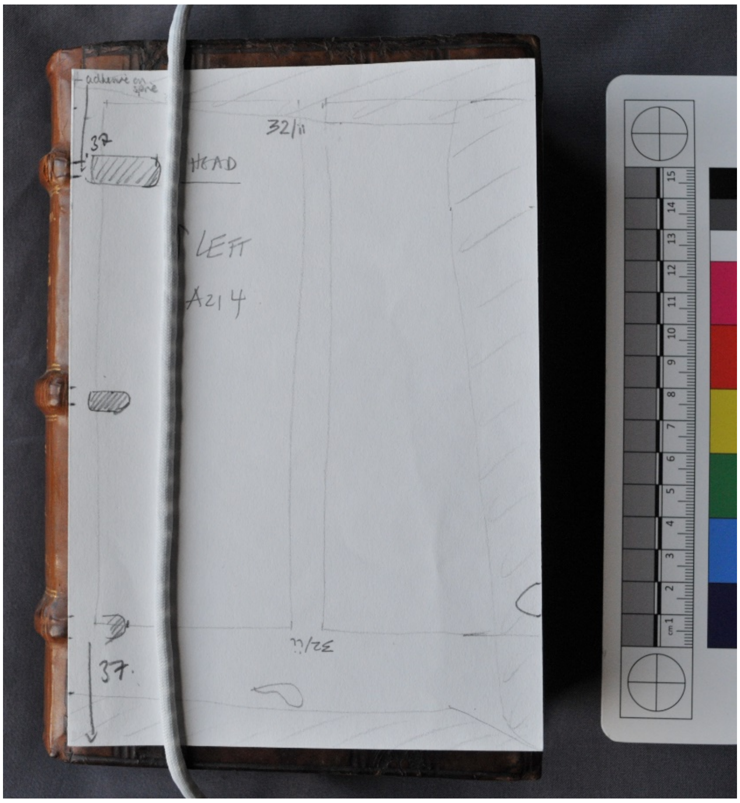




**Fig. 120. The spine of A.21.4 (Lyon, 1517).**

**Fig. 121. A.21.4 and Lanhydrock 32ii, the left endleaf.**
This arrangement of supports is typical of Northern European bindings.[315]

315 Pickwood, personal communication 23/5/17.

It is also possible to identify taller lower panels on comb spine linings and covers by the same method. The title on the spine of a cover, if it is written horizontally across the spine will also indicate which way up the cover was orientated. However, when it is written *along* the spine, it may be read up or down and so cannot be used for this purpose.

It was found that in some pairs only one endleaf has damaged sewing holes (5.4.3.1). This is the case in Westminster MS36 6, the left endleaf, from the beginning of the book (Q.1.8 vol. 3/7: Paris, 1542). Its sewing holes have torn while those on the right endleaf, Westminster MS36 7, which was positioned at the end of the book, have not. As the beginning of the book is more likely to be handled than the end of the book, the difference in usage may account for the difference in condition of the endleaf. It may also indicate that the endleaves had been pasted down and the opening of the board may have exerted a strain on the sewing thread which then tore through the parchment. This, again, is more likely to happen on the opening-side of the book – however there is no way of knowing whether the source binding opened to the left or to the right. Damaged sewing holes are frequently found on these fragments but as the degree to which they may be damaged will depend on the thickness of the parchment, this would not always be a reliable method for identifying the left endleaf from the right. However, along with other evidence such as the vertical spacing of the bands on the spine, it should be noted.

> **When it is not possible to identify whether a fragment was the right endleaf or the left endleaf, the process of identifying candidate matches is more involved as it involves checking the spines on the shelves twice - once with the fragment as the left fragment, and once with the fragment as the right fragment.**

### 5.8.2. Comparing the sewing evidence to the band distribution

Having identified

i. the fragment as an element of a binding,
ii. whether there is an associated fragment to make a pair (4.3.3.),
iii. the features of the spine that are visible on the fragment (5.4 – 5.6),
iv. whether the fragment faced the board or the textblock (based on the turn-in stain or impression, 5.4.1.),
v. whether it was positioned next to the right, left or potentially either board (5.8.1),

the next stage is to find a match for all the spine features from amongst the books on the shelves. The drawing of the fragment is necessary here. Having a drawing reduces the handling of the fragment and is essential when the fragment has been housed in a guardbook or fascicule and cannot be brought to the shelves. The height and the position of the sewing supports is the key information for this stage of the work (5.2).

To assess the bindings as candidate matches, they are compared one by one along the shelf against the drawing. The drawing, on which the distribution of the sewing supports is marked, is aligned against the sewing supports visible on the spines of the books. It is necessary to be at eye-level with the shelves when doing this as looking upwards at the spines distorts the image due to the angle of viewing. (This can cause some difficulty in libraries due to access issues for the higher up shelves.) If a fragment has been identified as the left endleaf, then the drawing of that fragment with be compared with the right side of the spine as it is seen on the shelf (Fig. 122-124).

Whole shelves can be excluded if they are not in the correct height range. It should also be remembered that books which have been boxed are likely to be situated on shelves with books that align with the height of the box rather than the height of the book within. Therefore, boxed books must be identified from shelves with taller bindings than the one being sought. Books which are wrapped in tissue, as for example with the St. Canice's collection, as the raised bands were evident through the tissue, could be examined in the normal way.

It might also seem sensible to discount shelves that do not have volumes with the correct cover material, for example in the case where the source binding is thought to be covered in tanned skin, parchment-covered books might be discounted. However, a textblock might have been rebound in a different material to the one with which it was originally covered and so covering material should not immediately be used to discount possible matches (5.10.1.2; 9.3.1.1).

**Fig. 122. Merton D.3.5 (33). Left board of the source binding, spine and left endleaf.** The outer face of the left endleaf aligns with the right side of spine when the binding is standing on the shelf**.**

**Fig. 123. Merton D.3.5 (32) Right board of the source binding, spine and right endleaf.** The outer face of the right endleaf aligns with left side of spine when the binding is standing on the shelf.

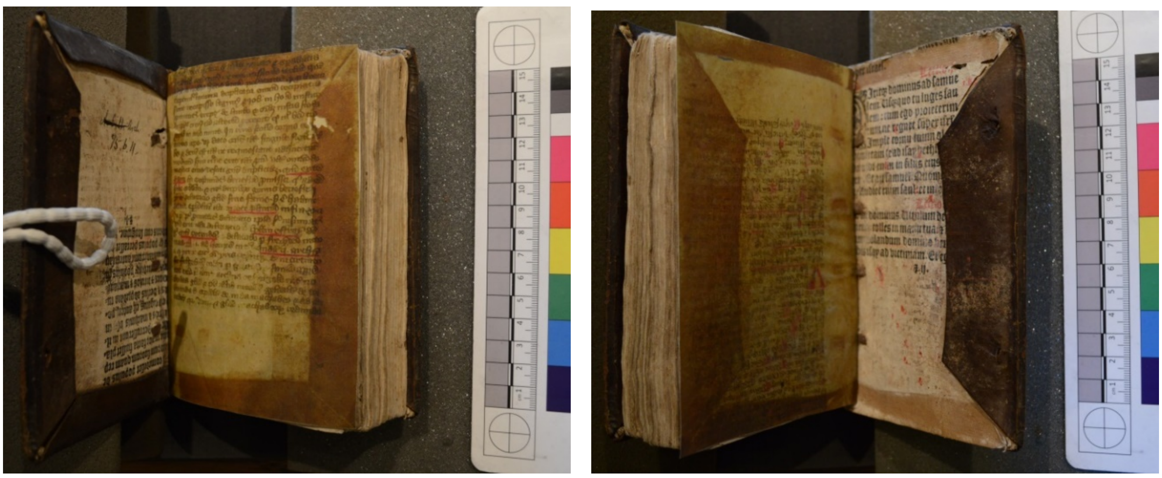


**Fig. 124. Merton D.3.5 (32), (33) and source binding 75.b.11 (Lyon, 1548).**
Left endleaf faces left board.
Right endleaf faces right board. (This is a to-size printing of the fragments.)

When trying to match the band distribution on the drawing with the spines on the shelves, the drawing is not placed level *on* the shelf as this would not take into consideration the difference in height between the fragment and the textblock and the cover. The starting point, rather, is the support closest to the tail.

The mark on the drawing indicating the position of the first support is placed next to the sewing support closest to the tail. (If a kettle band is present, this can be checked against the evidence for the sewing hole for the kettle which may be visible on the fragment. Kettle bands, however, are often false.[316]) With the fragment aligned with the binding at the tail support, it is then possible to see whether the other supports are in line with the position of the supports on the drawing (Fig. 125). It may be the case that

i. the position of the supports tally between the binding and the drawing but the binding is shorter than the fragment (Fig. 125).
ii. the support-distribution matches but the space at head and tail is not equal (Fig. 126).
iii. the support-distribution matches but the board is the same size as the fragment and so the fragment would be too large for the textblock (Fig. 127).

> **A match between the fragment and a binding would be a correct alignment of all the sewing supports visible on the fragment with all the supports visible on the spine and with a similar space between the tail edge of fragment and the tail of the spine and the head edge of the fragment and the head of the spine (Fig. 128).**

In the case studies examined, false bands (5.3.3) were only present on new covers. In other collections it may be necessary to consider that some of the bindings may have more bands on the spine than there are sewing holes in the fragment. In this case the sewing holes will match to the sewing supports visible on the spine but there may be additional bands which do not coincide with the sewing holes.

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[316] Pickwoad, personal communication, 23/5/17.

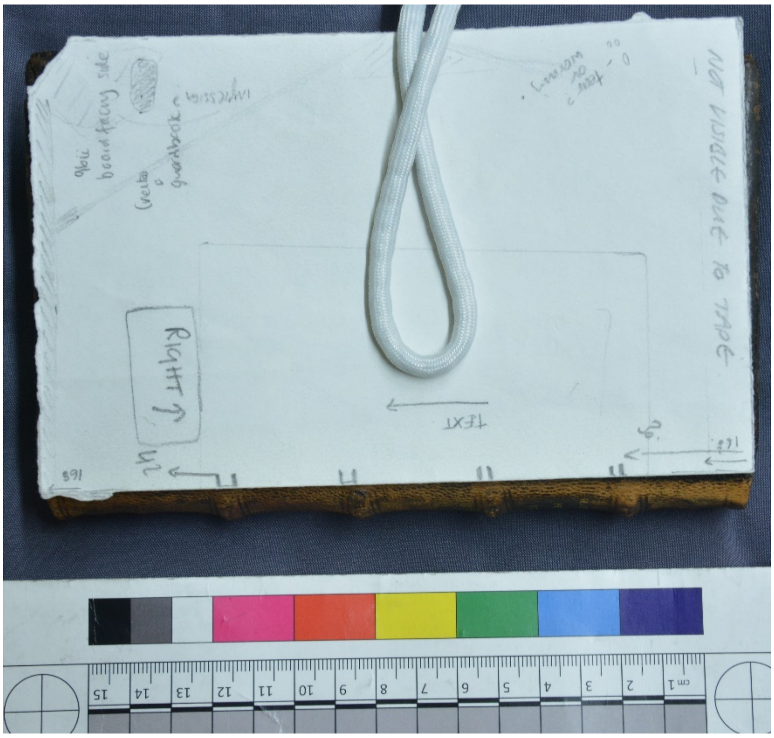


**Fig. 125. The sewing distribution matches but the binding is too short.**
Lanhydrock D.8.36 (Basel, 1571) and Lanhydrock 96ii. While the support distribution matches, the fragment extends beyond the height of the boards. The binding is too short for the fragment.

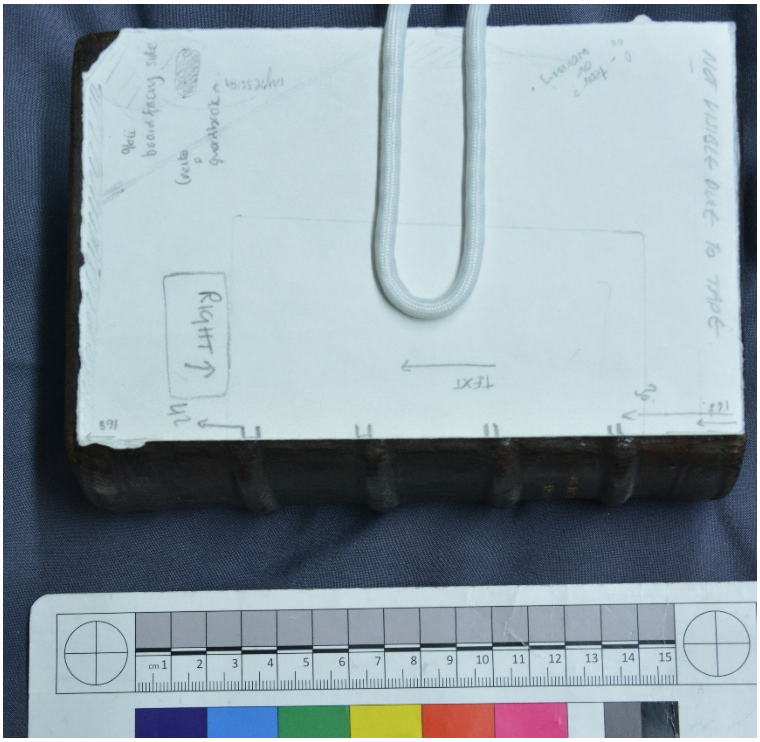


**Fig. 126. The sewing distribution almost matches and the binding is the same size.**
Lanhydrock F.9.21 (Lyon, 1602) and Lanhydrock 96ii. The sewing distribution is not an exact match and the fragment is the same size as the boards. The textblock will be too short for the fragment.

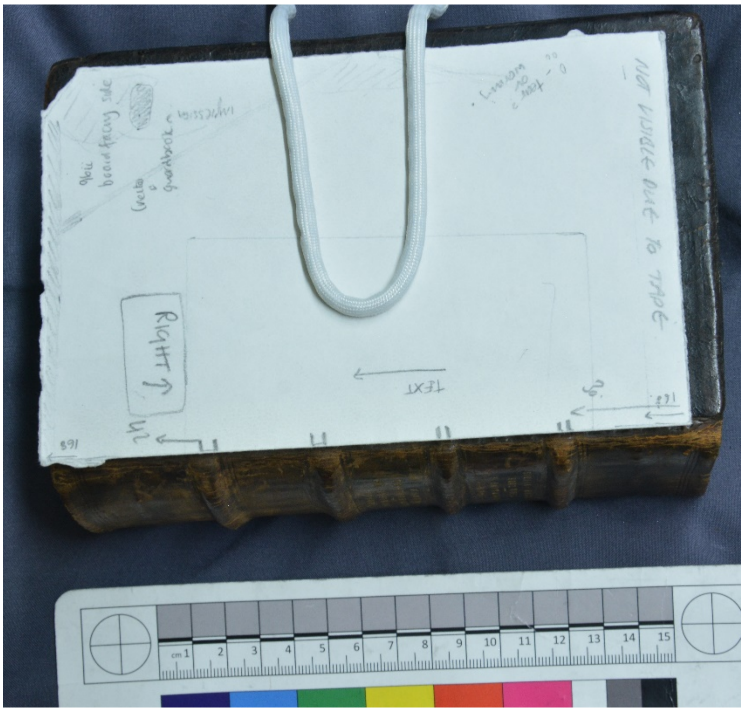


**Fig. 127. The sewing distribution matches but the space at head and tail is not equal.**
Lanhydrock C.2.4 (Geneva, 1574) with Lanhydrock 96ii. The drawing is placed against the tail support. The distribution of the supports is similar but not exact and the space at head and tail from where the fragment to the edge of the board is not equidistant.

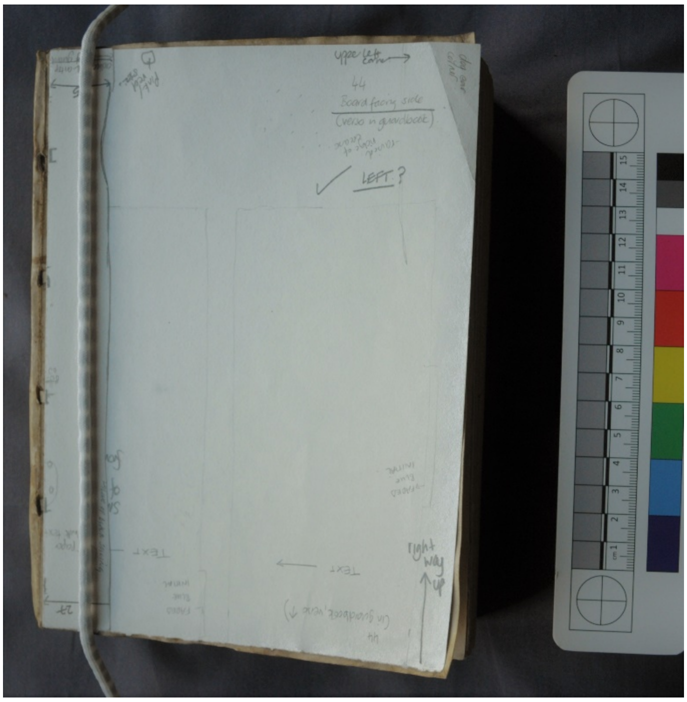


**Fig. 128. Matching the sewing distribution on a parchment-covered laced-case binding.**
The alignment is slightly off at the head support but aligned with the others.
Lanhydrock A.22.2 (Oxford, 1585) and Lanhydrock 44.
This binding had also been repaired.

The same method is employed when working with a parchment-covered laced-case binding. However, in these cases, the sewing supports are not visible on the spine in the form of raised bands but they can be visible under the parchment or at the joint of the spine as lacing-in holes (5.3.3).[317] This was the case with the candidate source bindings identified for the quarto-sized guards Lanhydrock 134ii and 139ii (Fig. 84, 85). When aligning the sewing holes on a fragment against the lacing-in holes on the cover, though, it should be remembered that the cover, as it is parchment, may also have altered or the lacing-in holes may have been damaged and the alignment may not be as exact as with the sewing supports on the spine (Fig. 128) – this, however, was not the case with the source binding for Lanhydrock 134ii and 139ii. In some laced-case bindings only the slips from the endbands and not the supports are laced in at the joints. In these cases, the visibility of the sewing supports under the parchment would have to be relied on – but as can be seen in the image below, this is possible (Fig. 129).

The library at Lanhydrock did not have many parchment cover books over octavo-size so candidate matches were easily spotted on the shelves by examining the height and covering material combined with the identification of the sewing support spacing pattern.


**Fig. 129. A parchment-covered laced-case binding in which only the endband slips are laced in.**
The four sewing supports are visible) and the right board where the lacing-in slips from the endbands can be seen at the head and tail.
Lanhydrock A.5.27 (London, 1598).

[317] http://w3id.org/lob/concept/1415

**5.8.3. The height of the spine and the distribution of supports**

The key to the method being presented here is thought to be the potential for variation in the spacing of sewing supports and how this could be used to differentiate between bindings (5.3.3., 5.3.5). Merton 46.c.2 (Paris, 1554) and Merton 46.c.10 (Basel, 1533), for example, have the same height (300mm), covering material and number of sewing supports but those supports have a different distribution pattern (Fig. 130). Therefore, while three features match, it is the distribution of the sewing supports that differentiates one binding from another.

The degree of variety that could be possible in the spacing of the sewing supports, however, will be dependent on the correlation between the available space on the spine, that is, its height, and the number of sewing supports. For example, in the case of a book sewn on four supports, there is a greater number of possible positions on the spine where those supports could be placed if that volume is 300mm in height as opposed to 200mm where there is simply less space on the spine. The taller the book and the smaller the number of sewing supports, then, the greater the possibility of variety in the way those supports are distributed along the spine.

In a book measuring under 200mm in height which was sewn on four supports there is a limit to how much variety there can be in the spacing of those supports. There is simply less potential on a shorter spine for a wide variety of distribution patterns of the sewing supports - and any variety on a shorter spine is likely to be less noticeable because of its height (Fig. 131). However, there can still be some variety. Lanhydrock 19, 20, and Lanhydrock 96i, ii, for example, were two pairs of endleaf fragments both measuring 166mm in height and with evidence of four sewing supports. The sewing distribution pattern of both fragments, though, differed. However, in both cases nine candidate matches were identified on the basis of the spine features - the largest number found for any fragment in that library. In contrast, Lanhydrock 56, 109, on the other hand, which measured 237mm in height and was sewn on four supports had only two candidate matches. This might suggest that the additional space on the spine allowed for greater variety in the spacing of the same number of sewing supports resulting in fewer candidate matches for that distribution. However, when it came to identifying the source bindings, shorter fragments were not found to have a lower success rate than taller fragments (see Chapter 9).


**Fig. 130. The variation in the position of the bands on the spine.**
Both of these books measure 300mm in height and both are sewn on four supports. The supports are distributed from the tail upwards to the head as:
Merton 46.c.10 (Basel, 1533) -the upper volume with ‘8’ on the spine): 52mm: 117: 183: 252.
Merton 46.c.2 (Paris, 1554) - the lower volume with ’27’ on the spine): 63mm: 125: 188: 250.


**Fig. 131. The variation in the position of the bands on the spine.**
Both volumes measure 155mm in height and are sewn on four supports. The supports are distributed from the tail upwards to the head as:
Merton 75.c.19 (Lyon, 1553) - the upper volume: 45mm: 78: 113: 145.
Merton 75.d.10 (Paris, 1542) - the lower volume: 45mm: 78: 111: 146.

The correlation between the height of the book and the number of supports is also worth noting. In Lanhydrock most bindings around 200mm in height were sewn on four supports so a binding of this height which had less than four supports would be unusual in this library, making them easier to identify. Clare 2ai, ii which measured 157mm in height and had evidence of five sewing supports matched only two volumes. Lanhydrock 32i, ii (195mm) and Lanhydrock 47, 49 (200mm), which were both sewn on three supports, had only one candidate match from the 3258 volumes in the library while Lanhydrock 116i and ii (197mm and also sewn on three supports) had two candidate matches. Fewer sewing supports can also be indicative of an earlier book or its origin – Italian binders had a preference for sewing on three supports – or its cost (cheaper). [318]

## 5.9. Identifying the 'key selection feature'

Initially, the key selection feature was thought to be a combination of the covering material and the distribution (p.160). Therefore, in cases where the turn-in stain showed that the covering material was tanned skin, only volumes bound in tanned skin were examined for the distribution pattern and this was largely successful. However, in one known case this proved to be a faulty method.

Merton D.3.1 (1) was an endleaf fragment, showing evidence of being from a volume which had been covered in tanned skin and sewn on five supports (Fig. 132). The library was examined for bindings that matched this evidence and the source binding was not identified. However, there was a barely legible shelfmark on the fragment[319] and by searching for variations on this shelfmark in the Merton catalogue a possible match was identified as C.7.11 (Art). This was an old shelfmark for 95.jj.8 vol. II (Basel, 1571).[320] This volume was examined and the evidence matched that on the fragment with the exception of the covering material. Instead of tanned skin this volume had parchment over the spine and exposed wooden boards. These were the original boards but the parchment spine was a new addition. In this case, in terms of the spine features, the height and the distribution of the supports was a match but not the covering material, which was a new repair (Fig. 133).

318 Pickwoad, personal communication, 23/5/17.

319 The Merton catalogue lists this as 'C.?9.11 Art': Thomson, 2009, p.251.

320 Merton 95.jj.8. *Theatri vitae humane*. vol. II. Basel, 1571.

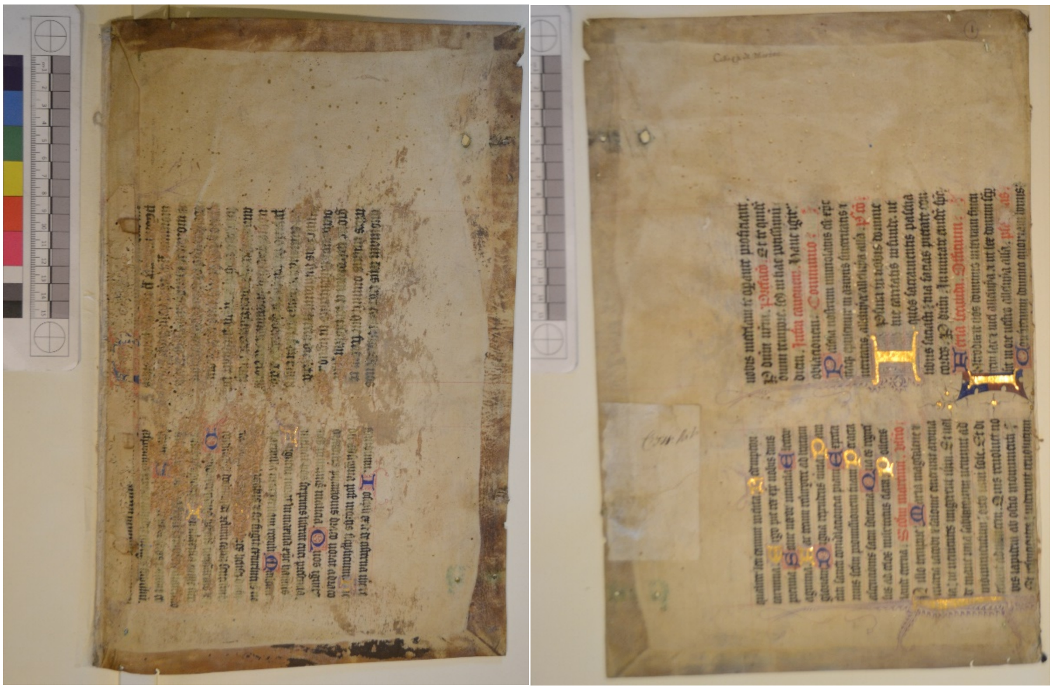

**Fig. 132. Fragments with evidence of a tanned skin cover.**
Merton D.3.1 (1). Left endleaf with partial shelfmark on a paper label.

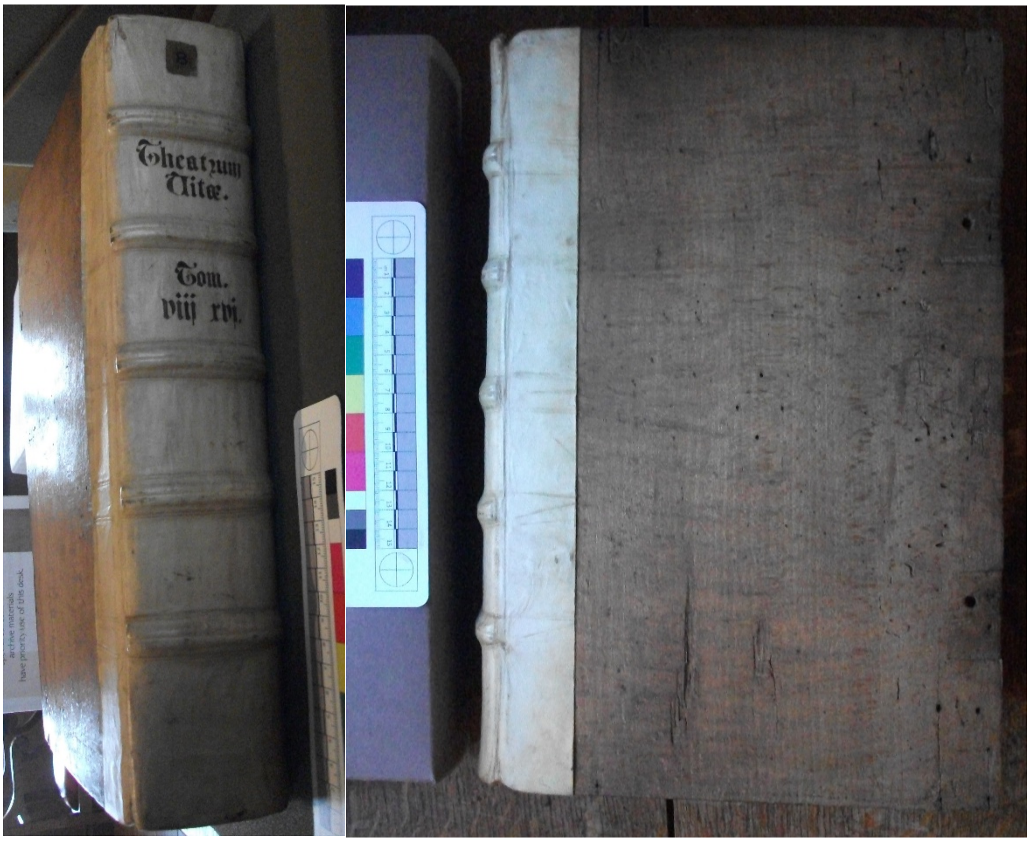


**Fig. 133. Change in cover material.**
Merton 95.jj.8 vol. II (Basel, 1571), the source binding for Merton D.3.1 (1) with a parchment spine over the wooden boards.

In light of this find, the source binding for another pair of endleaf fragments in the same library D.3.7 (2, 3), which it had not been possible to find, was looked for again and on this occasion evidence on the fragment for the covering material (also tanned skin) was ignored. The source binding[321] was identified on the basis of the distribution of the sewing support and it, like the previous example, was also a new parchment spine over original wooden boards.

This type of repair was not found in the other case libraries but it does emphasise the point that

> **the distribution of the sewing supports is the most relevant spine feature for the identification of the source binding for removed manuscript-waste fragments.**

However, it is possible that some source bindings were originally sewn to have smooth spines.[322] Books sewn on recessed supports, as they were from the mid-sixteenth to the mid seventeenth centuries, that is, towards the end of the period in question, will have smooth spines – as would unsupported structures (those without sewing supports, 5.3.3, p. 119). As stage one of this process is based on selecting candidate matches based on the spine features, the question is whether is still possible to use this method when supports are not visible on the spine. There are difficulties working with a smooth spine as, in effect, the only two spine features which can be matched are the height and the cover material and, as discussed earlier (5.3.1, 5.3.2), neither of these is likely to reduce the number of candidate matches in the way that the spacing of the sewing supports will. It may, however, be possible to see the abrasion of the covering material over the slips at the joints and on the boards which indicate where the sewing supports are. In the absence of this evidence, though, the process is more complicated and less effective. In the case of the single guard Lanhydrock 51, for example, there were five candidate matches with raised bands but none of them, after proceeding through Stage Two and Three of the process (to be described in Chapters 6 and 7), were an actual match. Looking, then, at books of the relevant height with the relevant covering material, and with a smooth spine, the number of candidate matches identified increased to thirty-three, one of which (C.1.18, Paris 1512) was the source binding. This volume had a smooth spine as a result of the repair of the binding.

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321 Merton 78.i.29 (Ausburg, 1537).

322 http://w3id.org/lob/concept/1610

## 5.10. Changes to the record through repair or conservation

As discussed earlier (2.4.1), fragments may have been removed from bindings as they were being repaired and even those bindings whose manuscript waste was removed by librarians (and so pulled or cut out of the bindings) may have been repaired or conserved at a later stage. Therefore, even when looking for the source binding of an endleaf fragment with thread intact, such as Merton E.3.9 16, 17, which could reasonably be deduced to have been cut out of a binding, the search should not exclude bindings that have been repaired.

Therefore, as many of the bindings are likely to have been repaired at some stage, and as stage one of the process being described here is concerned with the spine features, it is important to be aware of how a repair, whether that is a reback, rebind or re-cover (1.2), will affect what is seen on the spine. It has been noted previously that when a binding had been rebacked, if the old spine is laid down onto the new leather, the fact that the binding has been repaired may not be immediately obvious (2.4.1).

### 5.10.1. Altering the features on the spine

#### 5.10.1.1. Height

In cases where the source binding has retained its original boards, it is unlikely that the textblock would have been trimmed and so the height of the binding should not be less than expected from the evidence on the fragment. If the source binding has new boards or covers, the textblock

i. may have been trimmed and the height of the new binding may be less than expected from the evidence on the fragment, which will now be taller than then newly-trimmed textlbock.
ii. may not have been trimmed but if the new boards have significantly larger squares, then the height may be greater than expected. This is the case with Clare A.2.2, Index volume, (Basel, 1529) the source binding for 2di, ii (Fig. 81). The squares on the boards add 20mm to the height of the textblock.

In all cases, if the sewing has not been replaced, then the sewing distribution pattern on the spine will be the same as on the manuscript-waste fragment which was removed from that binding.

#### 5.10.1.2. Covering material

It is reasonable to expect that when the original covering material is replaced, like will be used to replace like and so a modern tanned skin will be used where an old tanned skin was used. The colour of the new material, though, may have changed significantly from when it was first adhered (p.29). This could be due to light damage or the poor colour fastness of the dye used. The turn-in evidence on the fragment might suggest that the source binding was a dark leather, and new replacement material might have matched this originally but may have faded since then. The quality of the new material may also be inferior to the point that the repair may have failed and the book may have had to be repaired a second time. This was the case in Clare A.2.3 (Basel, 1552), the source binding for 4di, ii. This volume had been re-covered but then had to be rebacked. The failing of the first repair was most likely due to the board's very large squares which left a thick textblock unsupported on the shelves.

In cases where manuscript-waste fragments have evidence of being from a parchment-covered binding, it should be remembered that the parchment cover itself may also have been a manuscript fragment and may also have been removed. If this is the case, then the associated textblock may have been rebound with a new modern cover.

**5.10.1.3. Distribution of the sewing supports**

The distribution of the sewing supports is the key element in identifying candidate matches for removed manuscript fragments. For a repair to have changed the position of the bands on the spine it would have to have changed the position of sewing supports. This, however, was not always necessary (Fig. 134).

Rebacking was used as a method of re-attaching bookblocks to boards when the lacing in slips which had previously attached the bookblocks to the boards had broken (p.9). The board attachment could be repaired using spine linings with extensions that were adhered to the board, new endleaves and new covering material on the spine. The sewing supports would be retained but they no longer formed part of the board attachment. Alternatively, the sewing supports could be elongated by attaching new material to the original to provide new lacing in slips which could then be used to attach the bookblock to the boards or new cords were sewn over the old ones.[323] In another method, the sewing supports could be cut out from under the sewing thread that had wound around them and new supports threaded through which were then laced in to the boards. In all the above, the original position of the sewing supports is not altered. A re-covered book (p.9), with or without new boards, may also have retained the original sewing supports.

Prior to either rebacking or recovering, the volume could also be resewn onto new sewing supports placed in the same positions as the old. This method re-uses the old sewing holes and avoids creating new ones. Evidence for re-sewing can be seen on the edges of a book. The edges will have been cut to a smooth edge when it had been sewn the first time and when it is sewn for a second time, this smooth

[323] Middleton, 2004, 4th ed., p.90-92.

edge will be impossible to retain. Uneven edges (either from re-sewing or the adhesive on the spine breaking down and the spine no longer being a solid block) is particularly pronounced when the title or shelfmark was written on the fore-edge (6.3.5). The fact that many of the rebacked or re-covered books have smooth fore-edges and undisturbed early endbands, the latter being a sign of original sewing, will indicate that they were not resewn. The position of the sewing support also remains unchanged.

However, in some cases the position of the sewing support was altered. A style of repair carried out at Lambeth Palace Library after the Second World War, but not seen as part of this research, is a case in point. This repair involved changing the method of board attachment to the bookblock from lacing in through to the boards to a purely adhesive structure where the bookblock is sewn by overcast sewing to a lining which is then glued to the inner surface of the board. In this method, the lacing in of the supports is unnecessary. It was observed on the Lambeth Palace Library collection that in some instances of repairs of this kind the earlier sewing supports had been removed and false bands had been added to substitute for them but they were not necessarily adhered to the same place on the spine. This type of repair may be associated with larger binderies where binders were required to work at great speed. In a case such as this, the spine profile will have been altered. No example of this kind of repair was found in the case studies examined, though cases may not have been identified as they would not have been selected as candidate matches in the first place.

**Fig. 134. The source binding re-covered with new boards but with undisturbed sewing supports.**
Clare A.2.2. vol. II (Basel, 1528) and its manuscript waste fragment endleaf, Clare 2ei.


**Fig. 135. Rebacked with a smooth spine.**
Lanhydrock A.19.11 match to endleaves Lanhydrock 96i and ii.

#### 5.10.1.3.1. Rebacked with a smooth spine

In Lanhydrock several of the smaller volumes had been resewn on cord which, being of a thinner material, resulted in a less pronounced 'band' on the spine giving the spine a smooth appearance, that is, without raised bands. The source binding for Lanhydrock fragments 96i and ii, A.19.11 (Paris, 1559), for example, was resewn on cord and rebacked with a smooth spine (Fig. 135). In this case it was possible to see on the outer joint the position of three sewing supports. These were, however, new supports. The associated fragments Lanhydrock 96i, ii had been sewn on four supports (Fig. 135). Sometimes these smooth spines have fillets impressed horizontally in bands across the spine, which may mark where the supports are but may also be purely decorative and so cannot be relied on as evidence for the supports. In Lanhydrock, this style of repair where the book was rebacked with a smooth spine was found to be particularly associated with smaller format books. While it is certainly more challenging to apply this method to books with a smooth spine, whether it is the original or a repair, it is not impossible (5.9).

Repair practices will vary greatly between libraries – rebacking to a smooth spine was not a feature of repair work encountered in Merton College Library or The Fellows' Library in Clare College.

#### 5.10.1.4. Spine width

In terms of the width of the spine, which is of relevance to comb spine linings and covers, this may have changed significantly with repair. The addition of new sewing thread and new spine linings may have increased its width while, in the case of a sammelband, the removal of a text may have decreased its width (5.6).

### 5.11. End of Stage One

> **Having compared the spine features on the fragment with those on volumes in the library and identified a volume that matches the spine distribution and the height – and possibly the cover material, and width – the work then progresses to Stage Two of the process.**

# Chapter 6
## Stage Two. The Sides

## 6.1. Overview

A candidate source binding identified by Stage One now passes to Stage Two. The purpose of this stage is to examine what is visible on the sides (that is the part of the cover on either side of the spine[324]) and compare this with the evidence visible on the fragment. The book does not have to be opened at this stage. Stage Two is described in this chapter in the following sections:

i. a list of the features visible on the sides of the binding (6.2).
ii. a description of these features and a discussion on how these features can be identified from evidence on the fragment (6.3).
iii. a description of the process of eliminating candidate matches selected by Stage One (6.4).
iv. changes to the record when bindings have been repaired (6.5).
v. fragments which were used as covers (6.6).

## 6.2. The features on the sides of the binding

The binding features considered here are

i. covering material (6.3.1).
ii. height of the sides (6.3.2).
iii. fastenings (6.3.3).
iv. furniture (6.3.4).
v. edge colour (6.3.5).
vi. width of the sides (6.3.6).
vii. board material (6.3.7).

In order for these features to be used to eliminate candidate matches identified by Stage One which are not true matches and identify those candidate matches which can progress to Stage Three, there must be evidence for them on the manuscript-waste fragments. This means that the features must be present on the inner surface of the cover, either by penetrating through or overlapping the sides, as only in this way could they have been in contact with the fragment.

In this chapter each feature will be discussed and the evidence for them which can be seen on manuscript-waste fragments will be described. As comb spine-linings and guards only extend onto a small area of the width of the sides, these fragments will have less evidence of the side features than an endleaf and so will be discussed after the discussion on endleaves. Manuscript-waste fragments that had been used as covers are considered at the end of the chapter.

[324] http://w3id.org/lob/concept/1596

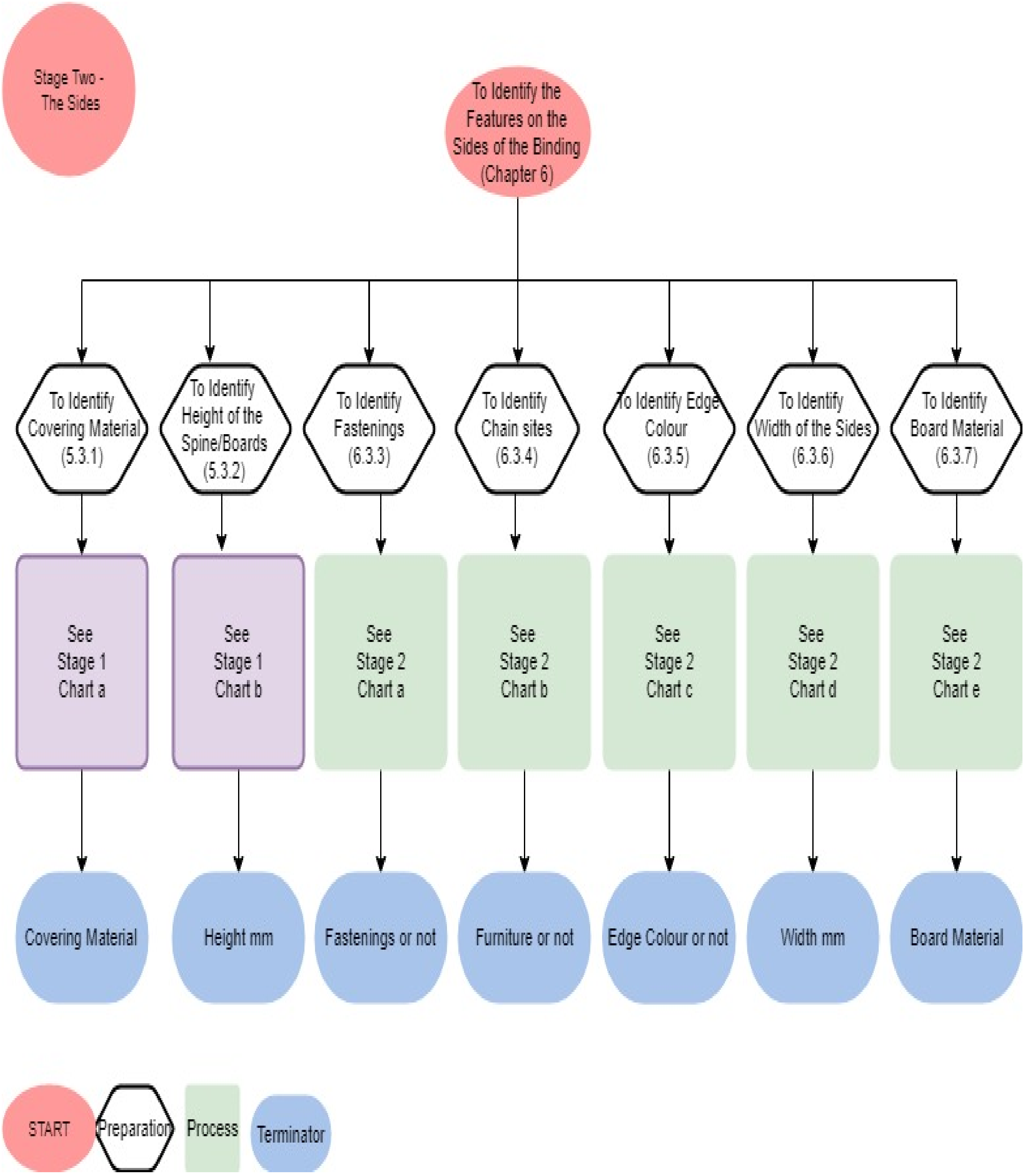



**Chart 2. To identify the features on the sides of the source binding from the evidence on the fragments.**

## 6.3. Identifying features on the sides of the source binding from evidence on the fragments

The first two features, the covering material and the height of the cover, have already been assessed in Stage One and are verified here in Stage Two. The other features, listed in 6.2., are examined here for the first time.

### 6.3.1. Covering material

The covering material was discussed in Stage One (5.4.1). There it was noted that the colour of the covering material on the spine, may have altered due to light damage and, in the case of tanned skin, may appear to be a lighter tone than the turn-in staining on the fragment (Fig. 136). This is true both of bindings that have been repaired and those that have not (In the case of the former, there is no reason to think that the colour difference on the spine was deliberate on the part of the binder, as a means of identifying this as a repair, but rather that the dye used for the leather has faded.) The turn-in stain on the fragment will usually be a more accurate match for the colour of the material on the sides of the binding than on the spine (Fig. 137) - while bearing in mind that the turn-in stain was transferred to the fragment when the material was wet and therefore darker.

### 6.3.2. Height of the Sides

The height of the spine, as determined in Stage One (5.4.2), is the height of the fragment plus the height of the squares at head and tail.

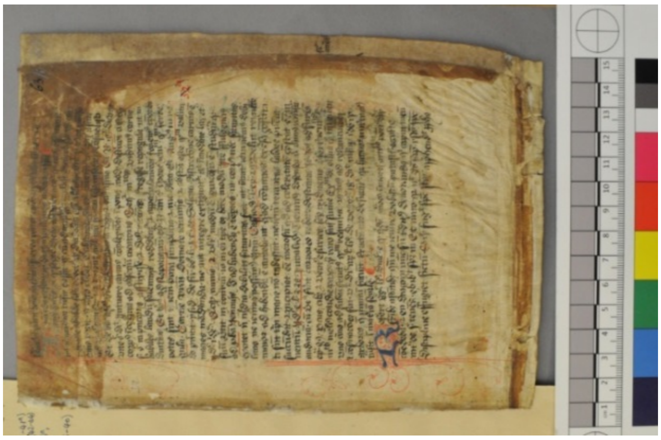



**Fig. 136. The colour difference between the spine and the boards.**
The new leather on the rebacked spine has faded.
Lanhydrock D.11.11 (Paris, 1515).

**Fig. 137. The colour difference between the covering material and turn-in stain on the endleaf.**
Lanhydrock 64 is the right endleaf from D.11.11. This image shows one half of this endleaf. The stub is to the right.

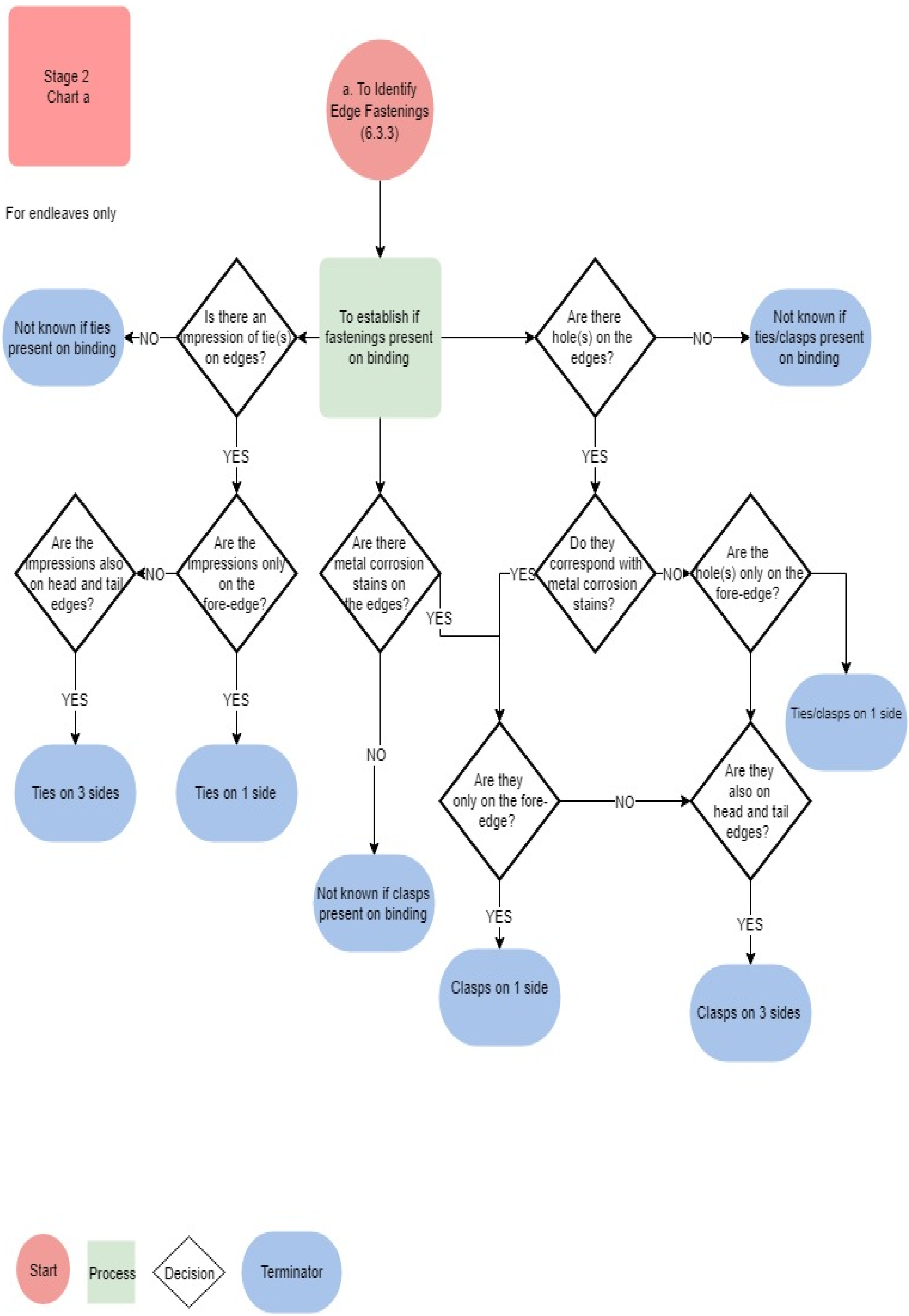



**Chart 2a. To identify edge fastenings**

### 6.3.3. Fastenings

Fastenings are found on the sides of the book and take two forms:

i. ties
ii. clasp fastenings

#### 6.3.3.1. Ties – fore-edge, head and tail

Ties are

> 'fastenings on the edges of books usually formed by pairs of flexible lengths of skin or ribbon which can be tied in a knot or bow across the edge of a closed book.'[325]

They can be either

i. a wrap-around tie. These are tied to the cover in one place, usually a fore-edge envelope flap, and then wrapped around the book and tied to itself[326] (no example of this was found in the case studies) or,
ii. paired ties. These are two 'single ties attached opposite each other to both sides of a cover and which are therefore tied together in pairs across the edges of the bookblock'[327]

Ties are positioned usually at the fore-edges but can also be found at the head and tail edges. When along the fore-edge, there are usually two pairs, one close to the head; the other close to the tail. When at the head and tail edges, one pair is positioned in the centre of each edge. Pairs of ties on all three sides are indicative of a continental origin (Italy – including Lyon – and Germany) but they are also found on English bindings.[328]

Ties are found on bindings both with and without boards. In this research study, ties were more usually used with paper than wooden boards. (They found only found on one binding with wooden boards and the ties in this case were a repair.[329]) The ends of the ties could be pasted down to the inside of the board under the turn-in or remain on top of the turn in (Fig. 139). (Another technique for adhering ties, which was used with parchment-covered laced-case bindings where there is access under the turn-in, involves the tie being taken around the edge of the turn in.[330] No example of this method was found in this study.)

325 http://w3id.org/lob/concept/1669
326 http://w3id.org/lob/concept/3096
327 http://w3id.org/lob/concept/3029
328 Pickwoad, personal communication, 31/10/18.
329 Merton 95.jj.8 vol. II (Basel, 1571).
330 Pickwoad, personal communication, 31/10/18. This is a technique commonly used, but not unique to, France. http://w3id.org/lob/concept/2978.

The holes in the board through which the ties were laced can be circular or rectangular slits (Fig. 138). They will be in a recognisable position close to the edge which allows them to be distinguished from wormholes and in contrast to wormholes their edges will appear pulled as a result of the ties being laced through them. [331] The covering material, if it has contracted, may not now be positioned exactly over the holes in the boards. Where the boards have been replaced but the cover retained, tie-holes will be visible in the cover material and but not in the new board underneath (6.3.7.2). The lengths of the ties may not survive but the stub of the tie may still be present in the lacing-in hole. Only the remnants of textile ties were found in the course of this research.

**6.3.1.1. Evidence of ties on manuscript-waste fragments**

Evidence for ties on manuscript-waste fragment which were used as endleaves (and not guards or comb spine linings on account of their width) are found in two forms

i. an impression of the shape of the tie as it appears on the inner surface of the board.
ii. a hole in the fragment where the tie was laced through the endleaf

**6.3.3.1.1.1. Impression of tie stub on the endleaf**

The shape of the impression of the tie can vary. They are found fanned out in a bell-shape (Fig. 139) but can also be quite straight and narrow (Fig. 140). The depth of the impression may depend on whether the fragment had been pasted down on top of the tie or not. Evidence may not be found on both fragments (in the case of a pair of endleaves from the same source binding) or from both ties on one fragment.

**6.3.3.1.1.2. Ties lacing-in hole in the endleaf**

When the endleaf had been pasted down to the inner surface of the cover prior to the addition of the ties, the ties would be laced through the boards and the endleaf. This is usually a replacement tie. The evidence in the fragment, then, will be the holes in the fragment (Fig. 141).

[331] Pickwoad, personal communication, 31/10/18.

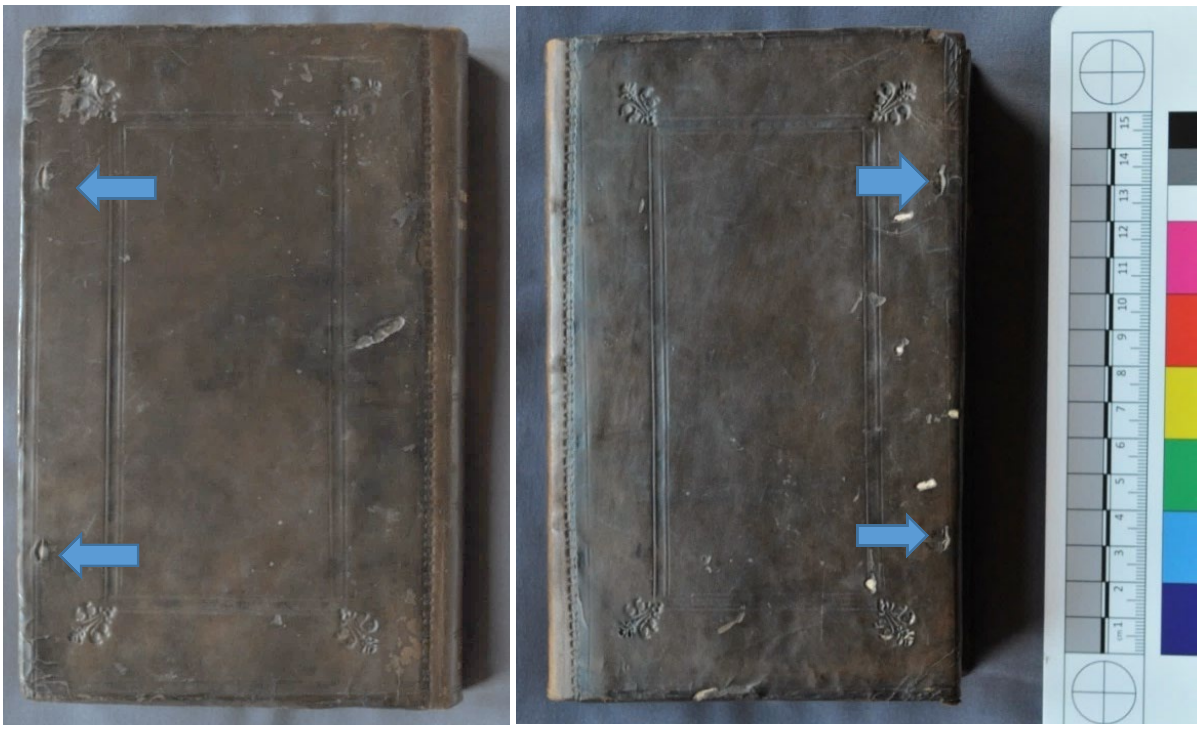


**Fig. 138. Slits on the fore-edge.**
Right: right board.
Left: left board.
The material of the new replacement boards is visible as white paper under the slits for the ties and the wormholes.
Lanhydrock A.19.11 (Paris, 1559), source binding for endleaves 96i and ii.

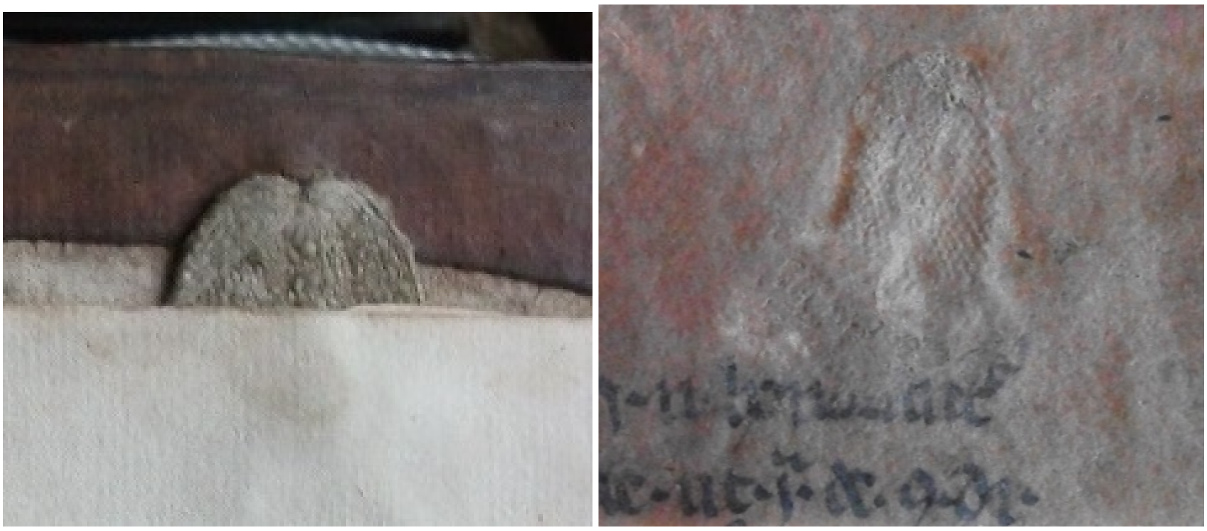


**Fig. 139. Textile fore-edge ties. In situ and the impression of a similar shaped tie on an endleaf fragment.**
Left: Lanhydrock C.2.24 (Lyon, 1609) identified as candidate match for the endleaves Lanhydrock 19, 20 but then discounted.
Right: Lanhydrock 49, source binding not in library (9.3.1.3).

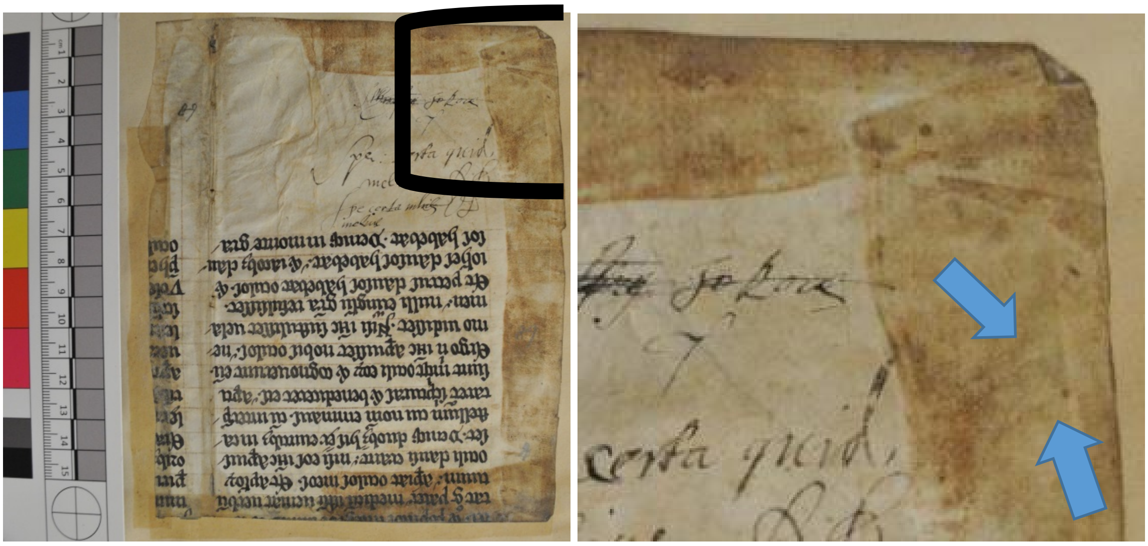


**Fig. 140. The impression of a narrow tie.**
Lanhydrock 20, right endleaf from D.8.33 (Antwerp, 1566).

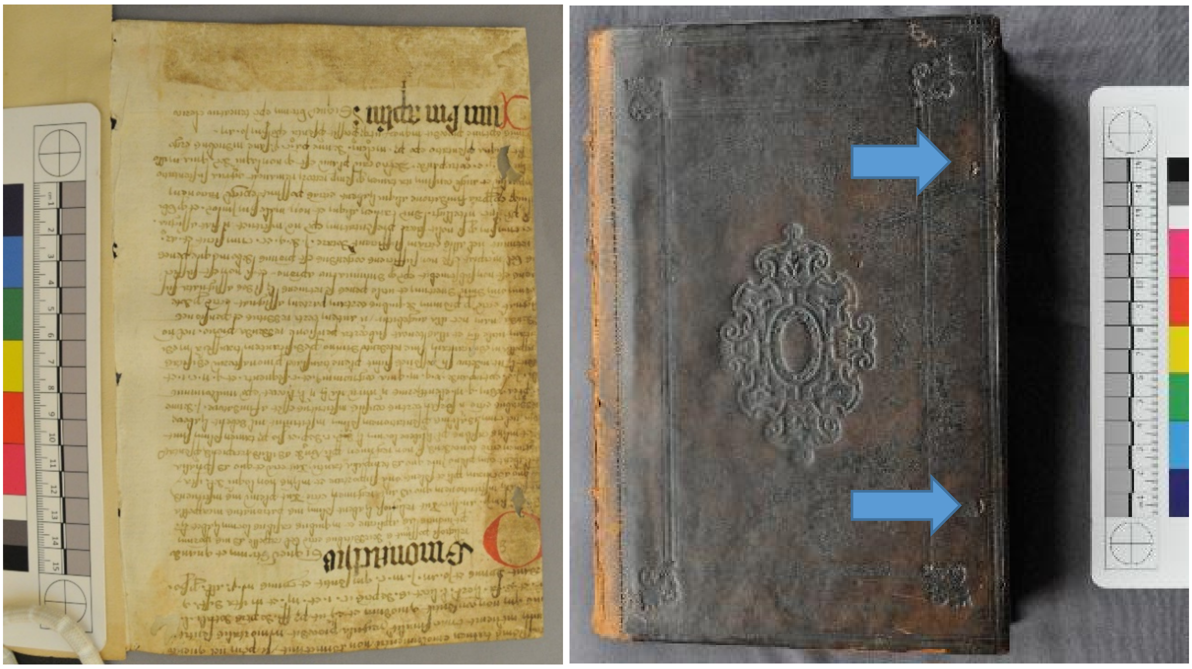


**Fig. 141.  Ties laced through the paper endleaves.**
Lanhydrock 124, left endleaf from F.5.10 (Antwerp, 1582).

#### 6.3.3.1.1.3. Ties as a distinctive feature in the matching process

Many bindings in the libraries examined have fore-edge ties but what was more unusual was a binding with ties also on the head and tail edges. Lanhydrock 47 and 49 was the one example found. These two fragments could be identified as a pair, though they were not positioned sequentially in the guardbook, on the basis of there being evidence for ties on three sides. Stage One produced only two candidate matches for this pair and one of these was discounted as it had clasp fastenings rather than ties. The remaining binding, A.21.5 (Paris, 1518), was the source binding (Fig. 142). This was also the source binding for Lanhydrock 126i, ii – paper layers from a laminated board which had been selected to serve a contrast to endleaf fragments - which also had corresponding tie holes (Fig. 61, 4.3.14).

#### 6.3.3.1.1.4. Discounting on the basis of absence of ties on the source binding

Knowing, based on the evidence on a fragment, that the source binding has ties allows for candidate matches selected in Stage One that do not have ties to be discounted in Stage Two. In the case of Lanhydrock 19,20, nine candidate matches for these fragments were identified during Stage One. Of these nine, five could be discounted on the basis that they did not have fore-edge ties – they were also too narrow. It is, then, a useful diagnostic feature.

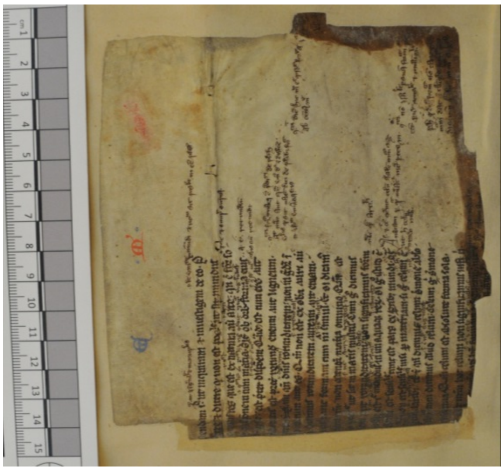
#### 6.3.3.1.1.5. When there is no evidence on the fragment

The fact that there is no evidence for ties on a fragment should not be taken to mean that the source binding did not have ties. There would be no impression of a tie if the fragment had not been wide enough to come in to contact with the tie and even if the fragment was sufficiently wide, there may still be no impression from the tie if the fragment had not been pasted to it or pressed on to it. This was the case with the pair Lanhydrock 34, 35, neither of which have evidence for ties (Fig. 143). Their source binding (A.2.39, Cologne, 1540) however, has clear evidence for the fore-edge tie on the inner surface of the board (Fig. 144) and in the holes on the board.

#### 6.3.3.1.1.6. Later ties

Ties can also be added later as a repair, as noted above (6.3.3.1.1.2). Whether or not there would be evidence of a repair tie on the fragment, would depend on whether the fragment had still been in situ when the repair was carried out. If the fragment had been pasted down, the tie would have been cut into the fragment and pasted down on to it, leaving clear evidence on the fragment. Merton D.3.1. (1), the fragment from 95.jj.8 vol. II (Basel, 1571) mentioned above (6.3.3.1) had the remnants of a textile tie (a repair) but also evidence of fore-edge clasps (Fig. 132, 133).

**Fig. 142. Distinctive ties – ties on three sides .**
Lanhydrock 47 – inner face, left endleaf. Tie holes on three sides visible on left side of source binding, A.21.5 (Paris, 1518).



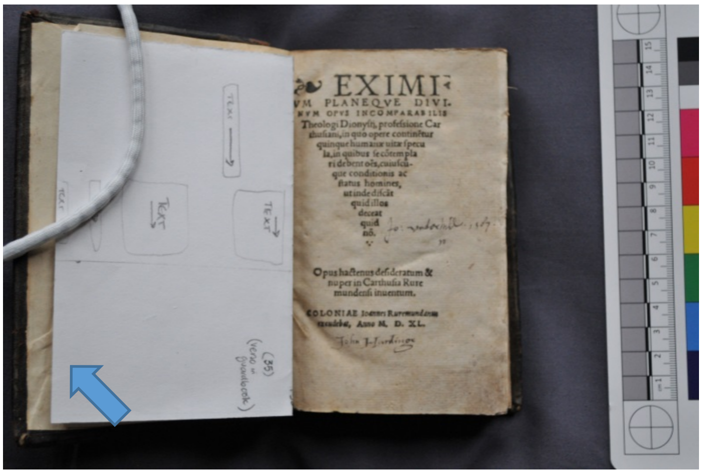


**Fig. 143. No evidence of ties on the fragment.**
Lanhydrock 35 – outer face of left endleaf inset into guard book, which accounts for the partial edges, with no evidence for ties visible.

**Fig. 144. Ties on the source binding but not on the endleaf fragment.**
Lanhydrock 35, inner face, showing that it did not extend to the full width of the board.
Source binding A.2.39 (Cologne, 1540). Evidence of the tie is visible under the modern pastedown at the lower fore-edge of the board.

#### 6.3.3.1.1.7. Summary

Evidence of ties on a fragment which was used as an endleaf indicates that the source binding must have had ties. Candidate matches identified in Stage One which do not have ties can be eliminated, unless they are re-covered or new bindings. It does not necessarily follow, though, that the absence of evidence of ties on an endleaf fragment means that the source binding does not have ties.

#### 6.3.3.2. Clasp fastenings

The second type of fastening, clasp fastenings, are also found on the fore-edge of bindings. They consist of two parts, comprising a metal fixture on each board.[332] On one board there is

i. a catch plate, that is 'fittings, usually in metal, mounted on the surface of a board, either under or over the covering material, and fitted with a slot, hole or pin in or on to which a clasp or ring can be secured[333] or
ii. a pin - found on the edge pins or side and not part of a larger fitting.[334]

Extending from the other board, there is a hook or a ring which is pulled over to the other board where it catches on the catchplate or the pin. This hook or ring is attached to the board by either

i. a clasp strap, which is made of tanned or alum-tawed skin or parchment but sometimes also of textile.[335] This in turn is secured to the board with a strap plate - 'pieces usually of metal and most often flat … through which the rivets used to secure it to the boards are passed'[336]
ii. a hinge plate - 'metal plates to which clasps are attached by a pin hinge on the fore-edge. The shape of metal plate will usually be the same as that of the catchplate'.[337]

Both parts of the clasp fastening, then, are secured to the boards using metal fixtures – either plates or nails. While the metal plates and the strap may not survive on the bindings (Fig. 146), the holes for the nails that secured them to the board will. The nails securing the strap to the board are usually positioned closer to the edge of the board while the catch plate encroaches more into the board. Wooden boards, particularly from German-speaking countries in the sixteenth and seventeenth centuries, though not exclusively as they are found in other parts of Northern Europe, might also have recesses cut into the edges of the outer face of the wood to accommodate these plates (Fig. 145).[338]

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332 http://w3id.org/lob/concept/4602
333 http://w3id.org/lob/concept/1244
334 http://w3id.org/lob/concept/1244
335 http://w3id.org/lob/concept/2858
336 http://w3id.org/lob/concept/3049
337 http://w3id.org/lob/concept/2923
338 http://w3id.org/lob/concept/1253

The *direction* in which the clasp fastening closes, whether from left to right or right to left, can indicate where the cover was made.

> 'Bindings are fastened from the side to which the movable part is attached to the side to which the immovable catchplate or pin is attached. A binding with catchplates on the left board and straps and clasps on the right board can therefore be described as fastening from right to left. German, Scandinavian, Dutch/Flemish and most eastern European and Greek bindings traditionally fasten from right to left and most British, French and Spanish bindings fasten from left to right. The only country to do both on a regular basis is Italy, where a small proportion of books fasten from right to left, possibly bound in the very north of the country, where German is still spoken. Some binders would reverse their normal direction of fastening when binding books printed or written in languages that read from right to left (e.g. Hebrew, Arabic, Syriac, *etc*.).[339]

**Fig. 145. Left board with strap recesses into which the straps were fixed by two nails. Right board with nail holes for lost catchplates.**

These boards were fastened from left to right. The larger holes in both left and right board are later additions for fore-edge ties. These boards were covered in tanned skin. The parchment covering on the spine is a later addition.

Merton 95.jj.8 vol. II (Basel, 1571). Source binding for D.3.1. (1).

339 http://w3id.org/lob/concept/2874

**Fig. 146. Evidence for fore-edge clasps – marks but no metal.**
Evidence for nails on the fore-ege of the left board where the straps were attached Evidence of catchplates visible on the right board. These boards were fastened from left to right**.**
Lanhydrock C.3.19 (Paris, 1518), source binding for the fragments Lanhydrock 116i, ii.

**Fig. 147. Evidence for fore-edge clasps – metal.**
Left: Catch plate on the right board – one half of a hook and bar.
Right: holes for securing the straps (now missing) on the left board.
This binding fastened from left to right.
Lanhydrock A.21.4 (Lyon, 1517), source binding for the fragments, Lanhydrock 32i, ii.

**6.3.3.2.1. Evidence of clasp fastenings on manuscript-waste fragments**

For an endleaf to have evidence of a clasp fastening, the nails securing the clasp or strap plate must have been in contact with the fragment, that is, they must have penetrated right through to the other side of the board. This can be seen in Lanhydrock A.21.4 (Lyon, 1517) (Fig. 147) where the pins have been struck through the board and covering material and are visible under (and in the lower example, through) the modern pastedown (Fig. 148).

Evidence for clasp fastening is seen in two forms on an endleaf

i. a stain left by the metal - green if it is a copper alloy - as it corrodes the parchment.
ii. a hole made by the corrosion damage - this hole may have a green corrosion stain around the edges (Fig. 151) - or by a protruding nail from either of the plates.

The evidence on the fragment relates to the position of the nail on the inner surface of the board. This nail, though, may have been struck through the board at an angle. The tip of the nail may also have been bent over on the inside of the board.[340] The end of the nail, then, as it appears on the inner surface of the board (and so the part which will have been in contact with the fragment) is not necessarily in the same position as the head of the nail on the outer face of the board. The parchment of the fragment may also have contracted or expanded which would also result in the evidence on the board and the fragment not being in exact alignment – and comparing the position of the holes on the fragment and the binding can how much the endleaves has shrunk. As staining from the nail may also penetrate further in to the textblock this feature will also be also examined in Stage Three.

[340] Pickwoad, personal communication, 31/10/18.

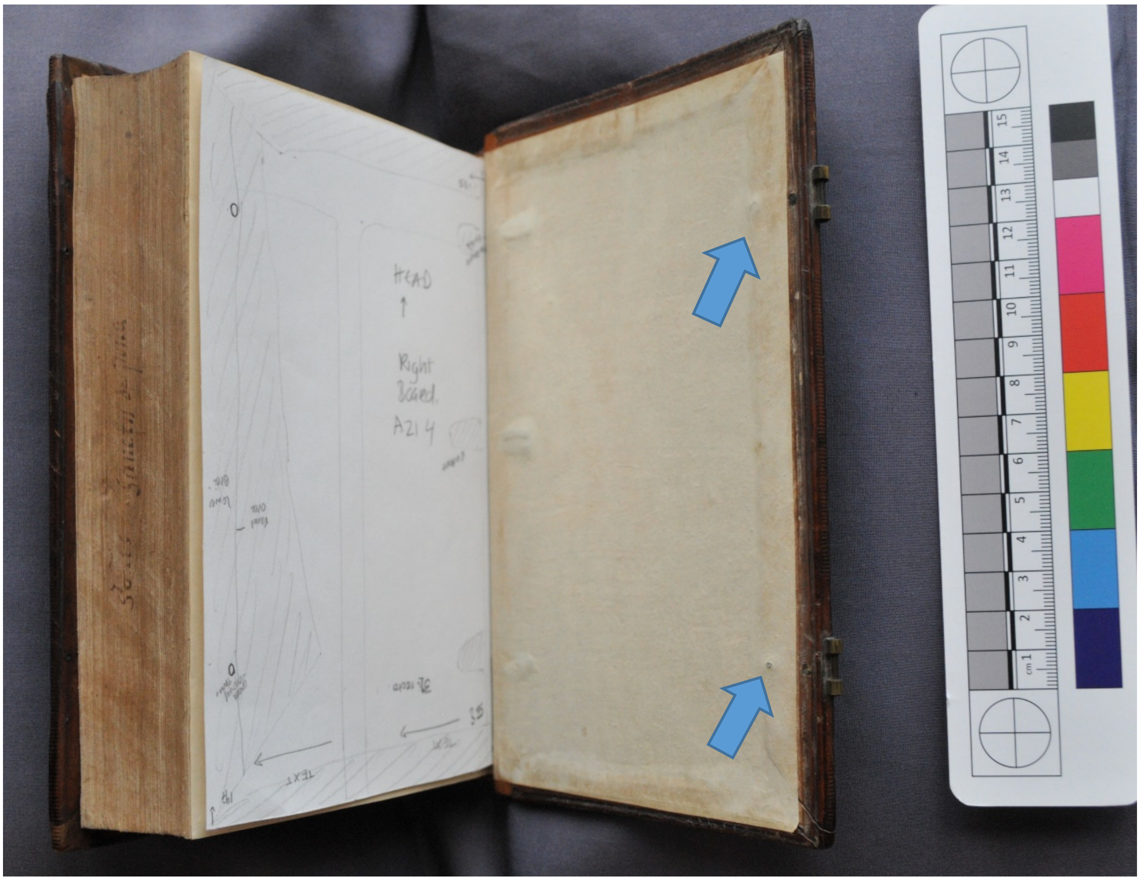


**Fig. 148. Nails from the catch plates penetrating through the cover material, board and new pastedown.**
Lanhydrock 32i, right endleaf and its source binding A.21.4 (Lyon, 1517). See Fig. 147 for image of boards.

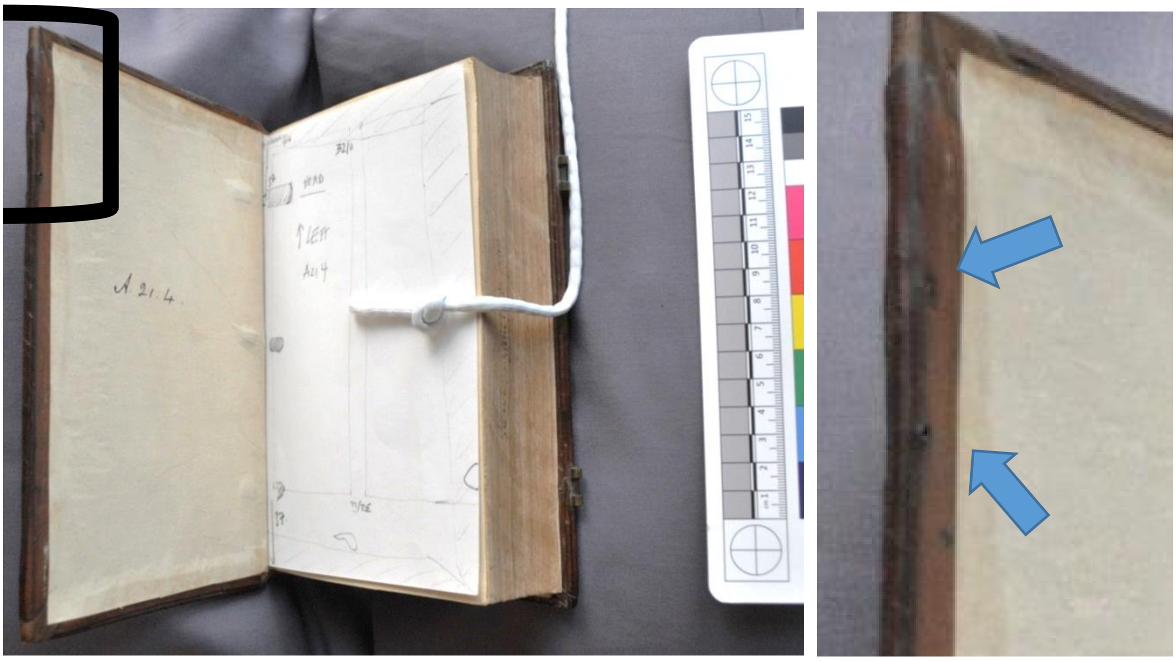


**Fig. 149. Nail holes for the strap.**
Lanhydrock A.21.4 (Lyon, 1517). The nail holes are at the very fore-edge of the left board and would not have been in contact with the endleaf 32ii.

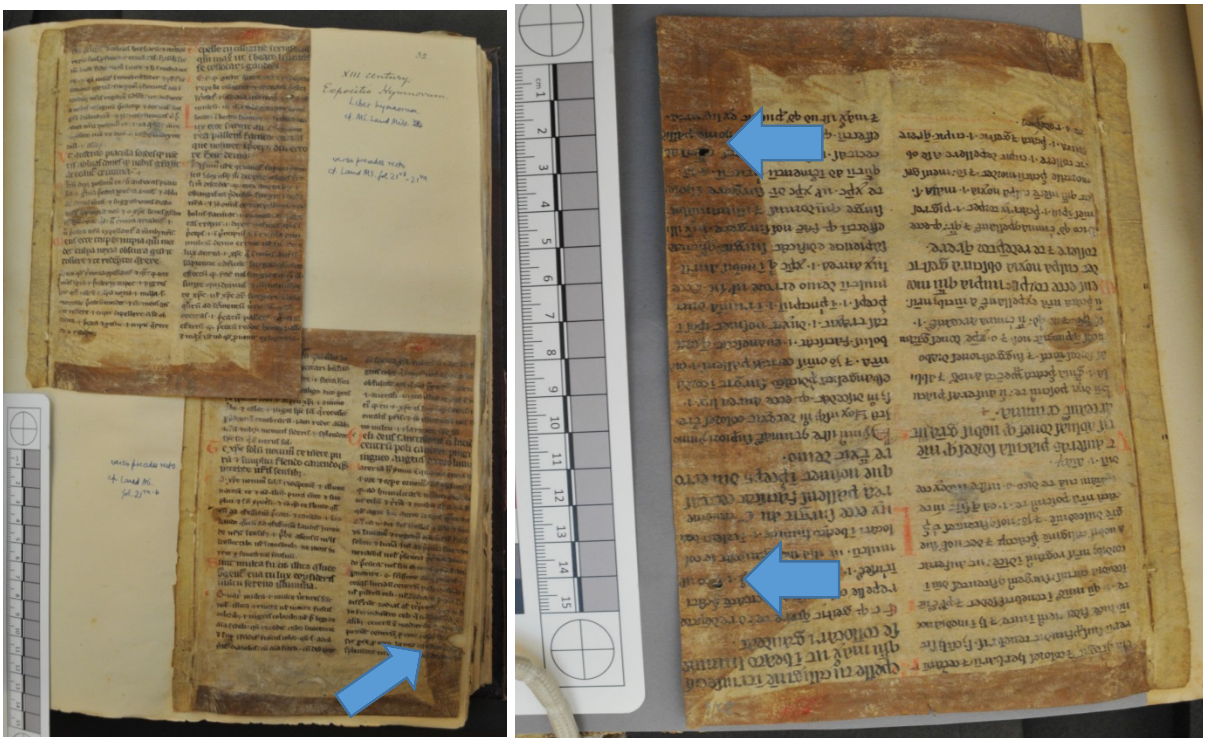

**Fig. 150. Fore-edge clasp evidence in the fragments.**
Lanhydrock 32i the right endleaf, closest to the head of the guardbook- should be rotated 180 degrees. Right: Lanhydrock 32i rotated.
Lanhydrock 32ii – the left endleaf closest to the tail edge of the guardbook faced the left board of the source binding.
Holes are visible in 32i but not 32ii, though there is some damage to the parchment of 32ii where it may have been in contact with nail from part of the clasp.

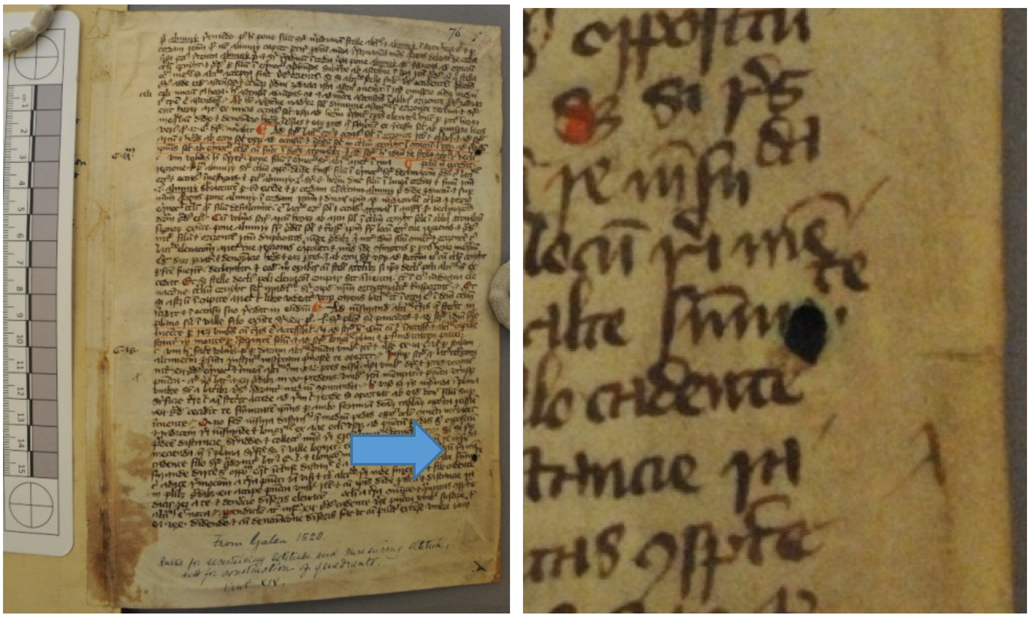

**Fig. 151. Corrosion and a hole as evidence of a clasp fastening (detail on the right).**
Lanhydrock 76, source binding no longer in library.

While a pair of endleaves may have evidence of both clasps and straps, as in the case of Lanhydrock 76 and 77, this is not always the case. Lanhydrock 32i (the right endleaf) has evidence of fastenings while its pair 32ii (the left endleaf), does not (Fig. 150). Lanhydrock 32i has two holes (one per catchplate) parallel to the fore-edge of the board (Fig. 150), matching the position of the clasp on the right board of the source binding A.21.4 (Lyon, 1517) (Fig. 148). The left board has evidence of where the strap was positioned - two sets of two holes arranged in a line parallel to the fore-edge of the board and close to its edge (Fig. 149). This evidence, however, did not transfer to the left endleaf, 32ii, as these pins were too close to the edge of the board to have been in contact with fragment. The presence of evidence on the fragment will, then, depend on how far into the board of the source binding the nails were placed. The further into the board the nails are positioned, the more likely they are to be in contact with the fragment and therefore the more likely there is to be evidence for them on the fragment. In this research, it was the fragment that sat next to the board with the catchplate that was most likely to have evidence of clasp fastenings as catchplates tend to extend further into the board than the pins securing the straps. This is particularly worth remembering when working with a single endleaf fragment. Lanhydrock 27, for example, does not have evidence of clasps but they are present on the binding (Fig. 152). This fragment sat next to the left board, where the nails for the strap were very close to the edge and were not in contact with the fragment (Fig. 153). The right endleaf, if there had been one, would be more likely to have evidence of the clasps as the pin holes for the clasp were positioned further into the board.

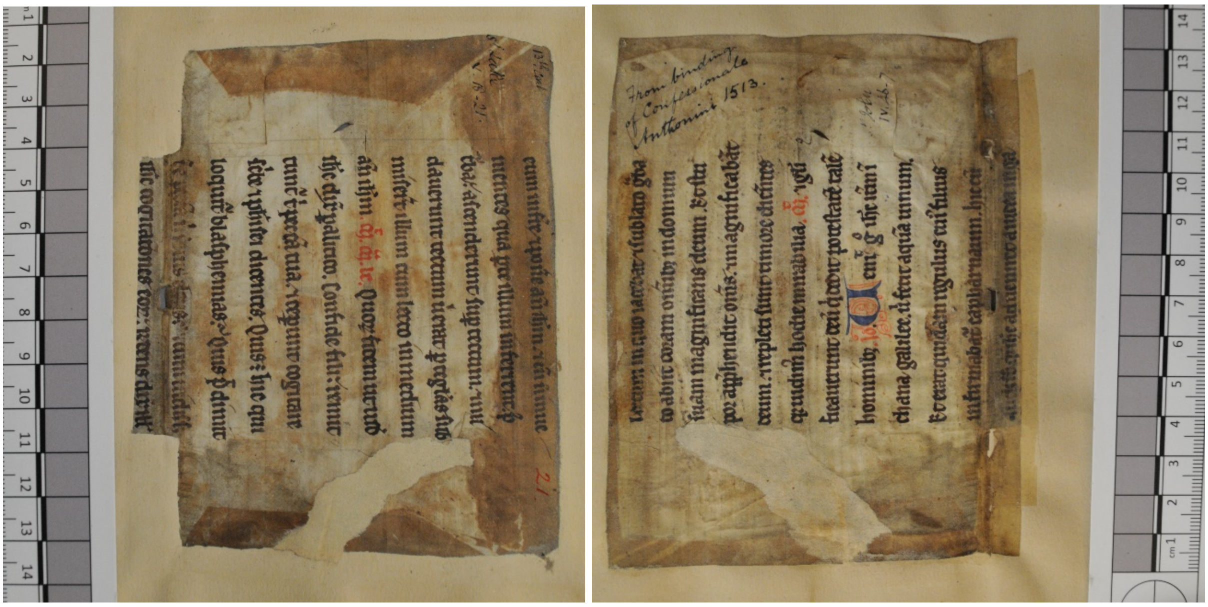

**Fig. 152. A fragment with no evidence of clasp fastenings.**
Lanhydrock 27, left endleaf.

**Fig. 153. The source binding: right board with catchplate and left board with nails for straps.**
Left: The right board with catchplate marks and holes.
Right: The left board with holes for the strap.
Lanhydrock C.1.23 (Paris, 1511-1513), source binding for Lanhydrock 27.

**6.3.3.2.2. Summary**

The conclusions listed above in relation to ties (6.3.3.1.1.7.) follow also for clasps, that is, when evidence for clasp fastenings is present on a fragment - which can only be an endleaf–

i. the sides of the source binding must have evidence of clasps, unless it has been re-covered.
ii. no evidence of clasps on a fragment should not be taken to mean that the source binding did not have clasps.

Evidence for clasp fastening on an endleaf cannot be used reliably on its own to indicate whether the endleaf was positioned next to the left or right board as the catchplate could be positioned on either board. However, in cases where the source binding has been rebound, and the new binding no longer has evidence of the clasps, identifying which board the catch plate was positioned on from the evidence on the fragment may suggest which way the fastening worked and therefore where the early binding was made (6.3.3.2).

The absence of clasps on candidate matches when the fragment indicates that the source binding has clasps is an effective diagnostic feature. In the case of Lanhydrock 63, 64, of the three candidate matches produced by Stage One, two of these bindings could be discounted on the basis that they did not have fore-edge clasps. The third remaining binding, D.11.11 (Paris, 1515) was the source binding.

**6.3.3.3. Fore-edge fastenings: Guards, comb spine linings and covers**

Fragments which were guards or comb spine linings will not be sufficiently wide to have been in contact with ties or clasps and there is no way of knowing from these fragments whether the source binding did or did not have ties. Fragments which were covers may have evidence of ties but it is unlikely that the new cover on the associated textblock will have ties, or if they are present, that they would be in the same position as the fragment. However, there may be impressions from the ties in the leaves at the beginning and end of the textblock and this can be examined in Stage Three.

### 6.3.4. Furniture

Furniture is a term for the hardware present on the sides of bindings which was applied to them for protective and decorative purposes such as corners and title frames.[341]

#### 6.3.4.1 Corners

Corners[342] are metal pieces attached to the board's corners either on just the surface or folded around its edges. By the sixteenth-century the use of furniture on bindings had declined[343] and the books examined during this research rarely had evidence of it: Merton 95.jj.8 vol. II (Basel 1571) was the one example found. The corner-furniture on this binding did not remain, and the covering material had also been removed, but the holes for the nails which secured them were visible in the boards.

As with clasp fastenings, it is the nails from the corner plates that, if they penetrate the board to the inner surface and are in contact with the endleaves, mark endleaves with holes and signs of corrosion. The one example found here, Merton D.3.1(1), removed from 95.jj.8 vol. II mentioned above, has evidence of nails in corner positions which match up with holes in the boards of the source binding (Fig. 154).

#### 6.3.4.2. Title frames

Title frames are found on the opening side of the book and are

> 'rectangular frames of metal, usually copper alloy, nailed to the exterior surface of either the left or right board over a title or shelfmark written on parchment or paper and sometimes a protective sheet of transparent horn.[344]

Evidence for title frames on endleaves (evidence is unlikely to be found on guards or the extensions of comb spine linings due to their width) is in the form of corrosion from the pins holding the frame in place. In Clare I.3.6, (Basel, 1521) three pins from the frame have penetrated through the board and were in contact with the endleaf (Fig. 155).

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341 http://w3id.org/lob/concept/1353
342 http://w3id.org/lob/concept/2866
343 http://w3id.org/lob/concept/1353
344 http://w3id.org/lob/concept/3072; Szirmai, 1999, p.263 uses the term 'fenestrae'.

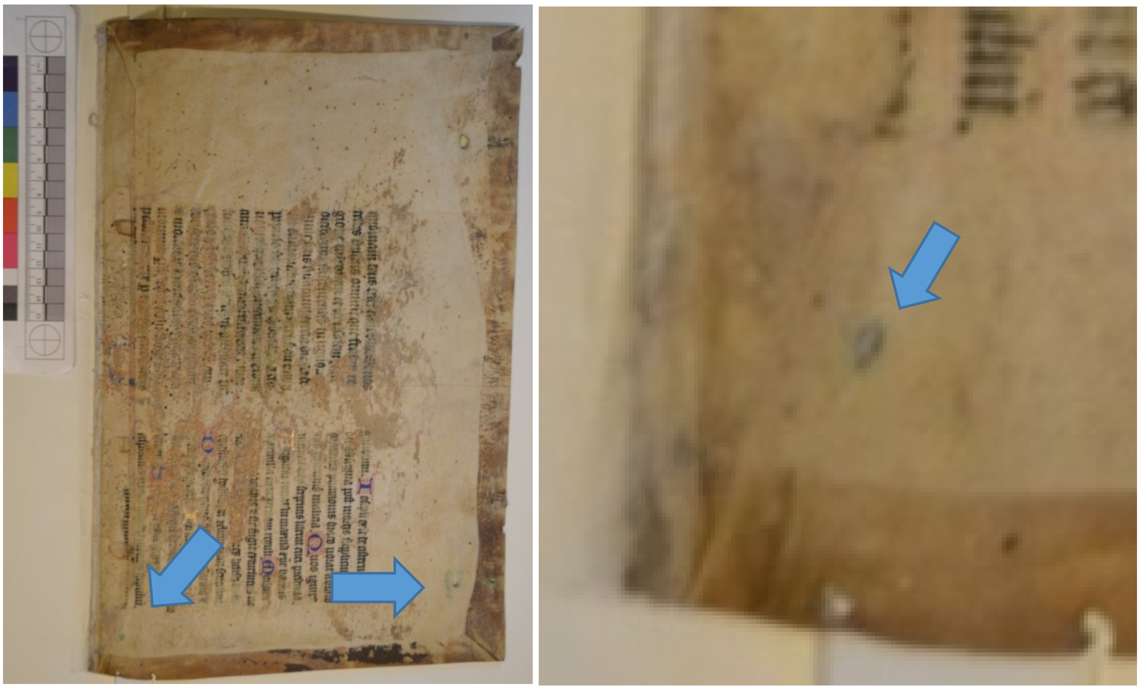

**Fig. 154. Corrosion marks from corner pieces and chains**.
D.3.1 (1). Source binding: Merton 95.jj.8 vol. II  (Basel, 1571).

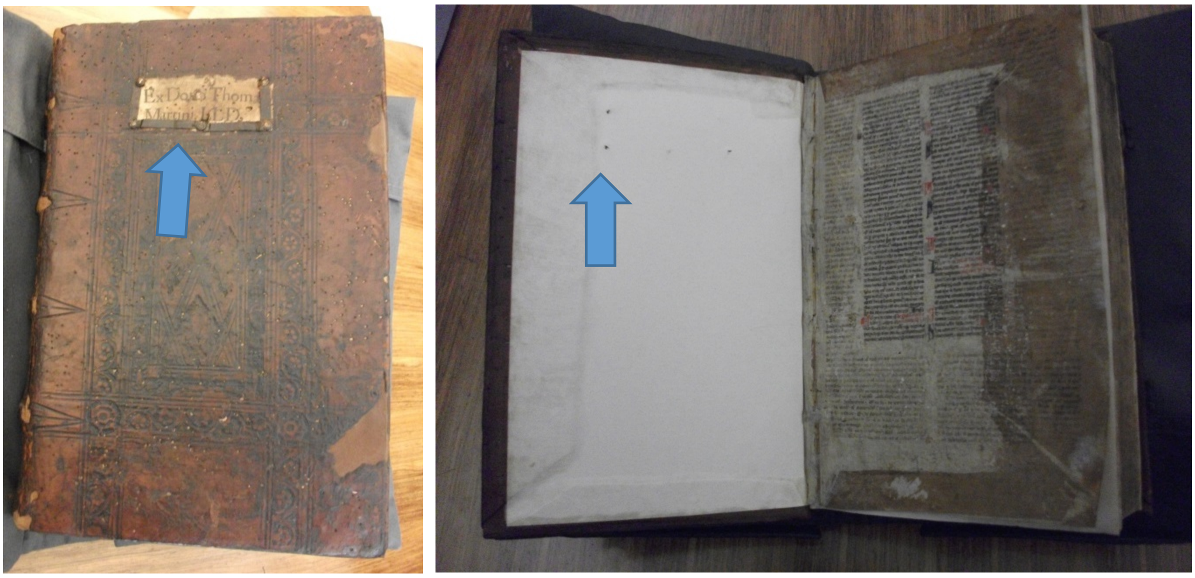

**Fig. 155. Title frame.**
Clare I.3.6. (Basel, 1521) with title frame and the inner surface of the left board with the left endleaf (source binding identified by shelfmark on removed manuscript-waste fragment). The nails are visible on the board.

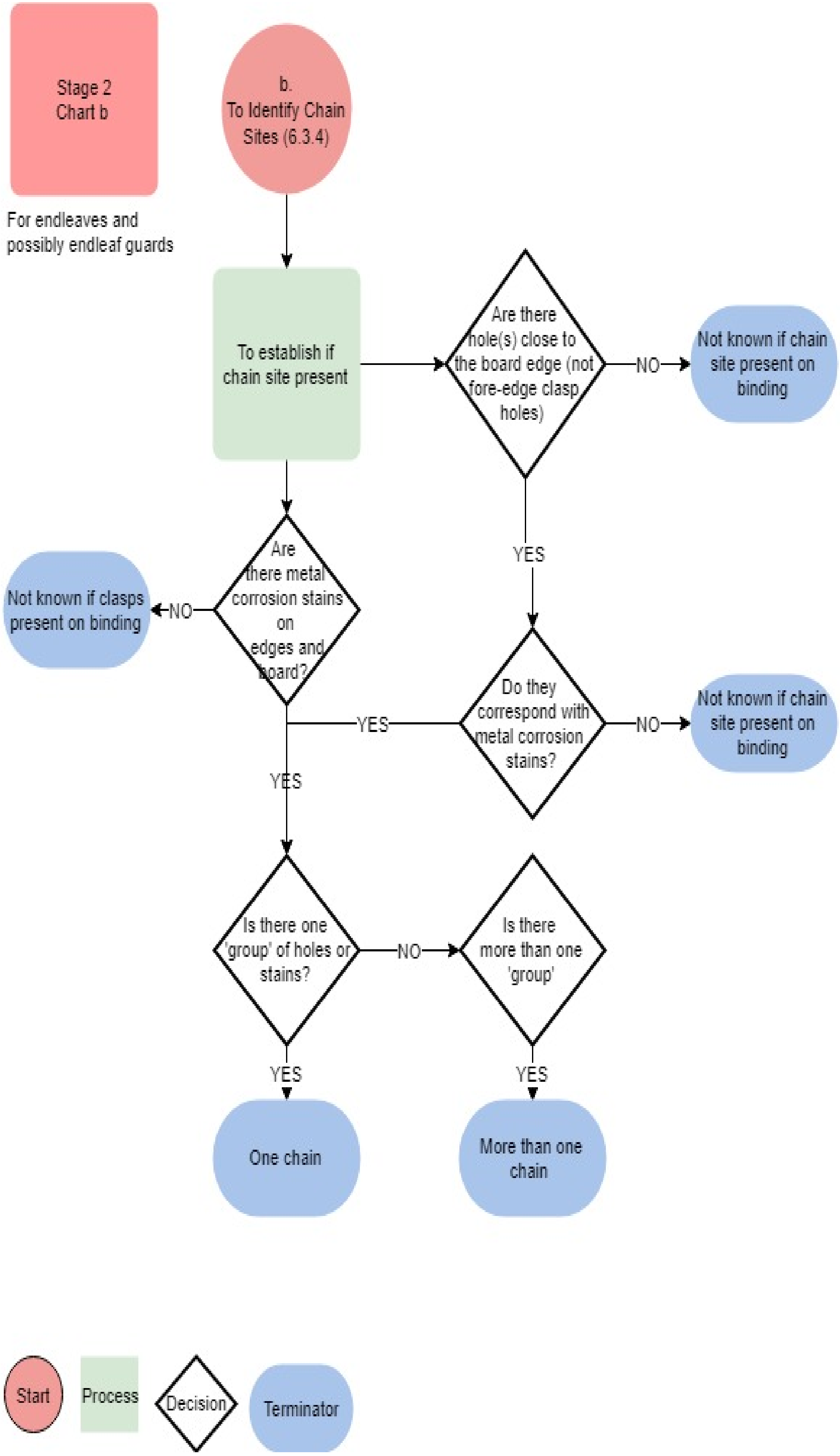


**Chart 2b. To identify chain sites**

### 6.3.4.3. Chain sites

Chain sites, places on the boards where chains were attached, are also classed as furniture.[345] They can be found on the left or right board and on any of the three edges of that board. There may also be more than one chain site on a binding. In Merton College Library, chains are found on both wooden and paper boards and seem to have been more common on larger volumes. The presence of chain sites on bindings may be dependent on the type of library being examined. They were not, for example, found in the country house library of Lanhydrock.

Evidence on the endleaf (and not, because of their width, on guards or comb spine linings) is usually in the form of holes and these may be edged with corrosion stains (Fig. 157). If the chain was attached after the endleaf had been pasted down, the chain plate will have been attached through the parchment which may result in more severe damage (Fig. 156). As the type and shape of the chaining sites can vary, the corrosion shapes can also vary. (The marks left by another chain plate,[346] or clip can be seen in Fig. 154.) This looks similar to a fore-edge clasp and may exist alongside a fore-edge clasp.

**Fig. 156. Chain site in the board and adjacent endleaf with related corrosion.**
Clare A.4.12 (Basel, 1538).

[345] http://w3id.org/lob/concept/2853 Szirmai 1999 267-271.
[346] http://w3id.org/lob/concept/2851

**Fig. 157. A pair of endleaves with chain evidence on the right endleaf (right image).**
Endleaves from Clare A.5.10 (Basel, 1537), source binding identified by shelfmark.

**Fig. 158. Source binding and right endleaf with chain evidence.**
A.5.10 (Basel, 1537). As the text in this binding is Hebrew this right board is the ‘front’ board. This is a re-used board. See also Fig. 192, p.241 for the left board of this volume.

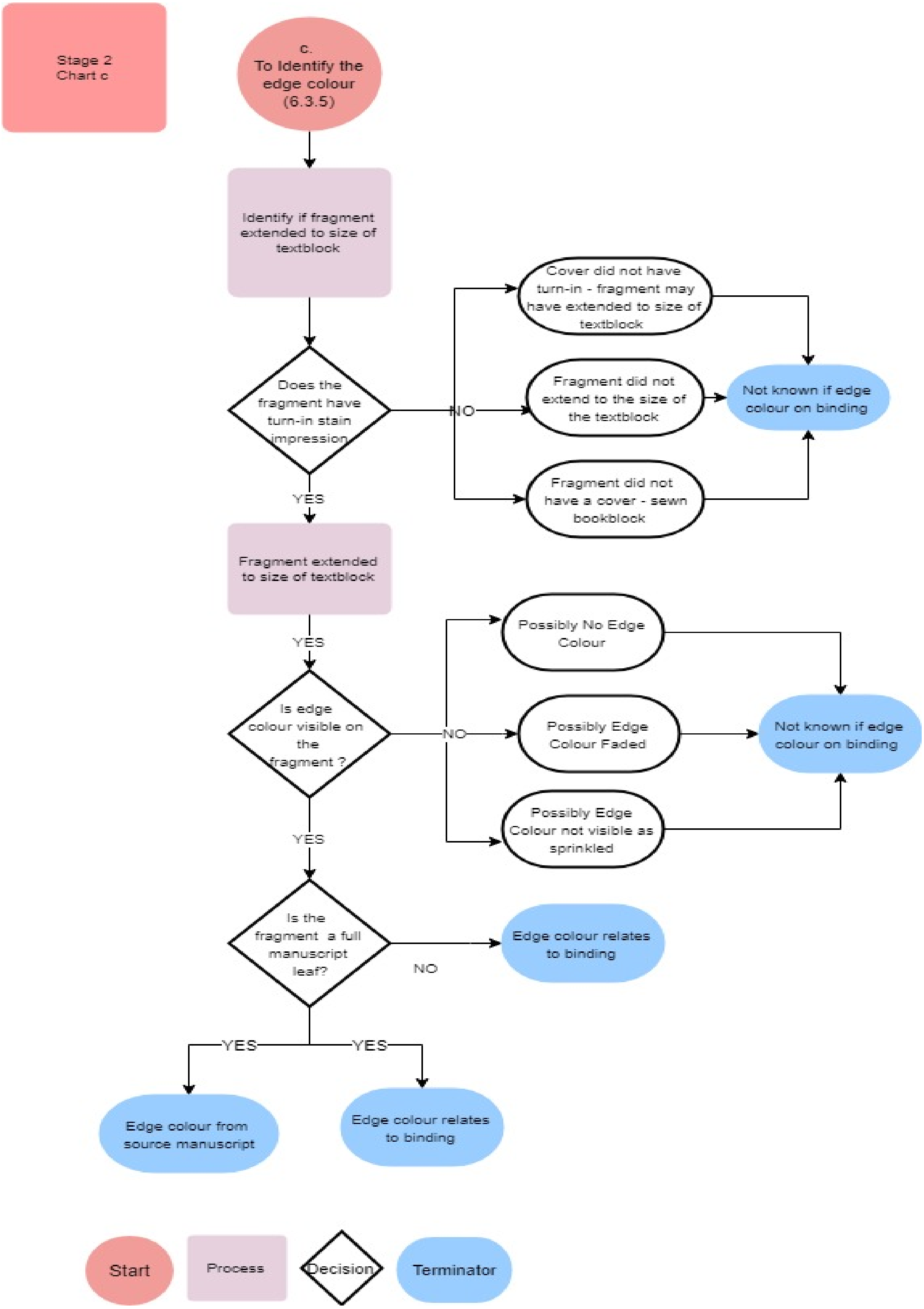


**Chart 2c. To identify edge colour**

### 6.3.5. Edges

Edge colour is considered in Stage Two rather than Stage One as, while it may be visible on the head-edge of the book when it is still on the shelf, the colour may also be obscured by dust. It may be necessary to remove the book from the shelf to see the colour properly. Edge colour may be solid[347] or it may be sprinkled dots of varied distribution, from sparse to dense[348] and if sufficiently dense[349] these dots may appear a solid colour.

The two main colours observed in the case study examples were yellow and red, though a deep green was also found in the Wren Library. The red pigment seems to have been particularly stable. The yellow, however, is susceptible to fading, and frequently appears strongest at the tail edge which has had the least exposure to light (Fig. 159). In some cases, it is only evident by examining the edges of individual leaves where the colour has encroached into the leaf and has not faded. As a result, the examination of the leaves for evidence of edge colour is also included in Stage Three.

As discussed earlier, the edges of the bookblock can also indicate whether a book has been resewn or not (5.10.1.3). An uneven edge can be particularly noticeable when there is titling on the fore-edge (Fig. 160). It is worth noting if a book has evidence of being resewn as it may lead to questions as to whether the position of the sewing supports has been changed

#### 6.3.5.1. Evidence of the edge colour on manuscript-waste fragments

Evidence of edge colour can be visible on one or all of the three exposed edges of an endleaf fragment but only on the head and tail edges of guard or comb spine linings, due to their width. (The question of identifying whether the colour is related to the source binding or manuscript is discussed in 5.4.2.2.) The ease with which the evidence of edge colour can be identified is connected to

i. the colour the edges were dyed, with, in this research, red edges being the most easily identified.
ii. the housing of the fragment– a fragment's edges may not be visible if it is set into the leaf of a guardbook.
iii. the presence of staining from the turn-in of the cover material - this may obscure edge colour on the fragment.

347 http://w3id.org/lob/concept/3857
348 http://w3id.org/lob/concept/1628
349 http://w3id.org/lob/concept/1286

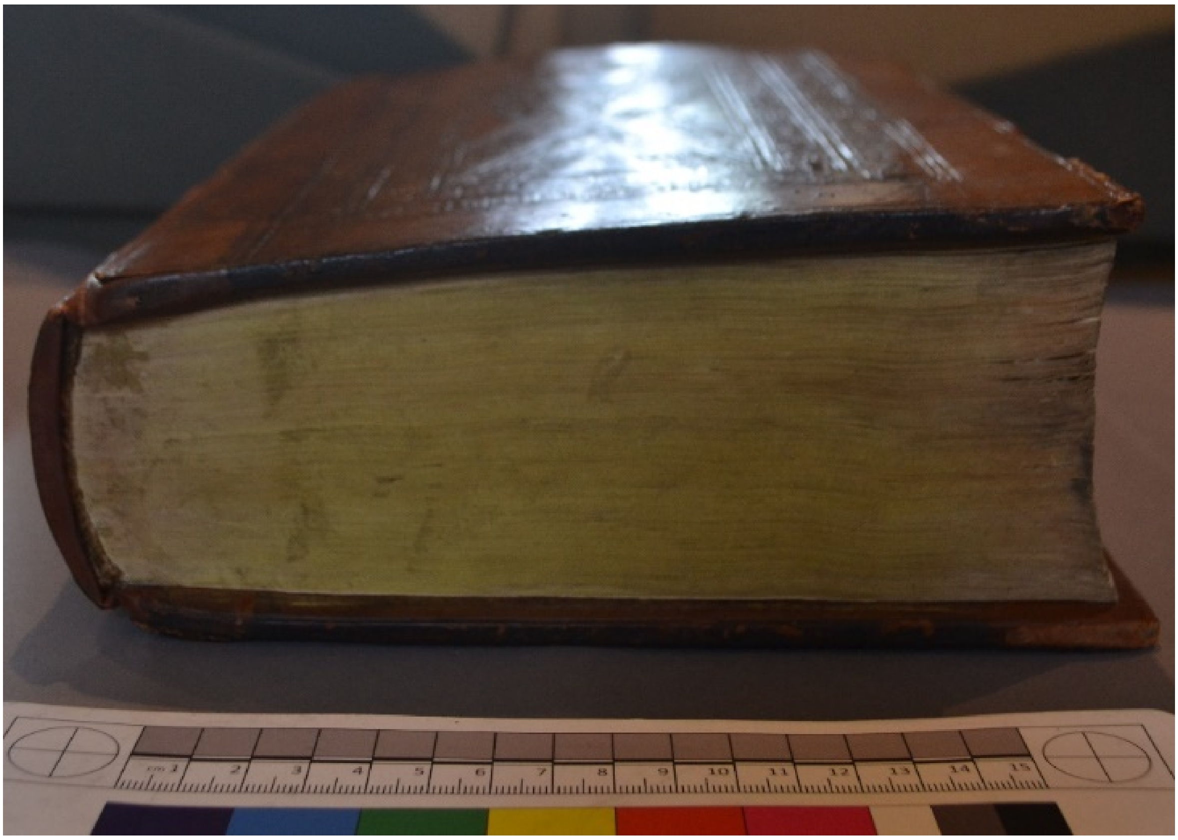

**Fig. 159. Yellow edges on the tail edge of the bookblock.**
Merton 46.c.10 (Basel, 1533). The colour has faded at the fore-edge.

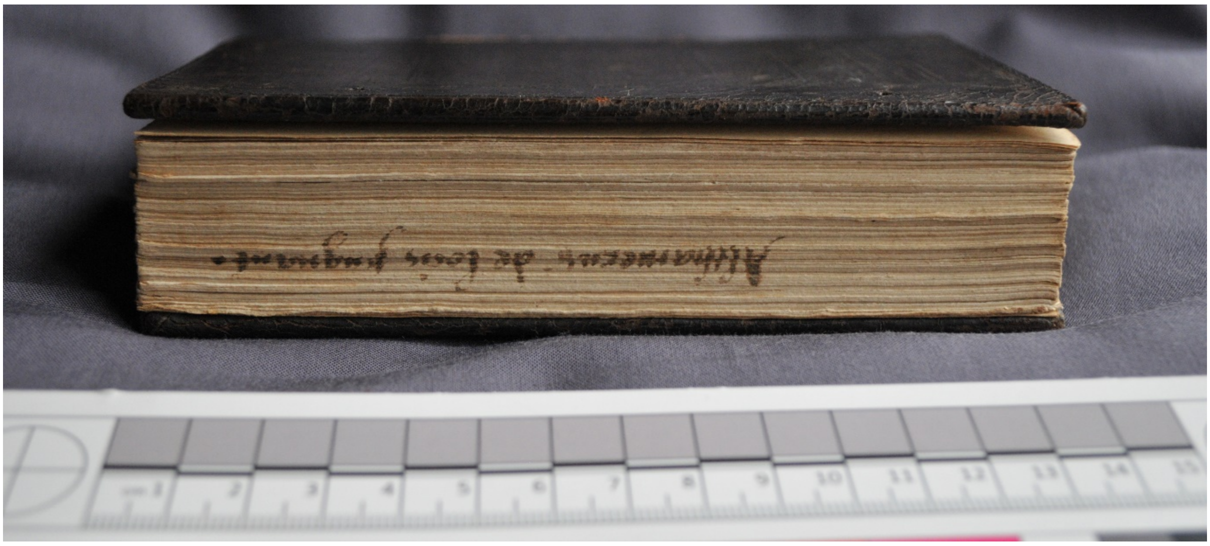

**Fig. 160. Title on an uneven fore-edge.**
Lanhydrock A.4.35 (Nuremberg 1561) source binding for 111i, ii.

The presence of red edges on Lanhydrock 56 and 109 (5.4.2.2) helped to identify that they were a pair and one candidate match identified by Stage One could be eliminated on the basis that it did not have matching red edges – the source binding, however, did (F.5.8. Oppenheim: 1640) (Fig. 164). Evidence of edge colour, though, may not be present on the fragment even though it is present on the textblock of the source binding. The endleaves, Lanhydrock 124 and 125, for example, have no evidence of edge colour yet their source binding, F.5.10 (Antwerp, 1582), has yellow edges. This is surprising as Lanhydrock 124 and 125, which were made from paper, were the same height as the textblock so it was not the case that the fragment was too short to be marked by the stain. Instead, the edge colour may not be visible because it is obscured by the turn-in stain on the fragments. Another possibility is that the endleaves were added after the edges had been coloured. Lanhydrock 19, 20 are another pair of endleaves that do not seem to have evidence of edge colour but their source binding, D.8.33 (Antwerp, 1566) has yellow edges. The edges of one of these fragments, however, cannot be clearly seen as it is set into the leaf of a guardbook. The absence of edge colour on a fragment, then, when it is present on a candidate match is not cause for eliminating that candidate match.

However, evidence of edge colour on the fragment – if it can be shown that it is not related to the source manuscript - but not present on the candidate match, would call into question whether the candidate match should be eliminated. This can only be securely done when the edge colour is not likely to have faded, *i.e*. in the case of red edges. The fact that a yellow edge may be difficult to see on the textblock edges due to that colour's tendency to fade would caution against immediately eliminating this book. However, the colour can also encroach into the leaf and by checking the lower margins of a textblock's leaves it can be possible to see the edge colour there when it is has faded from the actual edges (see Stage Three 7.2.2.5).

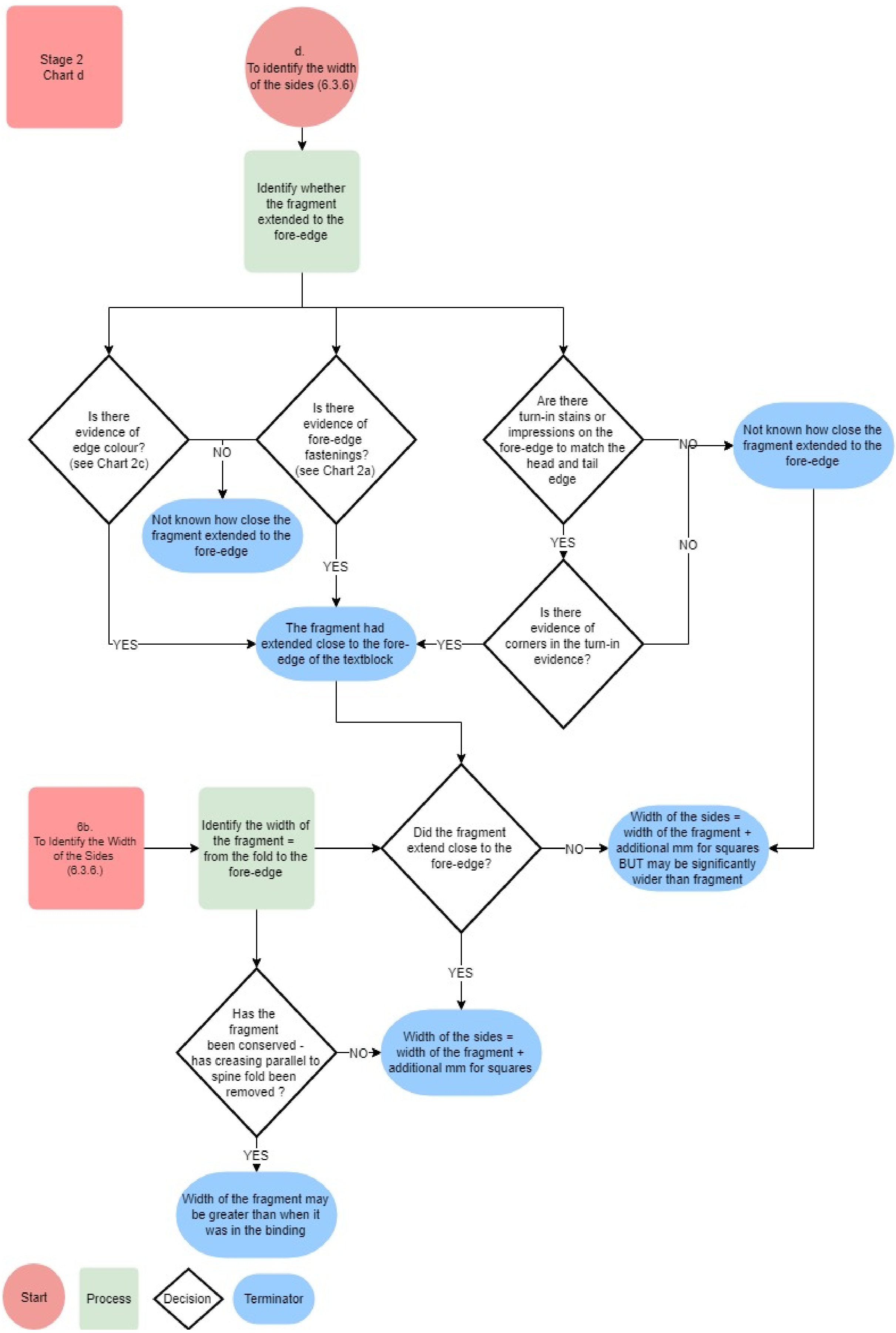


**Chart 2d. To identify the width of the sides of the cover**

### 6.3.6. Width of the sides of the cover

While the width of the sides of the cover can sometimes be seen when the book is still on the shelf, by looking along the head edge, this is easier to measure when the book has been removed from the shelf.

The width of the sides extends from the joints, that is 'the area along the edges of the spine along which the boards and/or cover hinge'[350] to the furthest fore-edge which is either

i. the fore-edge of the cover, if this extends beyond the bookblock (This does not include cover extensions, often referred to as 'yapp edges', which fold over the edge of the board or bookblock.[351])
ii. the fore-edge of the bookblock which may extend beyond the fore-edge of the cover if the cover has shrunk. This may happen if the cover is parchment or if the boards are of unseasoned wood.

The width of the leaf element of a manuscript-waste fragment used as an endleaf may be the same or less than the width of the textblock. The width of the textblock will be less than the width of the sides of the covers because of the squares of the covers (5.3.2). The width of the sides of the cover, then, will be the width of the fragment plus some additional millimetres either simply for the squares of the cover or also because the fragment was narrower than the textblock. Estimating the width of the sides of the cover from the manuscript-waste fragment will require

i. determining the width of the endleaf.
ii. determining the relationship between the width of the fragment and the width of the textblock.

#### 6.3.6.1. Determining the width of the endleaf

Hook-type endleaves consist of two elements, a leaf and a stub, sitting either side of the spine-fold. The width of the 'leaf' element is measured from the spine-fold to the fore-edge and does not include the stub (3.2.1.). A fold endleaf (of which only one example was found during this research) has two leaves, one each on either side of the spine-fold (4.3.1). The measurement for the 'leaf' element of this endleaf type is also from the spine-fold to the fore-edge. This is the width of the endleaf (as opposed to the width of the endleaf fragment).

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350 http://w3id.org/lob/concept/1405
351 http://w3id.org/lob/concept/1265

### 6.3.6.2. Evidence to indicate whether the fragment was the same width as the textblock

An endleaf could be smaller than or the same size as the textblock (4.3.1).[352] As previously discussed, an endleaf, as it is sewn to the textblock, must extend in height to at least the distance occupied by the sewing of that textblock, that is from one kettle stitch to the other with, for practicable purposes a couple of millimetres on either side of those kettle stitches (5.4.2.1). This means that the height of the endleaf, if not the same height as the textblock, will be a significant portion of it. Shrinkage of the parchment along this axis will also be restrained by the sewing. The endleaf, however, does not necessarily have to extend to the same width as the textblock (Fig. 159) and it may also have contracted (Fig. 160). It is necessary, then, to examine the endleaf for evidence that might suggest whether it had been the same width as the textblock.

If the endleaf extended to the same width as the textblock then it should have evidence of features which are found close to the fore-edge of the textblock and possibly, (depending on the size of the squares), the fore-edges of the sides of the cover such as

i. edge colour
ii. fastenings
iii. cover turn-in staining or impression
iv. corners of the cover turn-ins

These features have been discussed earlier in this chapter but will be examined here in relation to how they may be used to help identify the relationship between the width of the endleaf and that of the textblock.

#### 6.3.6.2.1. Edge colour

In Stage One, it was shown that edge colour on the fragment, if it does not relate to the source manuscript, can indicate that the fragment was the same height as the textblock (5.4.2.2). Similarly, if the colour is found on the fore-edge of the fragment it can indicate that the endleaf fore-edge was flush with the textblock fore-edge, and the two were the same width. However, the absence of edge colour alone cannot be taken to indicate that the fragment was not the same width as the textblock as the textblock edges may not have been coloured, or if coloured they may have been sprinkled leaving a less obvious trace on individual edges or the colour may have faded (6.3.5.1).

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352 Very occasionally they can also be larger than the textblock but no such examples where found during this research. http://w3id.org/lob/concept/1317.

**Fig. 161. An endleaf significantly narrower than the textblock**.
The paper on the joint edge of the board is a repair. A leaf of white paper has been placed under the *in situ* endleaf so that the difference between the width of the fragment and the textblock can be more easily seen.
The left endleaf is 29mm wider.
Merton 45.b.23 (Lyon, 1545). The fore-edge turn in on this board is 35 mm wide but only a small section of the endleaf is stained because of its narrowness.

| Merton 45.b.23 | Height mm | Width mm |
|---|---|---|
| Left endleaf | 388 | 265 |
| Right endleaf | 393 | 236 |
| Textblock | 405 | 269 |
| Board | 412 | 277 |

**Fig. 162. The parchment manuscript-waste fragment has shrunk while still within the binding.**
Merton 46.c.14 (Basel, 1543).

| Merton 46.c.14 | Height mm | Width mm |
|---|---|---|
| Left endleaf | 281 | 186 |
| Textblock | 291 | 194 |
| Board | 300 | 197 |

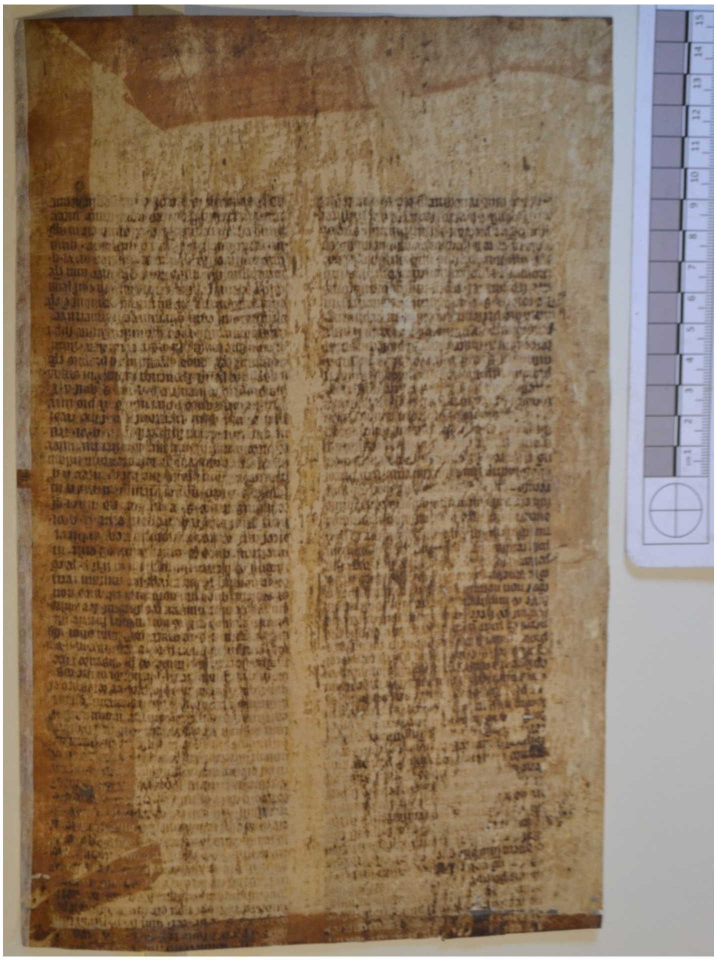

**Fig. 163. The corner evidence – tongued mitres.**
Merton D.3.7 (3), outer face of right endleaf (source binding not identified).

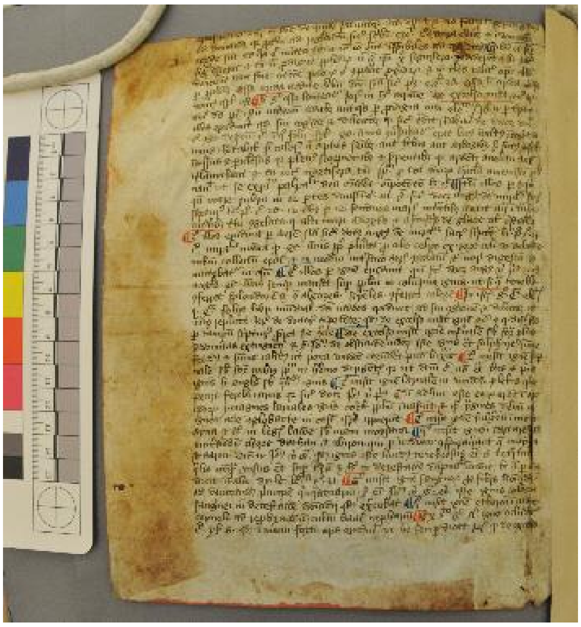

**Fig. 164. The corner evidence - lapped mitres.**
The corner evidence shows that the fragment extended quite close to the edge of the textblock. The red edges indicate that the edge of the fragment aligned with the edge of the textblock.
Lanhydrock 109.

#### 6.3.6.2.2. Fastenings

Evidence on the manuscript-waste fragment of fastenings, both ties and clasps (6.3.3), will also suggest that the fragment extended to the edge, or close to it, of the textblock. As with evidence of edge colour, the absence of evidence for fastenings should not be taken to indicate that the endleaf did not extend to the width of the textblock as not all covers had fastenings.

#### 6.3.6.2.3. Turn-in stains or impressions

A cover's turn-ins will usually extend along all three edges of the boards, though not necessarily to the same depth all around (Fig. 161). The absence of a turn-in stain or impression on the fore-edge of the manuscript fragment might suggest that the endleaf was narrower than the textblock – though it could also indicate that the cover did not have a turn-in or that there had been no cover (5.4.1).

#### 6.3.6.2.4. Corner evidence

As with trying to determine whether the fragment was the same height as the textblock (5.4.2.1), determining whether the fragment was the same width as the textblock can be done by observing how complete the evidence of the corners of the turn-ins is. If the fragment extended close to the corners of the textblock, and so also the cover, it will have a more extensive impression or stain of the corner shape of the turn-in from the inner surface of the cover. It will not extend fully to the corner as, due to the squares, the textblock will be shorter than the cover on all sides, but the fuller it is, the more likely it is to have been the same size as the textblock. Merton D.3.7 (3) (Fig. 163) shows the impression of the turn-ins extended almost to the corner (corner formation is discussed in Chapter 7). Lanhydrock 109 (Fig. 164) shows again quite a full impression of the corner of the turn-in – in addition to edge colour. It can also be seen here that the turn-in depth varies on all three edges.

#### 6.3.6.2.5. Summary

The presence of the evidence listed above on a manuscript-waste fragment used as an endleaf indicates that the textblock must have been as wide, or only slightly wider than, the fragment. The absence of this same evidence may be due to the fact that either the source binding did not have these features or that the fragment was not sufficiently wide to have been in contact with them. In these cases, the width of the textblock may be the same or greater than the width of the fragment but it is not possible to say how much greater. The fragment may also have contracted from its original size (Fig.162) and, if it has been conserved, it may also have been stretched.

### 6.3.6.2.6. Estimating the width of the sides from the manuscript-waste fragment

Having identified

i. the width of the leaf element of the manuscript-waste fragment and

ii. whether it extended to the full width of the textblock or whether that information is unclear,

the next step is to determine whether the fragment is an appropriate size for the candidate match being examined.

The width of the removed fragment, if the stub has been opened out, will be measured from the spine-fold to the edge. This will include the millimetres of the leaf that were curled in to the shoulder of the book, that is

> 'the part of the backed joints on the spine of a book which project beyond the thickness of the rest of the bookblock'[353]

In the region of approximately 2-5mm of a leaf of a textblock might be 'hidden' in the shoulder of the textblock. The initial and final quires, being at the extremities of the textblock, where the endleaves are situated and where the measurement of the textblock is usually taken, are particularly affected by this. If the fragment is a thin parchment then it may also have been pulled in to the sewing, causing it to crease – creases that may be removed if the fragment has been conserved. In the case where a cover has small squares, this may mean that the fragment looks to be the same size, or possibly even larger or only slightly smaller than the sides of that binding. This would, ordinarily, discount that volume since the source binding should be wider than the textblock and so the fragment. This was the case with Merton D.3.10 (13) and its source binding 73.a.11 (London & Antwerp, 1560-82) (see Table below). This volume had also been rebacked which might further interfere with the measurement. (This issue of the width of this fragment and its source binding are discussed further in 7.2.1.2).

| Shelfmark | Height mm | Width mm |
|---|---|---|
| Merton D.3.10 (13) | 145 | 103 |
| Textblock 73.a.11 | 147 | 99 (measurement from title page - not measured into shoulder) |
| Cover 73.a.11 | 154 | 101 |

**An endleaf fragment wider than the associated textblock.**

353 http://w3id.org/lob/concept/1595. The backing joints refers to the 'shaping of the edes of a bookblock to accommodate both the sewlling created by the sewing thread and the shape of the spine edges of the boards, http://w3id.org/lob/concept/1205.


**Fig. 165. The shoulder of the backing joint.**
Merton 73.a.11 (London & Antwerp. 1560-82).

**Fig. 166. The shoulder – where the bookblock curls in.**
Merton 73.a.11 (London & Antwerp, 1560-82), source binding for D.3.10 (13)

Given the factors that must be considered, estimating the exact measurement of the width of the sides of the binding from an endleaf manuscript-waste fragment cannot be more accurately given than that

> **the width of the sides of the binding will be greater than the width of the leaf element of a manuscript-waste fragment used as an endleaf. However, after a fragment has been removed from a binding, its dimensions may differ from when it was within the binding and it may now appear as the same size as the sides of the cover or even possibly wider.**

Despite the possible issues with calculating the width of the sides from the endleaf fragment, this feature was found to be a very effective way of eliminating bindings from the group of candidate matches generated by Stage One. Of the nine candidate matches identified by Stage One for Lanhydrock 19, 20, seven were discounted on the basis that they were too narrow. Candidate matches may also be discounted in Stage Two if they are significantly wider than the fragment.

With regard to fragments which were guards, there can be such a variety in their width that it is not possible to be more specific that to note that the width of the source binding will be greater than the width of the guard (Table 9). Guards can, on some occasions, be very wide - approximately 75% of the width of the textblock[354] the guards examined here, were approximately one third of the width of the source binding with one, Lanhydrock 51, being approximately half the width of its source binding. The extension element of comb spine linings will also be too narrow to provide any indication of the width of the source binding.

| Lanhydrock fragment | Guard Height mm | Guard Width mm | Source Binding | Place | Date | Binding Height mm | Binding Width mm |
|---|---|---|---|---|---|---|---|
| 104, 105 | 294 | 104 | Not Found | - | - | - | - |
| 51 | 135 | 55 | C.1.18 | Paris | 1512 | 152 | 103 |
| 29, 30 | 145 | 40 | *B.9.8 | Tübingen | 1611 | 162 | 100 |
| 134iii | 146 | 55 | *B.1.10 | Cologne | 1532 | 156 | 102 |
| 134ii, 139ii | 195 | 55 | C.3.29 | Milan & Paris | 1509, 1512 | 201 | 133 |

**Table 9: Width of guards versus width of source bindings.**
*Identified as possible matches, discussed further in 9.3.2 – not included as successful match

354 Pickwood, personal communication, 31/10/18.

### 6.3.7. Board material

The final feature considered here is the material of the boards of the source binding. This may be visible on the sides if the cover material has been damaged leaving the board underneath exposed. When it is not visible, the material might be suggested by the thickness and weight of the boards or features such as the bevelling of the sides, something which is associated with wooden boards (Fig. 147). In some cases, it is necessary to wait until Stage Three, when the inner surface of the board can be examined.

The two materials seen used for boards are  wood or paper. Wooden boards were usually of beech or oak and ranged from 4 to 20 mm in thickness.[355] Thinner boards called sca'boards 'a thin board most often split from blocks of wood'[356], usually of beech and between 1 and 3mm in thickness, are also found mainly on 'small-format books in cheap bindings, such as school books and inexpensive devotional literature from at least the mid-sixteenth century'.[357] (No examples were found in the course of this research.) Oak was more commonly used in northern European countries 'but especially in the Low Countries, Britain and France',[358] while beech was used in most of Europe but particularly Germany and Italy.[359]

Paper boards are laminates 'of two or more layers of sheet material'[360] which were adhered together in one of two ways. The first way used adhesive to create 'adhesive laminate boards'[361] which were also known as pasteboards.[362] Sheets of cartonnage, a heavy paper made 'from pulp with very long fibres, and heavily sized with gelatine'[363] (often used as a cover material in Italy[364]) could also be laminated in this way to create boards. The second method used no adhesive but involved laying sheets of still wet paper, cream or grey-coloured, on top of each other. These then bonded together (relying on hydrogen bonds between the layers), in a process referred to as 'couching'. These boards

355 http://w3id.org/lob/concept/3699
356 http://w3id.org/lob/concept/1559
357 http://w3id.org/lob/concept/1559
358 http://w3id.org/lob/concept/2976
359 http://w3id.org/lob/concept/2630
360 http://w3id.org/lob/concept/1418
361 http://w3id.org/lob/concept/1192
362 'This term has traditionally been used almost exclusively of boards made from paper, and within that category, has been used rather indiscriminately of different types of paper board and cannot be relied on to denote exclusively this type of board manufacture' http://w3id.org/lob/concept/1192; (Hobson, Humanists, Appendix 1).
363 http://w3id.org/lob/concept/1241
364 Pickwoad 1994, p.88.

were also known as millboard[365] and the surfaces of the boards, which were made on woven screens, may have the impression of those screens.[366] Boards were also made of laminates of pulp boards - that is a single thick sheet made from the pulping of trimmings off bookblock edges, waste paper and often mixed in with other discarded materials.[367]

Adhesive laminate paper boards were used in Spain in the fourteenth century and in Italy from the mid-fifteenth century[368] and became more widespread by the first quarter of the sixteenth century.[369] Couched laminate boards were introduced slightly later but still by the end of the fifteenth century and were in use across Europe in the sixteenth century. Pulp boards are typically British from 'the last quarter of the sixteenth century through to the third quarter of the seventeenth century'[370] and do not seem to have been used on the continent. All three types of paper board can be identified if the corners of the boards are exposed as the paper in each breaksdown in different ways: adhesive laminates layers cleanly separate, couched-laminates have evidence of fibres attached between the layers[371] and pulp boards divide into 'very uneven flake-like fragments of paper'.[372]

Both wooden and paper boards were in use during the date range of the bindings examined in this research (fifteenth to seventeenth centuries). The wooden boards are likely to be planks of oak or beech, rather than sca'boards, and the paper boards are more likely to be laminate, either adhesive or couched, rather than pulp. From the mid-sixteenth century, paper boards became common but did not fully replace wooden boards. The latter continued to be used in Germany into the seventeenth century while in England they were used for liturgical books and bibles into the eighteenth century.

Not all bindings had boards – sewn bookblocks, for example, will not have had boards and laced-case bindings also did not require boards though examples can be found with paper boards 'inserted into the sides of the cover after the cover has been attached to the bookblock'.[373]

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365 Because such boards were made in paper mills, they are also known as millboard, though this term has been so generally used of all paper boards in the literature that it has largely lost its specific meaning' http://w3id.org/lob/concept/1264
366 http://w3id.org/lob/concept/1264
367 http://w3id.org/lob/concept/1528
368 Hobson, 1989, p.252.
369 http://w3id.org/lob/concept/1192; Hobson, 1989, p.252.
370 http://w3id.org/lob/concept/1528
371 http://w3id.org/lob/concept/1264
372 http://w3id.org/lob/concept/1528
373 http://w3id.org/lob/concept/1414

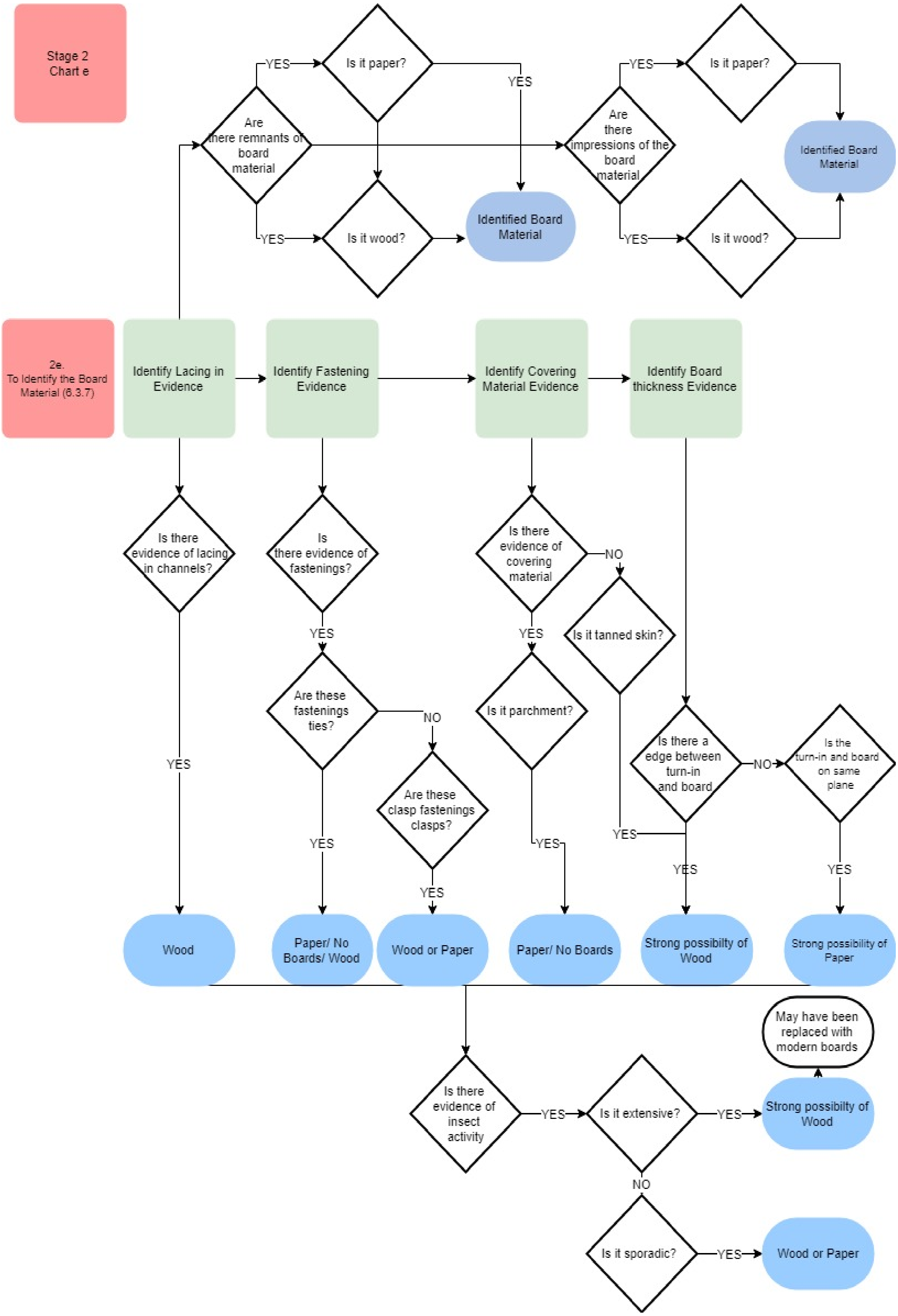



**Chart 2e. To identify the board material**

#### 6.3.7.1. Evidence of the board material on manuscript-waste fragments

Evidence for the board material may be found on the manuscript fragment in two forms

i. remnants (either physical or as an impression) of the material
ii. evidence of other features which are associated with a particular board material

##### 6.3.7.1.1. Remnants of the board material

If the manuscript-waste had been pasted to a board, whether wooden or paper, pieces of the material may remain attached to the fragment after it had been removed. However, remnants of paper could also have come from the textblock - the endleaves Lanhydrock 96i, ii had small pieces of paper on both sides of the fragments (Fig. 168).

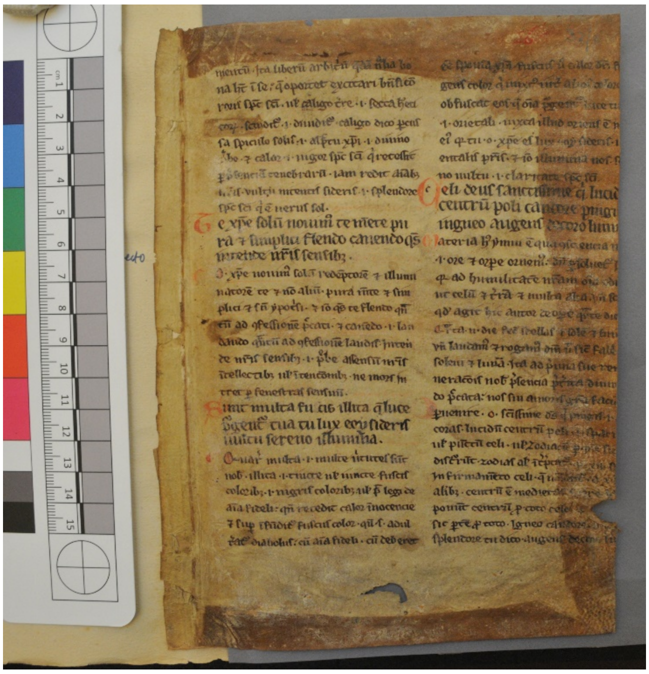
The board material may also leave an impression in the manuscript fragment, particularly if the endleaf had been pasted down. This might be an image of the grain of the wood (Fig. 148) or, in the case of paper boards, chain lines or the impression of the woven screen on which they were made (Fig. 169).

##### 6.3.7.1.2. Features associated with specific board materials

It may be possible to identify the board material based on the evidence for other binding features which are associated with a particular type of board.

###### 6.3.7.1.2.1. Lacing-in channels

A clear indication of the board material is the presence of features that are necessary for that particular material, as opposed to any other, to function as a book board. An indicative feature for wooden boards might be lacing-in channels which are cut into the inner surface of the board to accommodate the lacing-in slips which attach the bookblock to the board (5.4.3.4). With paper boards, these channels are not necessary as the lacing-in slips can be laced directly through holes punched in the boards - they are then usually hammered flat afterwards. The presence of evidence for lacing-in channels will then indicate that the board of the source binding was made of wood. This evidence takes the form of impressions of the edges of the lacing-in channels perpendicular to the sewing holes and may be found on endleaves, guards and comb spine linings.



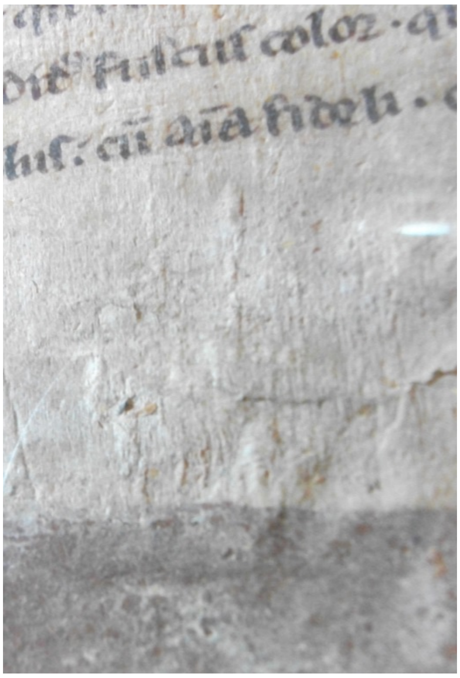
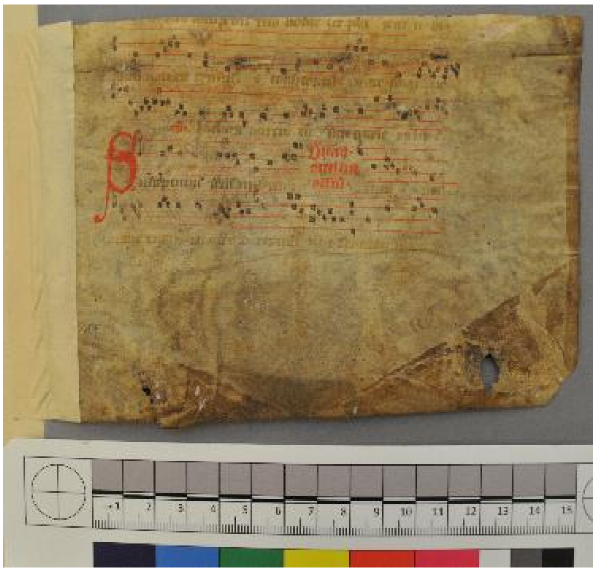


**Fig. 167. Wood flecks on the fragment.**
Lanhydrock 32ii (and detail on the right).



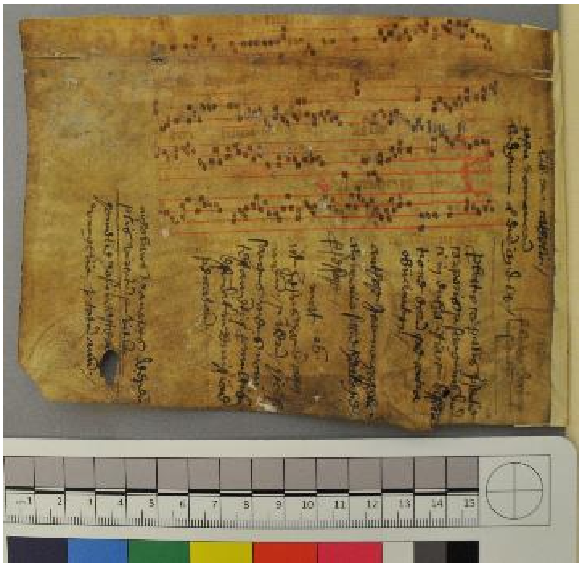


**Fig. 168. Paper on the fragment.**
Lanhydrock 96ii, outer face and inner face of this fragment, both with flecks of paper.

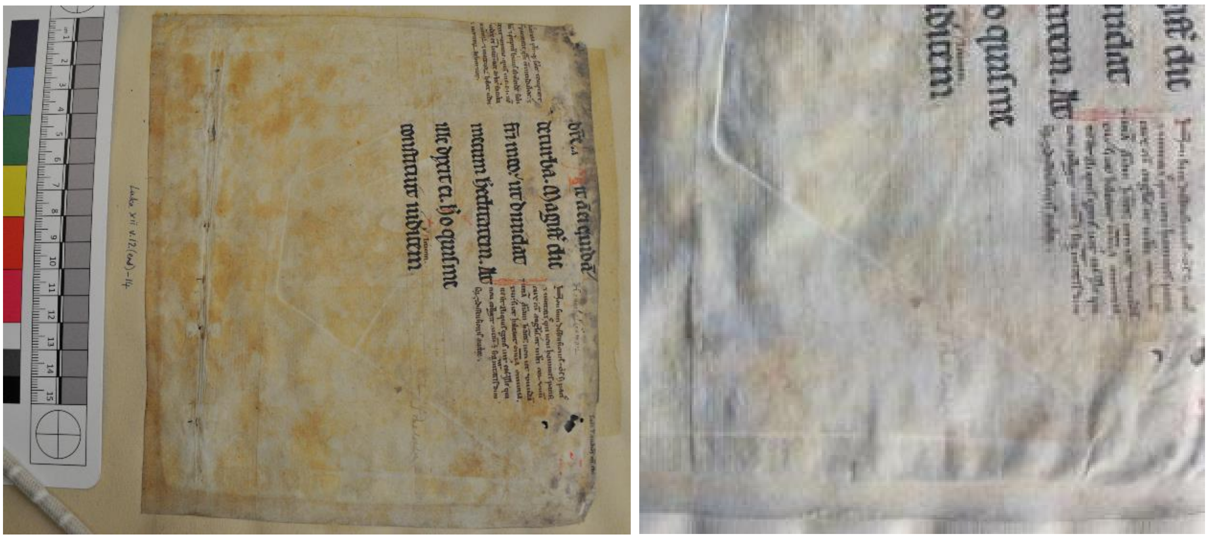


**Fig. 169. Chain lines on the fragment.**
Lanhydrock 8. The chain lines may indicate either the board, in which case the source binding for this fragment was a parchment-covered laced-case binding with boards inserted, or the textblock. An impression from the fore-edge flap can also be seen here.

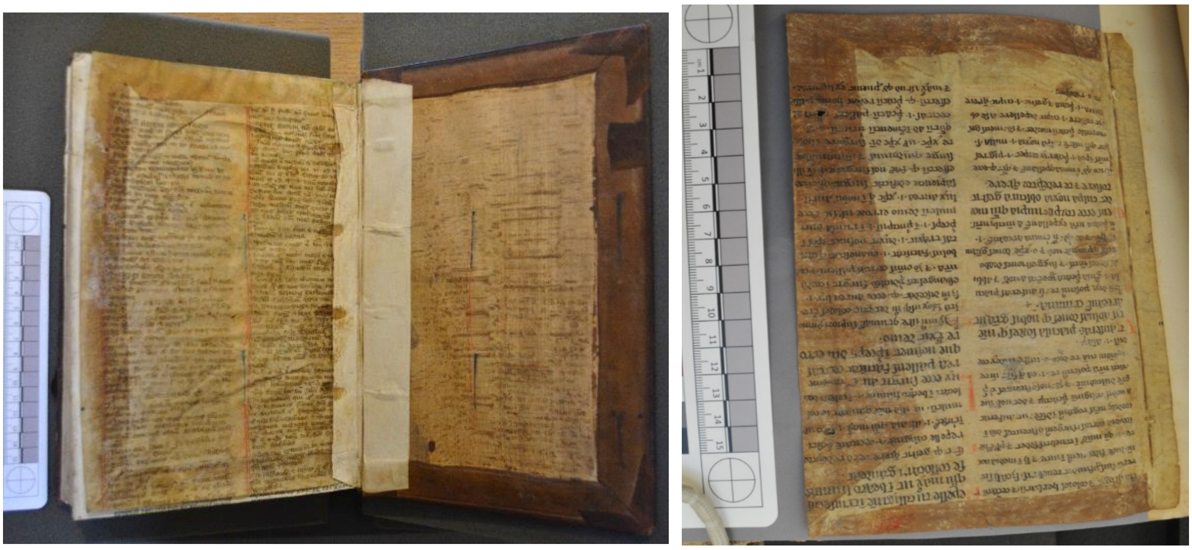


**Fig. 170. Ridge of trimming line and butt-mitred corner.**
Merton 46.c.14 (Basel, 1543), right board – the thickness of the leather can be seen where the turn-in has been cut back.
Lanhydrock 32i. A ridge can be seen in the turn-in stain. The turn-in was trimmed back to this point and the ridge marks the 'step' from the edge of the turn-in to the board. This 'step' indicates the thickness of the covering material at this point.
(See Fig. 179 for this fragment and the inner surface of the board it faced.)

### 6.3.7.1.2.2. Other features

Other features which might be *associated* with wooden boards, but are not exclusively used with wooden boards, and for which there might be evidence on a manuscript waste fragment are

i. clasp fastenings as opposed to ties.
ii. thick covering material – visible in the turn-in stain when the turn-in has been trimmed back and a ridge between the cover material and the board beneath is visible (Fig. 150).
iii. particular ways of forming a corner such as tongued mitred where

> 'the two turn-ins that meet at a corner are trimmed to leave a space between them which is filled by a strip, or tongue, of the covering skin which is pulled over the corner to lie between them… The tongued mitre was developed to allow relatively thick covering skins to be drawn neatly over the corners of thick wooden boards… Their western-European use continued until the mid-sixteenth century, when they are found on books with both paper and wooden boards'[374] (Fig. 171).

iv. wormholes. Worm evidence in a manuscript-waste fragment, however, could relate to the source manuscript or to the textblock. Severe worming, if it had been associated with the boards, could also indicate that the boards, may have been replaced with modern boards.[375] (Evidence of worming is discussed further in Stage Three.)

These features, if found on a manuscript-waste fragment, might suggest that the source binding had wooden boards but this has to be verified in Stage Three (Chapter 7).

[374] http://w3id.org/lob/concept/1674
[375] Ker, 2004 2nd ed., p.xv.

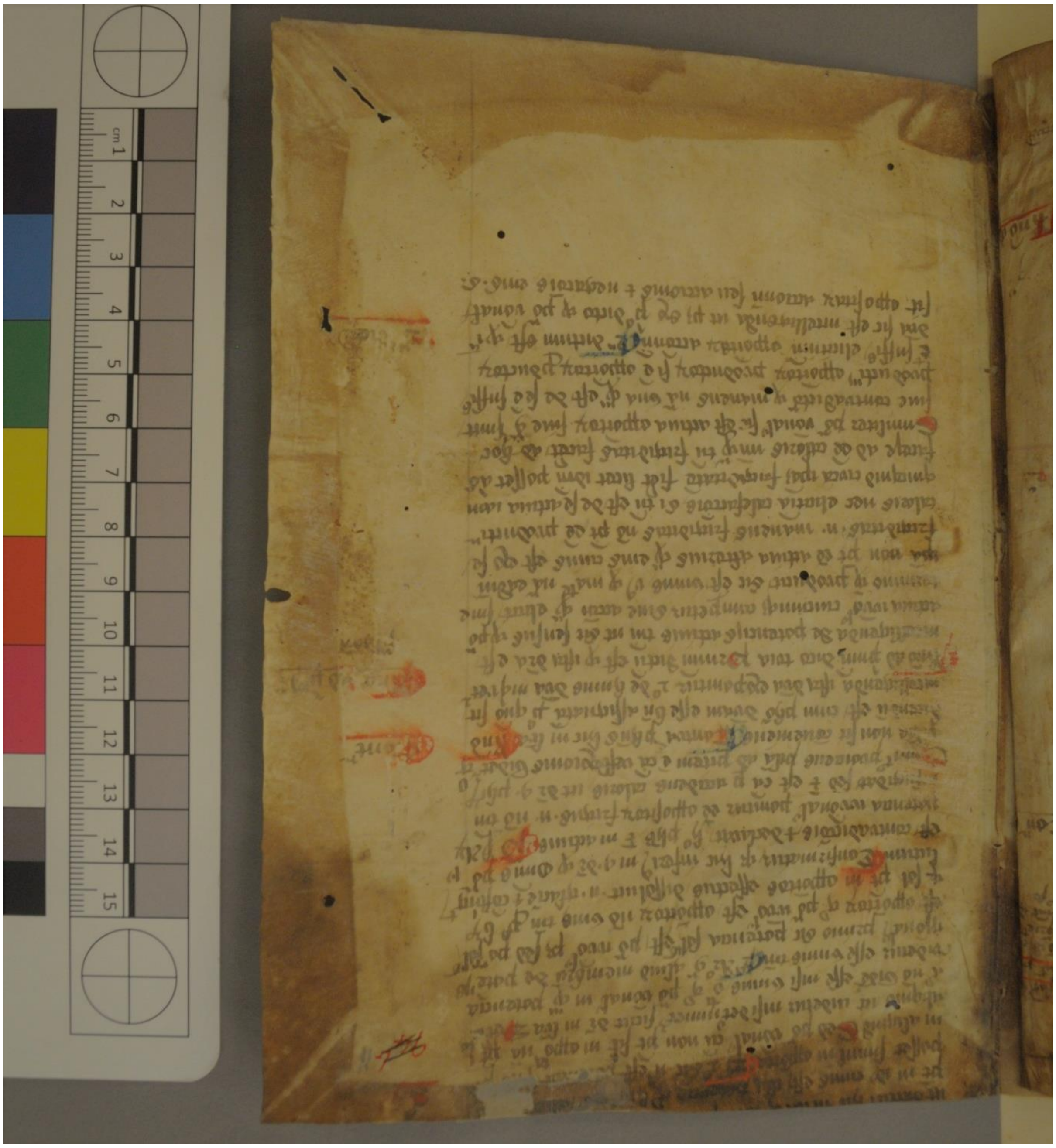


**Fig. 171. Evidence for a wooden board: tongued corners, lacing in channels, clasp fastenings, and worm holes.**
Lanhydrock 116ii outer face of right endleaf from C.3.19 (Paris, 1518).

### 6.3.7.2. Changes to the board material

It should be remembered that the evidence for the board material visible on the fragment is evidence for the board material that was present when the fragment was still within the source binding. Book boards could be replaced as part of the repair of books.[376] The fact that the evidence on the fragments indicates that the board was of wood does not mean that the board of the source binding will still be wood today. A binding should not be discounted as a candidate match on the basis that it has paper boards while the evidence from the manuscript fragment indicates a wooden board - the current boards may be a later repair. It can be possible to see on the sides of the binding when boards have been replaced as the new board may be visible through the wormholes or fastenings' holes (both tie and clasp) in the covering material (Fig. 138).

As stated earlier, the board material is only visible on the sides of the binding when there has been some damage to the cover material exposing the board beneath (or through the holes, as mentioned above), or when the boards have been bevelled. The thickness and weight of the boards might also be used as an indication of the material. However, boards which were replaced in the late nineteenth and early twentieth century may have modern paper boards which can be heavier and more solid than the early paper boards.

In many cases, the identification of the board material has to be verified in Stage Three of the process, that is, when the inner surface of the boards is examined (7.2.2.1).

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376 Ker, 2004 2nd ed., p.xv

## 6.4. The process of identifying candidate matches from the evidence on manuscript-waste fragments

The preceding parts of this chapter identified the features on the sides of the binding (6.2) and where evidence of these features might be seen on a manuscript waste fragment (6.3). This section now looks at how Stage Two functions. Stage One results in a binding being removed from a shelf for further examination. Firstly, the height and the distribution of the sewing supports is checked to ensure that it is in fact a match. Working at a height or examining spine features at an angle can distort the proportions and errors can be made in the selection (5.8.2). Therefore, before proceeding with Stage Two, it should be confirmed that the binding selected is in fact a true match. After confirming this, the exterior of the sides of the binding are checked to determine whether or not the book can be discounted and returned to the shelf or pass to Stage Three of the process.

As discussed earlier, in addition to the covering material and the height of the binding, Stage Two examines the following features on the sides of the binding

i. fastenings.
ii. furniture
iii. edge colour
iv. width of the Sides
v. board material

Endleaves, on account of their width, will have been in contact with, and therefore have evidence of, a larger portion of the inner surface of the board or cover of the source binding than the other fragment types (see Table 10). Guards and comb spine linings will only have evidence for covering material, height of the sides and possibly board material and edge colour. Fragments which were covers will have evidence of the height, and possibly width, of the sides and it will be understood that the associated textblock will be in a later binding (6.6).

| | **Covering Material** | **Height of the Sides** | **Fastenings** | **Furniture** | **Edge Colour** | **Width of the Sides** | **Board Material** |
|---|---|---|---|---|---|---|---|
| **Endleaves** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Guard** | ✓ | ✓ | X | X | Possibly | X | Possibly |
| **Comb spine lining** | ✓ | ✓ | X | X | Possibly | X | Possibly |
| **Cover** | New cover | ✓ | X | X | X | ✓ | X |

**Table 10. Stage Two binding features visible on the four fragment types**

The width of the sides proved to be the most immediately visible indicator that a candidate match identified by Stage One should be eliminated from the search. In cases where the fragment was either the same size or not significantly larger than the sides of the cover, it will be necessary to examine this again in Stage Three of the process. It should also be noted if the binding has been repaired as the joints might also have been altered and this will impact on the assessment as to whether a fragment is too wide for a binding. Bindings should only be discounted at this stage if there is a significant difference in the width of the fragment versus that of the sides. If the binding has evidence of features such as fastenings, furniture and edge colour and the fragment does not, the binding should not be discounted (6.3.3.2.2.). However, if the fragment has evidence of these features and the binding does not, then the binding should be eliminated from the search – unless it is a new cover.

### 6.5. Changes to the record through repair

When a book has been re-covered there will be no evidence of fastenings or furniture on the covering material. However, edge colour will still be a relevant diagnostic feature as will the width of the sides. In the cases of the endleaves Clare 2di and ii, 4di and ii, and 2ei and 2eii, whose source bindings had all been re-covered with new boards, these new covers lacked much of the evidence normally visible on the sides. As a result, Stage Three of the process was more important for the identification of the source binding as there was too little to observe and compare in Stage Two. In the case, though, of 95.jj.8 vol. II (Basel, 1571), the source binding for D.3.1 (1), while the cover was no longer present, the boards had been left exposed and the position of the fastenings, corner pieces and chains were visible (Fig 145). When boards have been replaced but the cover retained, evidence for ties may be less visible as there will be holes in the cover but not in the boards.

Two cases were found where fore-edge ties had been used as a repair. Merton D.3.1.(1) and its source binding 95.jj.8 vol. II (Basel, 1571) and Lanhydrock F.1.13 (London, 1581), which was selected, but then rejected as a candidate match for one of the Lanhydrock fragments (Fig. 172) . Merton D.3.1 (1) has evidence of this tie which serves as a reminder that bindings could be repaired either while the fragment was still in situ or after it had been removed.

An envelope flap is another feature which may have been removed from a binding as they could be cut off. The parchment, though, will be damaged along the fore-edge. Lanhydrock 8 had an impression of an envelope flap – the source binding, however, was not found (Fig. 180).

**Fig. 172. A binding with paper boards, fore-edge clasps and a later tie.**
Lanhydrock F.1.13 (London, 1581), right and left boards.

## 6.6. When the manuscript-waste fragment is a cover

The bookblock associated with fragments which were full covers will, of course, have a new cover. If the fragment is a laced-case cover it will have evidence of the sewing (5.6). If the associated bookblock has not been re-sewn, and so has retained the same sewing support distribution, then the sewing evidence should match and this will be identified in Stage One. (Stitched through a cover binding do not have sewing supports (4.5.1).) The bookblock may also be selected based on the height and width of the spine, though the latter can be problematic (5.6). When it comes to Stage Two, side features such as ties will not be relevant – and other sides' features such as title frames, corners or clasps would not be present on a laced-case binding. It is unlikely that there would be edge colour on the fragment as usually the edges were coloured before the cover was attached, though in some cases later owners may have coloured the edges after covering. The width of the cover is problematic as it may be larger (if it has squares) or the same size as the bookblock. In the cases, then, of fragments which were used as covers, it is unlikely that it will be possible to securely eliminate any candidate match generated by Stage One and it should instead be examined in Stage Three.

## 6.7. End of Stage Two

> **Having compared the side features on the fragment with those on the candidate match identified by Stage One of the process, and found it to be a match, the binding then proceeds to Stage Three of the process.**

# Chapter 7

## Stage Three: The Inner Surface of the Boards and the Textblock

## 7.1. Overview

In Stage Three the binding is examined to see whether its features also matche the evidence on the fragment when the book is open. What is being compared here is the evidence that can be seen on

i. the outer face of the fragment and the inner surface of the cover of the binding.
ii. the inner face of the fragment and the textblock.

While Stage One and Two involved interpreting the evidence on the fragment and identifying how this might relate to the features on the spine (Stage One) and on the sides (Stage Two), Stage Three is - after confirming the measurements of the height and the width - a more straightforward process of matching the evidence. In this stage, the shapes and position of features on the fragment (excluding those related to its source manuscript) are matched to those on the adjacent inner surface of the cover or on the textblock. As there will be more evidence on fragments which were endleaves, these will be considered first. Guards and comb spine linings will be addressed where relevant in the text as will covers, where the evidence for consideration will only be visible in the textblock.

When the inner surface of the board is not covered by a pastedown, as in many of the examples in Merton, the binding features are immediately visible. In other cases, a leaf - either contemporary with the textblock or a later addition, and possibly part of the repair of the binding - may have been pasted down on to the inner surface of the board. The thickness of this leaf can affect whether features on the board are still visible through it or not, as seen in Westminster (3.2.2). When the boards of the binding have been replaced, it may be necessary to rely on evidence of their features which are visible in the textblock in the form of impressions or stains on either a contemporary endleaf or the title page.

## 7.2. Corroborating the evidence

When corroborating the evidence on the manuscript-waste fragment with what can be seen in the binding and textblock when the book has been opened, the following evidence is being compared

i. the proportions of the fragment to the textblock (7.2.1).
ii. the evidence on the fragment relating to the materials and features of the binding to the binding itself (7.2.2).
iii. the evidence on the fragment relating to non-binding features such as staining *etc*. (7.2.3)

### 7.2.1. Corroborating the Proportions of the Fragment

#### 7.2.1.1. Height of the fragment and the textblock

In the previous stages the height of the fragment was used to determine an estimated height for the spine of the binding (5.4.2) and the width of the sides of the cover (6.3.6) which in both cases would be larger than the textblock, and so the fragment. In Stage Three the height of the fragment is checked against the textblock.

#### 7.2.1.2. Width of the fragment and the textblock[377]

In Stage Two it was noted that candidate matches could be eliminated when the sides of the cover were significantly wider than the endleaf-element (that is, the leaf minus the stub) of the endleaf fragment (6.3.6.2.6). It was also noted, though, that bindings where the sides were *the same width* as the fragment should not be discounted at this stage. This is despite the fact that the sides of the cover should be wider than the fragment as they should be wider than the textblock (on account of the fore-edge square). However, the shape of the shoulder of the backing joint (Fig. 173) and how much of the endleaf might have been creased within that area is not visible in Stage Two and so the width of the fragment is also examined here in Stage Three.

It should be remembered that the shoulder and backing joint may have been altered during repairs or may be difficult to access particularly if new endleaves have been tipped on, that is adhered by adhesive only, to the bookblock. However, the width of the fragment can also be compared against the inner surface of the board. On occasion it is possible to see a line in the turn-in where the binder ran a bone folder around the edge of the textblock.[378] This line marks the point where the textblock, and so the endleaf, sat against the turn-in (Fig. 174). By aligning the fragment against this mark, if it is present, it can be possible to see whether the fragment extended to the inner edge of the board (next to the textblock), something which would indicate that it was the right width.

377 As noted in 1.2., the bookblock is the textblock plus endleaves. In many, but not all, cases where the source binding has been repaired, the textblock will have been given new endleaves. Here the term textblock is being used irrespective of whether the volume has new endleaves or not as this is what the width of the manuscript-waste fragments related to originally.

378 Pickwoad, personal communication, 9/11/18.

**Fig. 173. The shoulder of the backing joint.**
Merton 73.a.11 (London & Antwerp, 1560-82), source binding for D.3.10 (13).

**Fig. 174. The line where the fragment was positioned, marked on the turn-in.**
Merton 54.b.12 (Lyon, 1542). The edge ruled in the turn in can be seen in the covering material at the tail edge.
The offset from the fragment can be seen still on the covering material but not on the boards which have been cleaned. (The fragment for this binding was not one of those selected for the case study.)
The paper over the lacing-in channels is part of the repair of the binding.

This marking line on the turn-in proved useful when determining whether the endleaf fragment Merton D.3.10 (13) could have fitted in 73.a.11 (London & Antwerp, 1560-1582). As noted in Chapter 6, this volume was almost discounted as a candidate match as the fragment (width: 103mm) was wider than the board (width: 101mm). In a small book (height of binding: 154mm) the difference of 8mm in the width of the fragment to the boards might be considered too great a difference to be accounted for by the shoulder and backing joints and this volume could easily have been discounted. However, only three candidate matches were identified for this fragment, of which only two had red edges matching the evidence on the fragment. One of these, (74.e.15: Arnhem, 1607), was discounted on the basis that it was even narrower (90mm), leaving only 73.a.11 for consideration. When this book was opened (as part of Stage Three) there were other features which matched very closely to the fragment and this prompted a further consideration of the width of the book in relation to the fragment.

A drawing of the fragment (the original was pasted into a fascicule) was compared against the textblock (width: 99mm) and was clearly too wide (Fig. 175). However, when the same drawing was lined up against the lines on the leather of the turn-ins, it fitted (Fig. 176). It was also clear that the red edge-stain encroached on both the fragment and the *in situ* blank endleaf in the same place (Fig. 176).

Why the fragment seems not to fit when lined up against the textblock but does fit when lined up against the board may be due to a number of factors:

i. The tearing along the spine-fold of the fragment (Fig. 175) might indicate that when the leaf was being sewn in, it was pulled in quite tightly to the rest of the textblock causing the fragment to crease parallel the joint.
ii. Being of such light weight, the fragment could easily 'curl' into the shoulder area.
iii. The fragment has been conserved and creases along the spine-fold which might indicate how it was positioned into the shoulder may have been smoothed out, altering the dimensions of the parchment.
iv. The volume has been rebacked and this might have involved reshaping the spine and also the shoulder and backing joint.
v. The drawing is on a heavy paper. This is helpful when comparing the fragment against the spines on a shelf as it can stand up against spines but was difficult to manipulate into the shoulder area - unlike the fragment, which is a light-weight parchment.

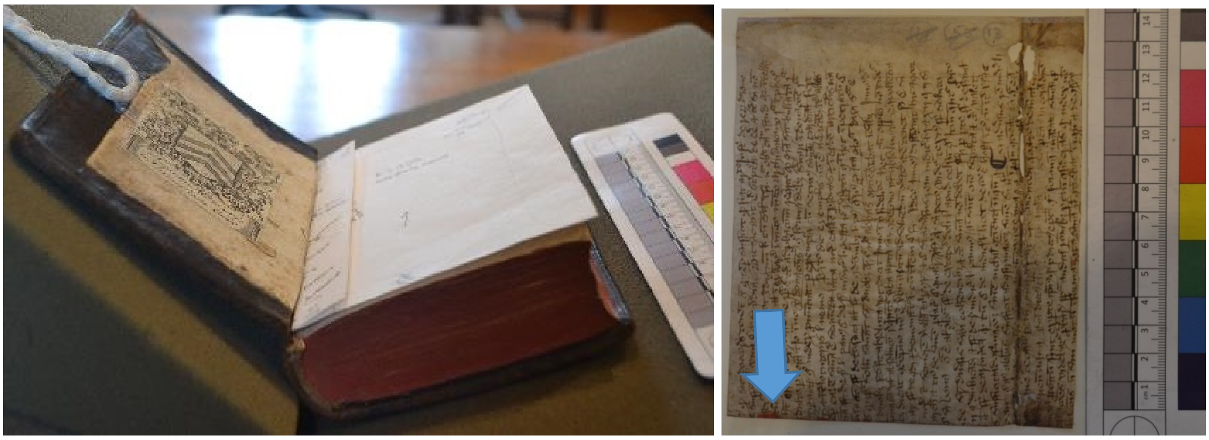


**Fig. 175.The drawing of the fragment overhanging the edge of the textblock of the source binding.**
Merton 73.a.11 (London & Antwerp, 1560-82) and drawing of D.3.10 (13)
Merton D.3.10 (13) Inner face with evidence of the red visible on the tail edge.

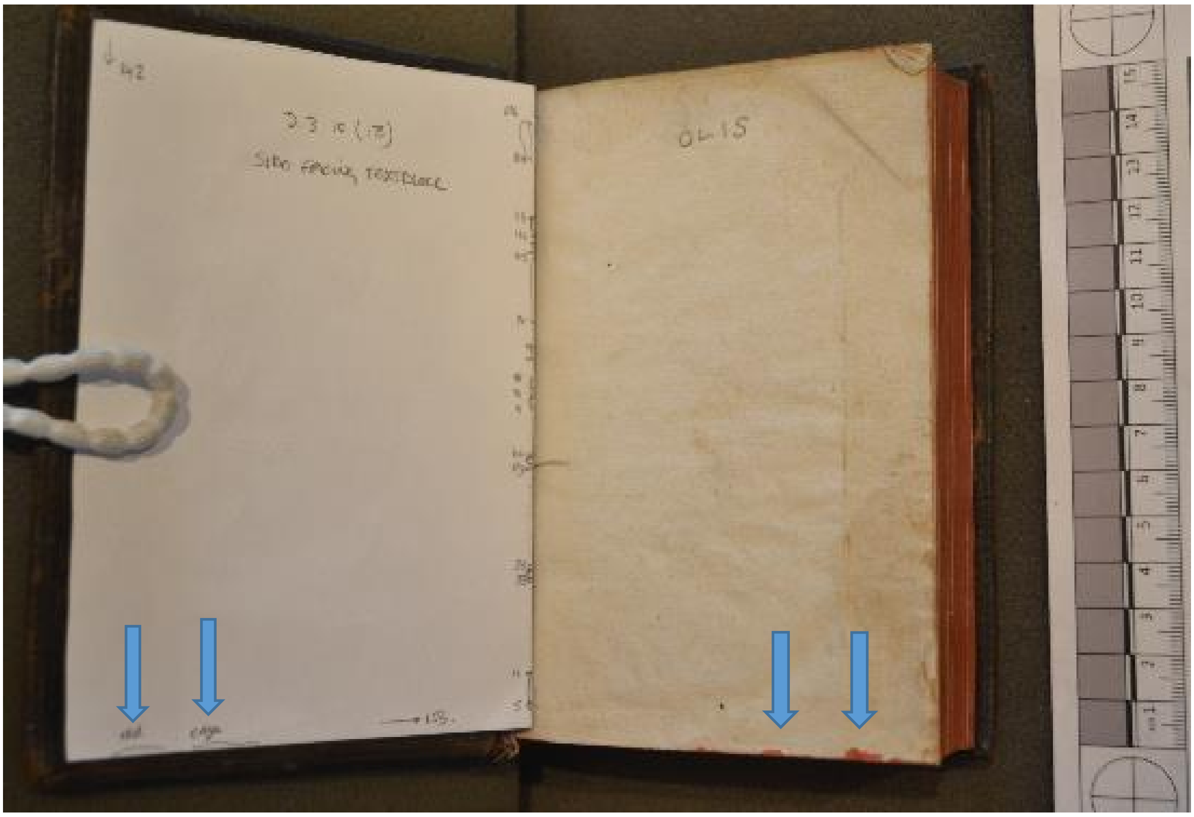


**Fig. 176. Matching the drawing against line on the turn-in.**
Also noting where colour encroaches at the same point on the fragment and the bookblock.
Merton 73.a.11 (London & Antwerp, 1560-82) and drawing of D.3.10 (13).

Comparing the width of the fragment against a binding can also be problematic when working with a parchment-covered laced-case binding. The practice of pasting down endleaves in these bindings, often done as part of a repair, has the effect of pulling the textblock further into the cover and restricting the opening of the textblock. This was the case with the endleaves Lanhydrock 44, 45 (width: 157mm) which seemed too wide for their source binding A.22.2 (textblock width: 160mm). Creases and ink stains on the endleaves matching those on the adjacent blank endleaf, however, confirmed the association between the two (Fig. 177, 184, 185).

**7.2.2. Corroborating the materials and features of the binding**

In the second part of Stage Three, the materials used in the binding are compared with the evidence on the fragment. However, it should be remembered that the binding evidence on the fragment is related to the binding as it was when the fragment was still *in situ* and the binding may have been altered since then. This section combines a discussion of the features that can be seen when the book has been opened with how those same features may have been altered through repair. The following are considered:

i. board material
ii. sewing support
iii. endband slips
iv. ties, clasps, chain sites, title plates, corner pieces
v. edge Colour
vi. turn-in shape

**7.2.2.1. Board material**

Evidence of the board material, both wood and paper, on the fragment was discussed in 6.3.7. There it was noted that while on occasion the board material might be visible on the sides of the binding or can be suggested by some features, in many cases it is necessary to wait until Stage Three to verify this. As mentioned in 7.1., the inner surface of the board may be exposed or may have been covered by a pasted down endleaf. If the inner surface of the board has been left uncovered, the board material will be visible. However, the surfaces of wood and paper boards are sufficiently different to make them easy to recognise even when covered (Fig. 178). In all cases examined, when wooden boards were replaced, they were replaced by paper boards. The covering material which had been over the original boards may either have been retained (6.3.7.2; Fig. 138; p.29 note 125) or replaced.

**Fig. 177. Parchment-covered laced-case binding with new endleaves pasted down.**
Lanhydrock A.22.2 (Oxford, 1582), source binding for endleaves, Lanhydrock 44, 45. (See also Fig. 184, 185.)

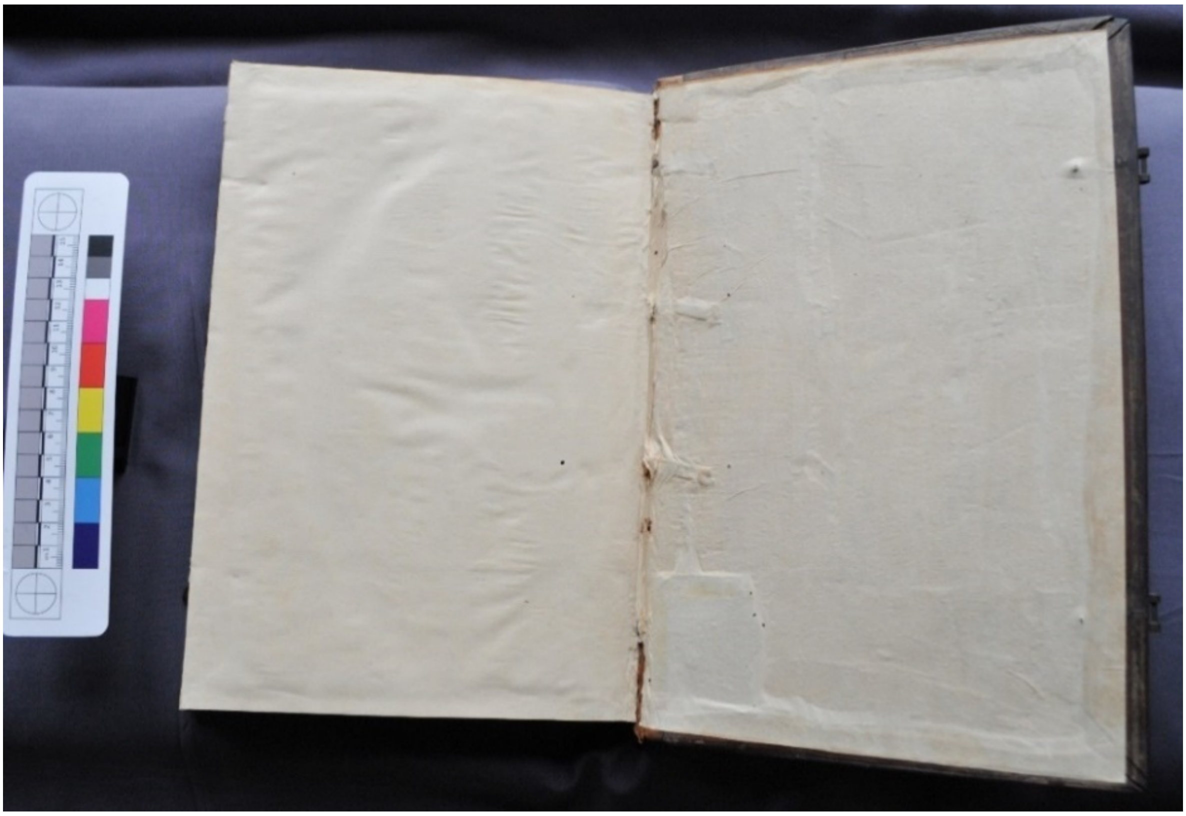


**Fig. 178. Wooden board visible under the pasted down endleaf**.
Lanhydrock D.11.11 (Paris, 1515), the source binding for Lanhydrock 64.

#### 7.2.2.2. Sewing Supports

Evidence of the sewing supports on the fragment was discussed in Stage One in relation to how the position of the sewing supports can be identified (5.4.3). The lacing-in evidence, visible on the inner surface of the board, transferred to the endleaf fragments in the form of

i. staining from the laced-in slip.
ii. impression of the lace-in slip.
iii. impression of the lacing-in channel.
iv. pieces of the support material remaining adhered to the fragment.

In comparing the evidence on the fragment with what is visible on the inner surface of the covers and the textblock, the following are examined:

i. the material of the sewing support.
ii. its shape.
iii. its position.
iv. conflicting evidence due to repair.
v. conflicting evidence due to the use of recycled materials.
vi. absence of evidence.

##### 7.2.2.2.1. The material of the sewing support

The material of the supports can be identified through the presence (in the case of tanned skin supports) or absence (in the case of alum-tawed or cord supports) of staining. Alum-tawed supports leave no stain even when the material has been toned. (Coloured alum skin is taken as evidence of the use of recycled material.) They can, however, in common with tanned skin supports, leave a clear impression. The absence of a stain from the supports may also be due to another component of the endleaf structure acting as a barrier and inhibiting the transfer of the stain to a fragment.

It is worth noting that all the supports of one binding do not have to be of the same material and not all supports which are visible on the spine and for which there is a sewing hole may be laced in to the board (select lacing).[379] Lanhydrock 51, for example, has staining evidence for the head and tail supports but the middle supports (for which there are sewing holes) have left no stain (Fig. 107). This may be explained as either being an example of select lacing or that the middle supports are of alum-tawed skin (5.4.3.4).

[379] http://w3id.org/lob/concept/1571

**7.2.2.2.2. The shape of the sewing support**

Both tanned-skin and alum-tawed skin supports can leave an impression on the fragment. The evidence for the support on the fragment will be, in the case of an inboard binding, the portion of that slip that had been laced into the board (Fig. 179) but, in the case of a laced-case binding, it will be the whole slip that had been laced in to the cover (Fig. 181). The tanned-skin supports in the source binding for Lanhydrock 32i, ii, A.21.4 (Lyon, 1517) are raised above the level of the boards and have left both an impression and stain on the fragment and an impression on the adjacent leaves in the textblock. (Fig. 179). Support impressions can vary in shape. Lanhydrock 7 and 8, show evidence of very narrow sewing supports which are of a non-staining material (Fig. 180). (The source binding was not identified so this cannot be corroborated.) The alum-tawed supports visible on Lanhydrock C.3.29 (Milan, 1509 & Paris 1512) and its associated fragments 134ii & 139ii are wider while a candidate match for the same fragments A.14.3, (Oxford, 1596) also had alum-tawed supports which were long, narrow and sharp-ended (Fig. 181).

**7.2.2.2.3. The position of the lace-in slips**

Lacing-in holes and channels have been previously examined as evidence of the distribution of the sewing supports (5.4.3.4) and as a way of identifying the board material (where lacing-in channels are indicative of a wooden board, 6.3.7.1.2.1). Here, the evidence on the fragments for the *position* of the lacing-in holes or channels is being compared to the candidate source bindings.

The direction of the lacing-in holes in bindings can vary. They can be angled 'either upwards or downwards, and will often be found angled in one direction on one side and in the other on the other side'.[380] The lacing in holes can also be arranged parallel[381] or perpendicular (Fig. 179, 180)[382] to the joints of the bookblock. The edge of the lacing-in channels in wooden board may leave either a stain or an impression on the fragment (Fig. 183). The latter may be in the form of two parallel lines. However, sometimes the evidence can be deceptive. The lacing impressions on the pair of guards (Lanhydrock 134ii and 139ii) were taken, in error, to be evidence of the edges of lacing-in channels. In fact, the source binding turned out to be a laced case binding and the impression was of the sewing supports (Fig. 182).

380 http://w3id.org/lob/concept/1199
381 http://w3id.org/lob/concept/1484
382 http://w3id.org/lob/concept/1499

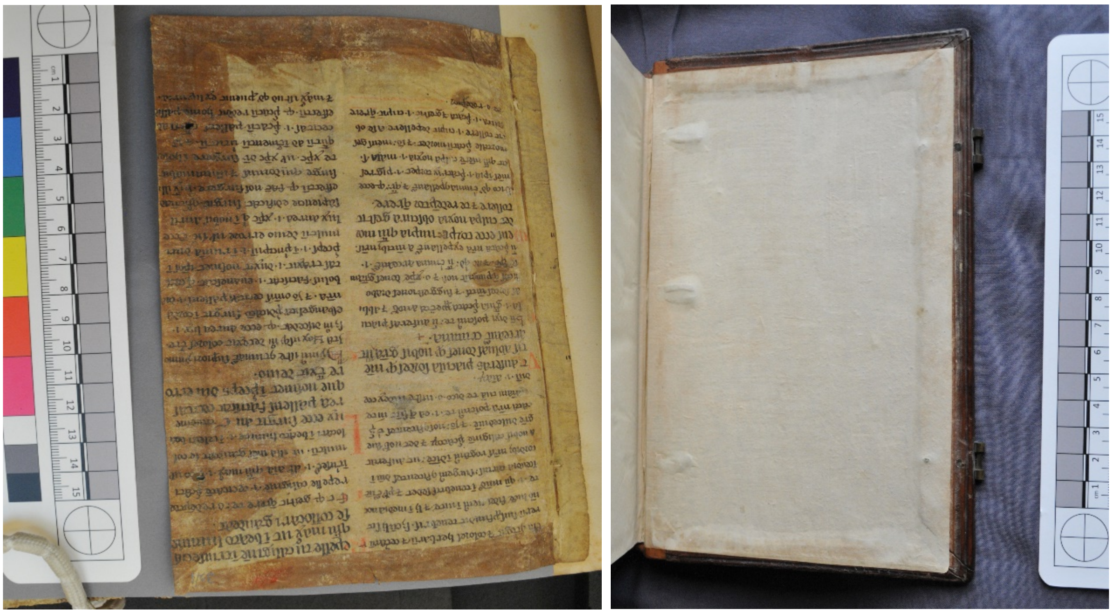


**Fig. 179. The supports are raised above the boards.**
The supports have left clear impressions and staining in the endleaf.
Lanhydrock 32i and the right board of the source binding A.21.4 (Lyon, 1517).

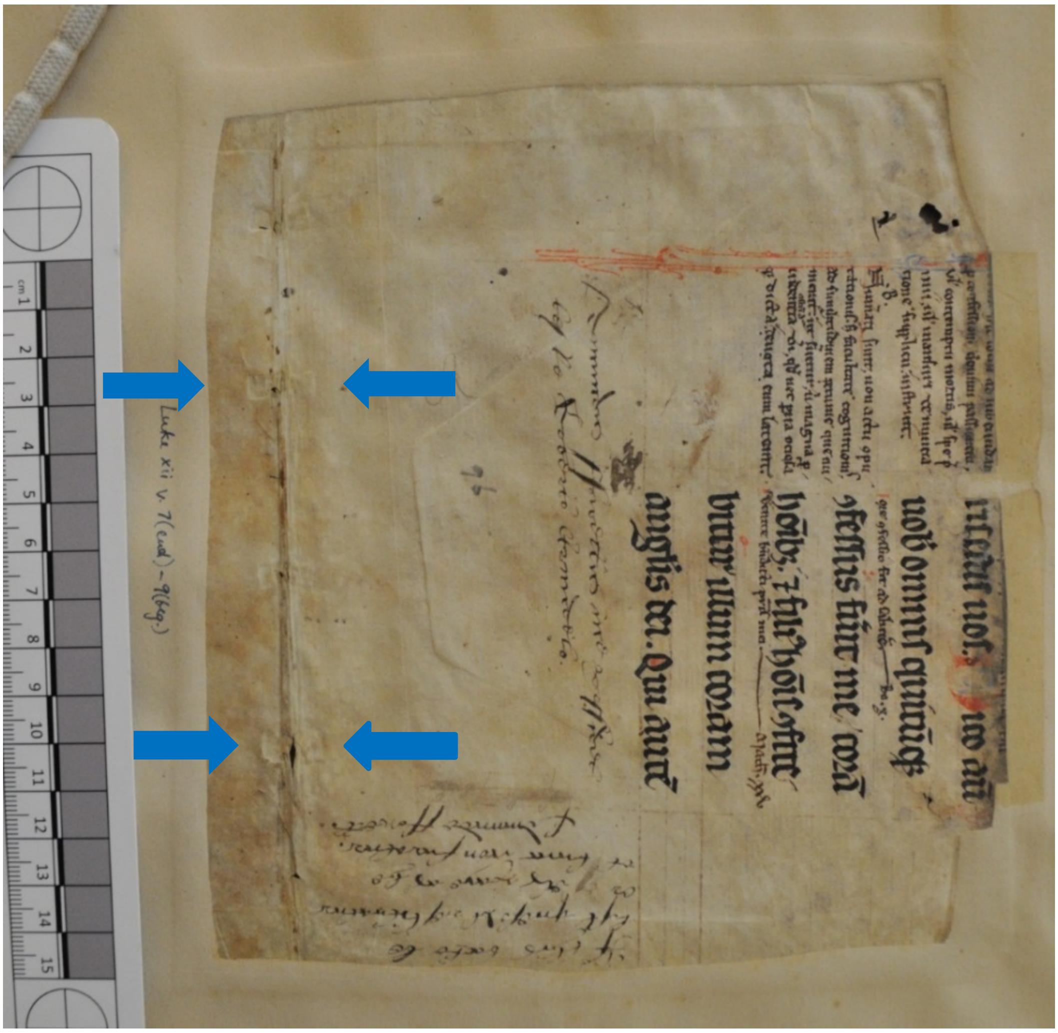


**Fig. 180. Support material leaving a sharp impression.**
Lanhydrock 8 (source binding not found).

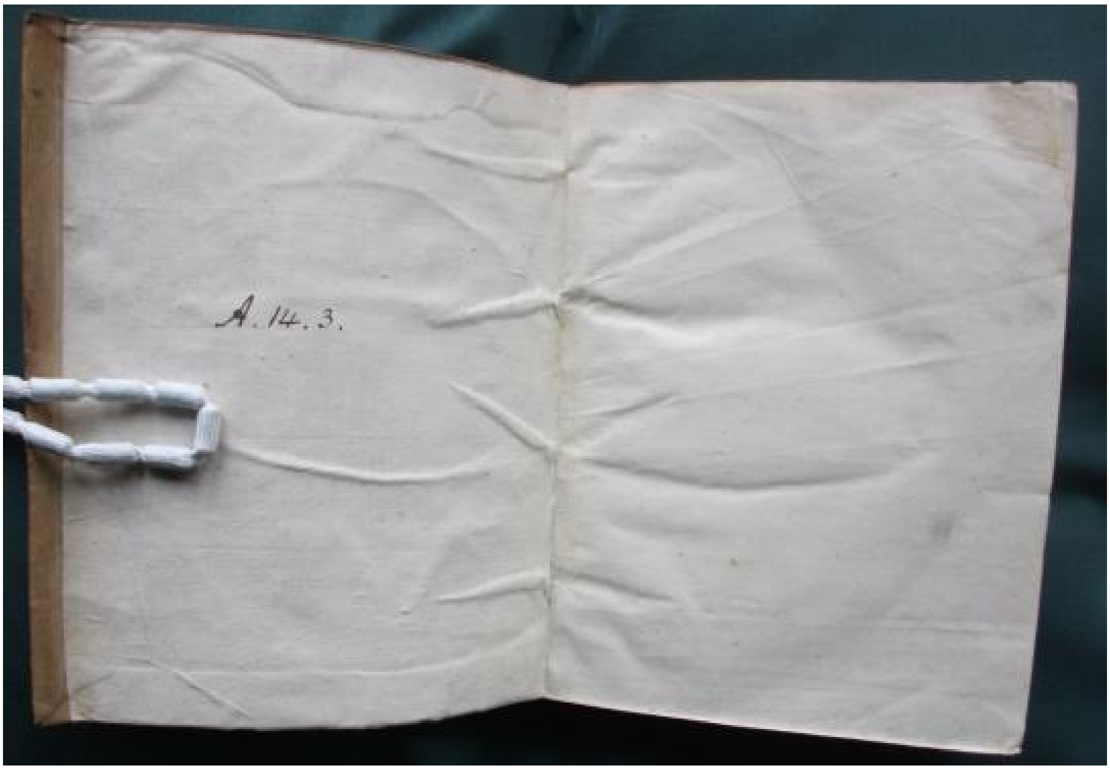



**Fig. 181. Alum-tawed supports with whole slip visible.**
Lanhydrock A.14.3 (Oxford, 1596), candidate match for Lanhydrock 134 ii and 139ii but discounted.

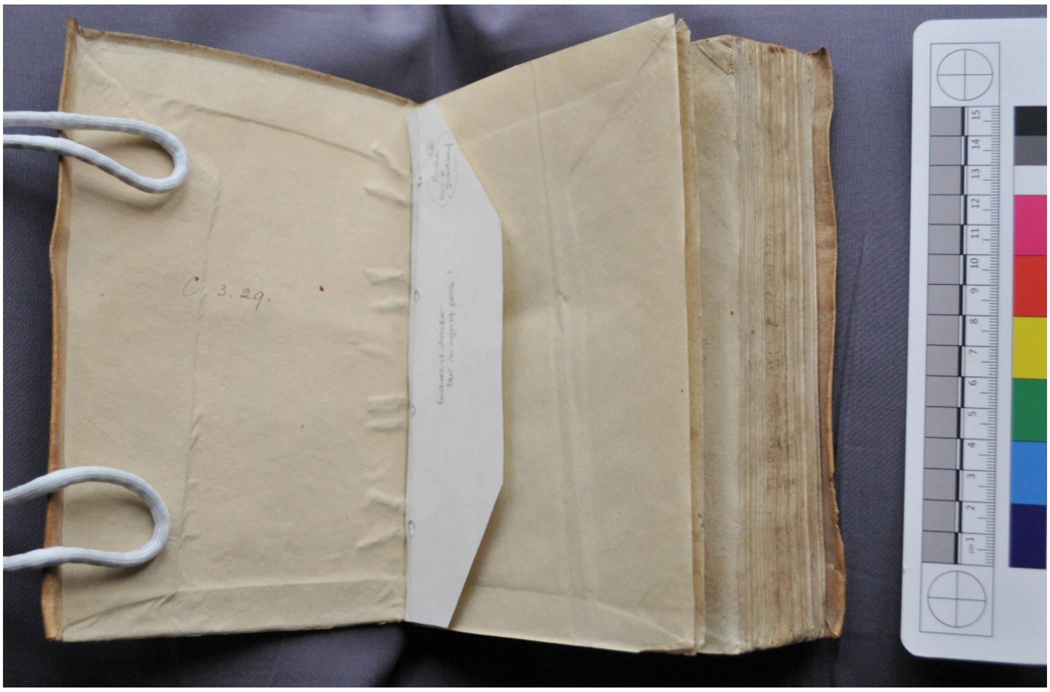
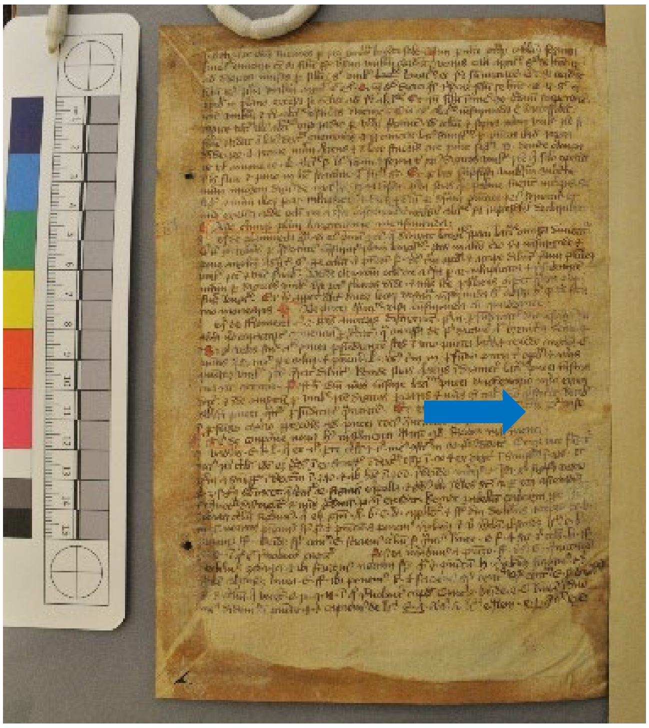



**Fig. 182. Alum-tawed supports visible under pastedown on a laced-case binding.**
Each sewing support – whether this is a double or a paired support is unclear - is raised on the inner surface of the cover and impressed into the guard fragment. The whole slip is visible.
Lanhydrock 134ii (a pair with 139ii), source binding: C.3.29 (Milan, 1509 & Paris 1512).



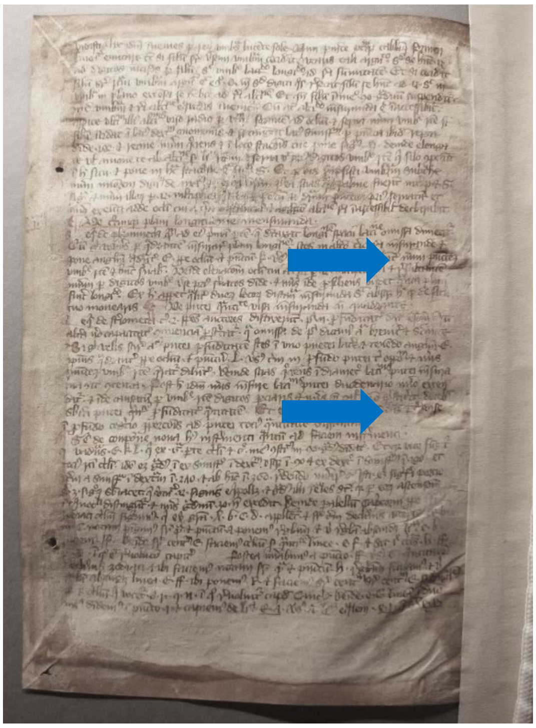


**Fig. 183. Lacing-in channel on a wooden board.**
Right: A black and white image of the same leaf shows the features more clearly.
Lanhydrock 76, adhered to the guard in guardbook. Its source binding is no longer in library (also seen as Fig. 171).

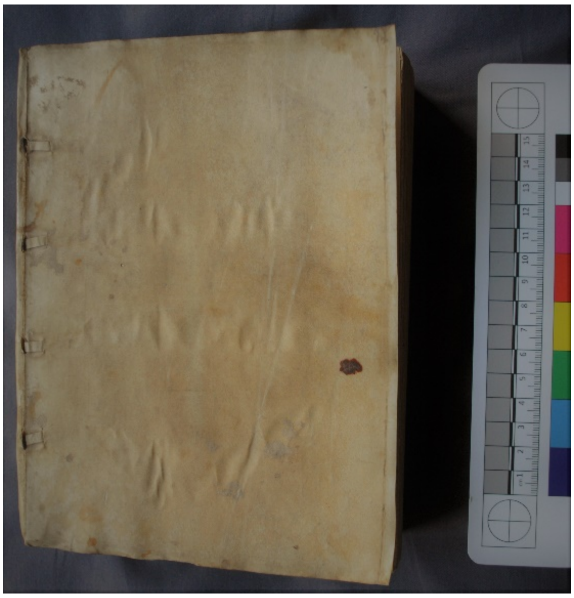


**Fig. 184. Outer face of the fragment without staining or impression from lacing-in slips.**
Left: Lanhydrock 44 and its source binding. A.22.2 (Oxford, 1585).
Right: Left cover of A.22.2 with parchment supports visible at joints.

### 7.2.2.2.4. Conflicting evidence due to repair

While sewing supports may be visible on the outer joints of the book (either when the covering material is damaged or when it is a laced-case binding), these sewing supports may be part of a repair. In the endleaf pair Lanhydrock 44, 45 and their source binding A.22.2 (Oxford, 1585), the sewing-support evidence on the fragments (for which there was no staining or impressions) matched the evidence on the outer joints where parchment supports could be seen laced in to the parchment-covered laced-case binding (Fig. 184). However, inside the book, the stub of an outside-hook paper endleaf, contemporary to the cover and textblock, showed staining from four tanned-skin supports (Fig. 185). This endleaf had been folded around Lanhydrock 44 and its stub had protected the stub of Lanhydrock 44. This accounts for the lack of staining on the fragment from the sewing supports. Meanwhile, the new parchment supports were part of the repair.

In this case, the lack of staining on the endleaf fragments was compatible with what was visible on the exterior joints – parchment lacing-in slips. However, the reality was more complicated. These slips had replaced the tanned skin supports. Evidence in the textblock, then, becomes particularly important in cases where the binding has been repaired and evidence on the cover has been removed or concealed.

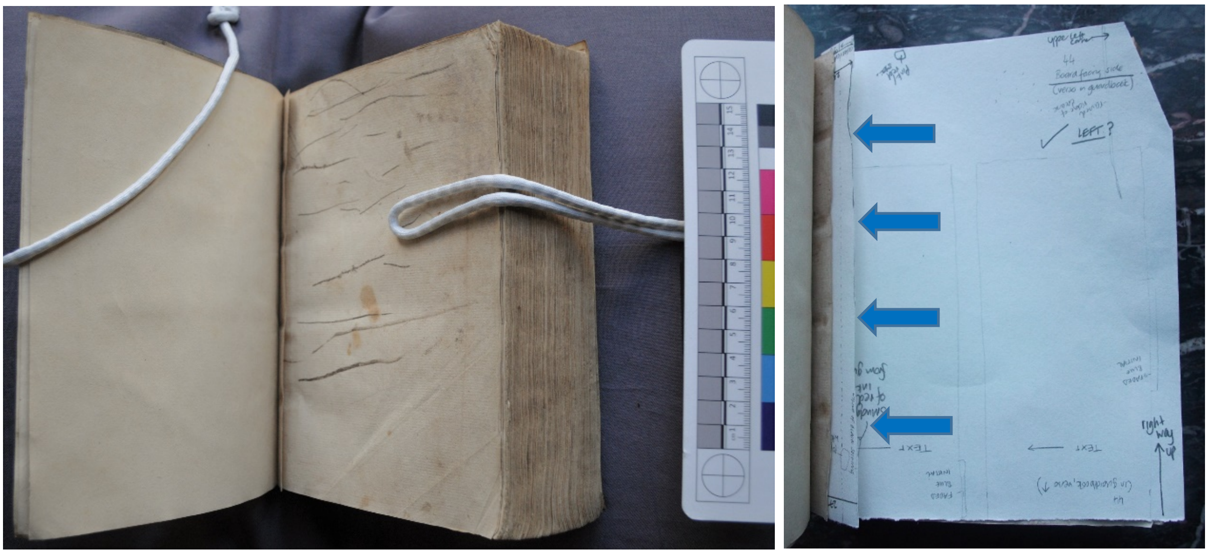


**Fig. 185. Lanhydrock A.22.2 (Oxford, 1585). Endleaf stub with evidence of tanned supports.**
Left: Contemporary paper endleaf (after new endleaf to the left) with outside hook.
Right: Lanhydrock 44, positioned inside this paper endleaf. Staining and impressions from the tanned-skin sewing supports are visible on the stub of the paper endleaf. These sewing supports have been replaced with parchment supports (see Fig. 184).

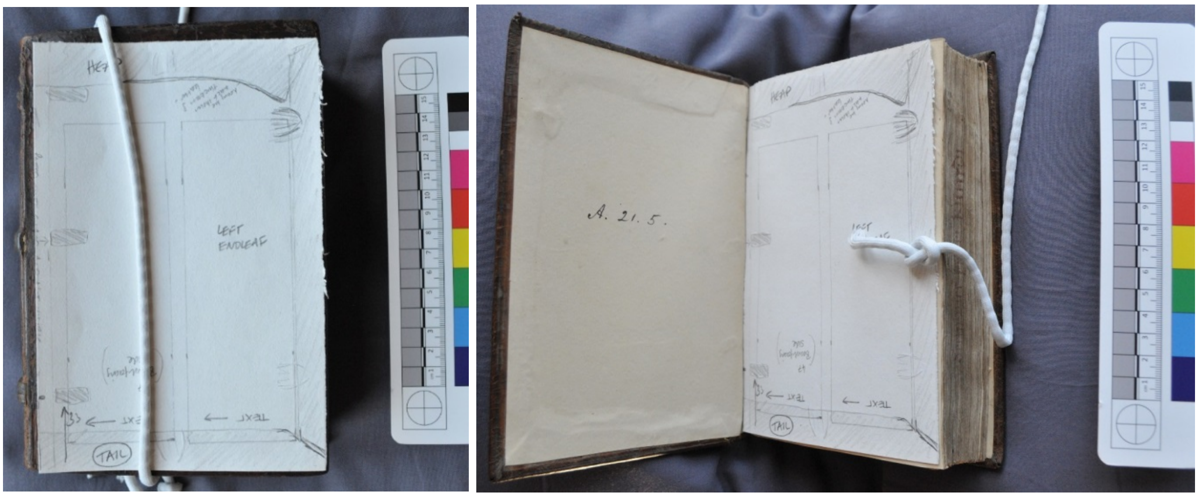



**Fig. 186. Lanhydrock A.21.5 (Paris, 1518) with replaced boards - and Lanhydrock 47.**
Left: The distribution of the supports on the spine still matches the evidence on the fragment.
Right: The boards have been replaced and new supports are laced in. The new supports are of cord. They are not visible on the spine where the sewing support distribution pattern has not been disturbed. The new supports may be flattened down on the spine or they may have been attached to the very end of the support elongating it and providing a slip to lace in to the new board.

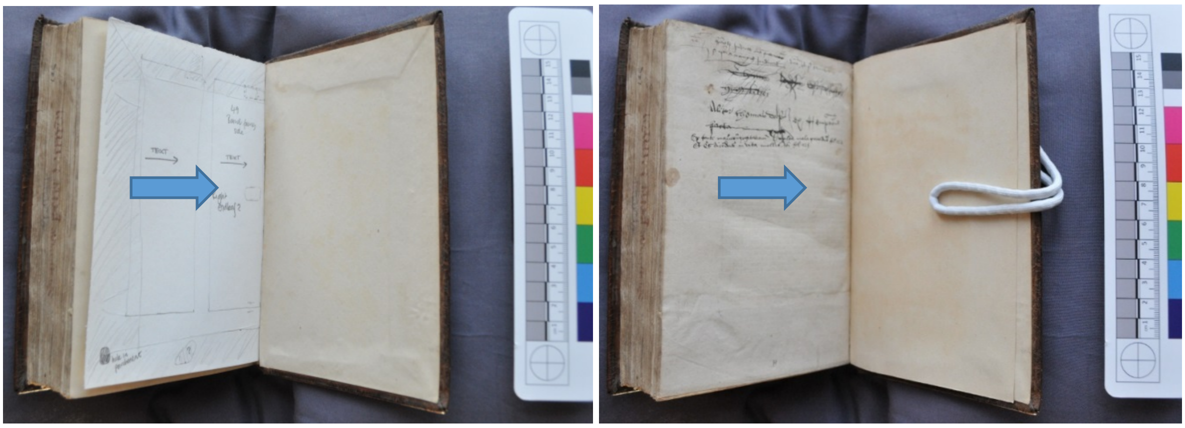


**Fig. 187. Impressions from the original laced-in slip are visible in the last leaf.**
Left: Lanhydrock A.21.5 (Paris, 1518) and a drawing of Lanhydrock 49.
The new board has no relevant lacing-in evidence. The new endleaf is part of the repair of the binding.
Right: The last leaf of text has an impression from the original lacing-in slips.

When a binding was repaired after the fragment(s) had been removed, the evidence on the inner surface of the board which relates to the repair will not be visible on the fragment - and the evidence that is visible on the fragment may no longer be present on the inner surface of the board. In the case of A.21.5, (Paris 1518), the source binding for Lanhydrock 47, 49, the boards have been replaced, resulting in the original lacing-in evidence no longer being present. The lace-in evidence visible on the boards today relates to the repair and shows lacing-in slips that are angled (Fig. 187) while the evidence on the fragment shows slips that are perpendicular to the spine (Fig. 186). However, impressions from the original perpendicular slips are visible in the last leaf of the textblock, before the new endleaf (Fig. 187). The covering material of this volume was replaced over the new boards and while the corners have also been repaired, they and the turn-in shape match the staining on the fragment. In this case then, the evidence required to confirm the match between the fragment and the source binding is both on the boards and in the textblock. It is worth noting that while the boards are now attached to the bookblock using new supports these have not interfered with the spine profile which still shows the original spacing of the supports. There is no evidence on the spine for these new supports.

The evidence on the boards is also contradictory in the case of D.11.10 (Basel, 1527), which was selected as a candidate match for the endleaves Lanhydrock 63, 64, but discounted in Stage Three (Fig. 118-90). This volume was also re-sewn on cord supports and the new boards have evidence of five laced-in supports (Fig. 188). There are, however, only four raised bands on the spine (Fig. 189). Evidence for those four supports are on Lanhydrock 63, 64 and also within the textblock (Fig. 190). The binding was *selected* as a candidate match on the basis of the spine features and these were a match for the evidence on the fragment. However, to *verify* the association between the binding and the fragments, evidence in the textblock had to be examined as only the new supports are visible in the new boards.

When contemporary boards have been retained, new supports can either be laced in to the old lacing-in holes or new holes may be created. In the former case, particularly if the lacing-in slips are concealed by a new pastedown, it may be difficult to know whether the slips are early or part of a repair. In the latter case, there will be two lacing-in patterns on the one board – one that relates to what is visible on the spine of the binding, and the other which is the evidence for new supports. This is the case with C.3.19 (Paris, 1518), the source binding for Lanhydrock 116, where the new angled slips can be seen adjacent to the original lacing-in holes in the wooden boards. The latter match the evidence on the endleaf manuscript-waste fragment (Fig. 191).

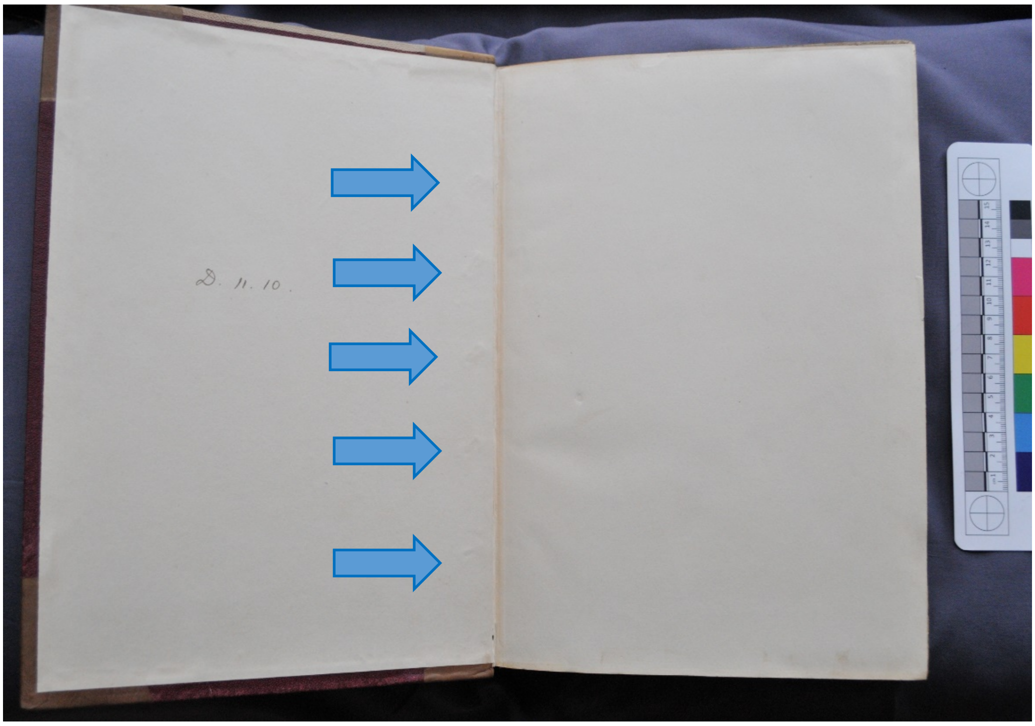



Fig. 188. Lanhydrock D.11.10 (Basel, 1527). Resewn on five cord supports laced into new boards.

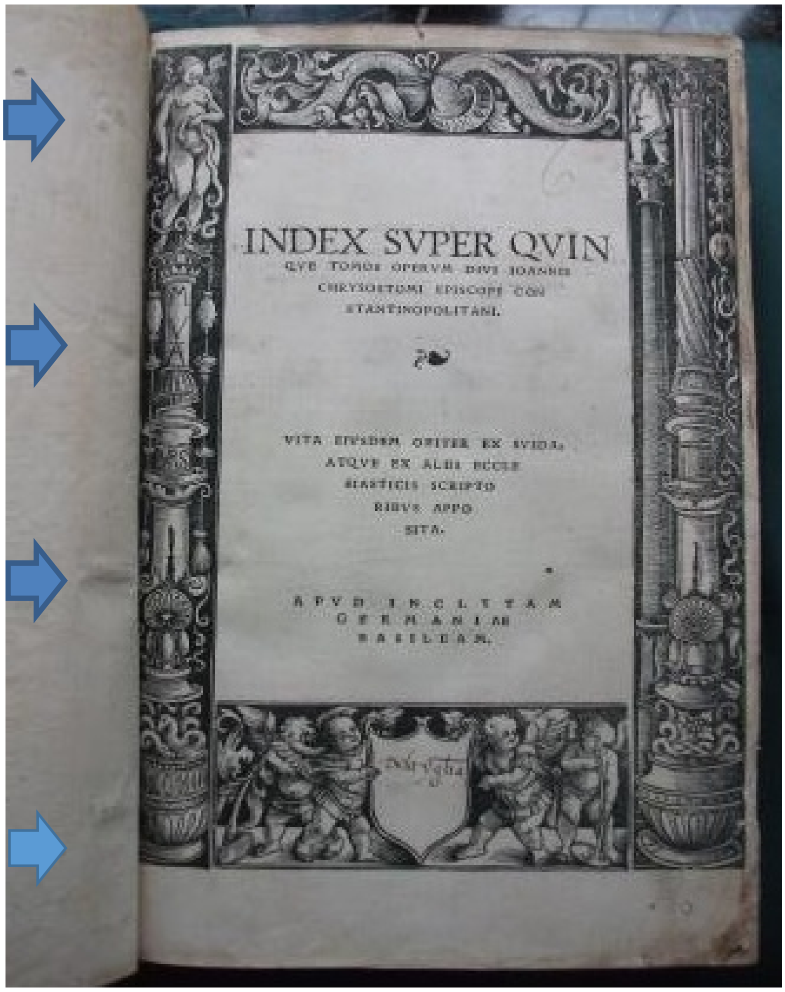




Fig. 189. The spine of Lanhydrock D.11.10 (Basel, 1527) showing the four supports.
Fig. 190. The impression of these four supports on the endleaf opposite the title page.

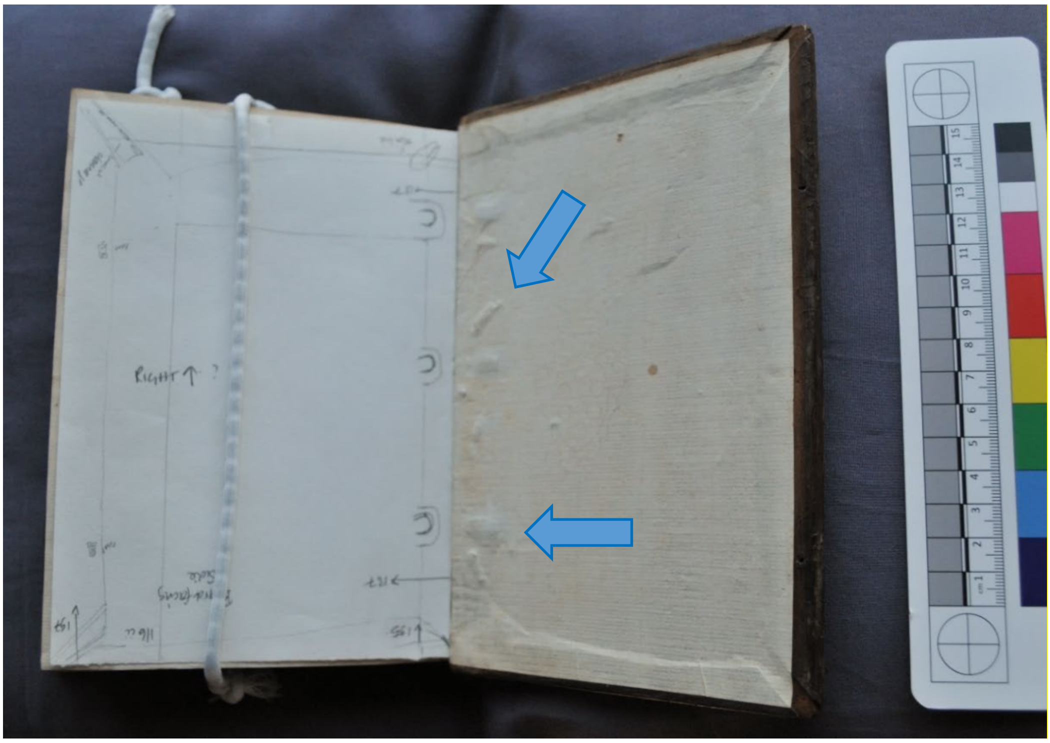


**Fig. 191. Original perpendicular lacings-in channels and later angled lacing-ins slips.**
The angled lacing in slips are part of the repair.
Lanhydrock 116 and source binding C.3.19 (Paris, 1518).

**Fig. 192. Two lacing-in patterns, visible on the boards.**
One with tanned skin supports, the other with alum tawed skin supports. There are only four raised bands on the spine. This volume was sewn on the tanned-skin supports. This is a re-used board.
Clare A.5.10. (Basel, 1537).

### 7.2.2.2.5. Conflicting evidence due to recycled materials

Another case where the evidence in the book may not always, in its entirety, relate to what is seen on the fragment is seen with re-used boards where the board retains evidence of the lacing-in from the earlier book. This is the case with Clare A.5.10 (Basel, 1537), the left board has evidence of both alum-tawed and tanned skin laced-in supports (Fig. 192). The right board, however, has only one set of tanned-skin supports and one additional alum-tawed support (Fig. 158). A manuscript-waste fragment in contact with these boards would have staining only from the tanned skin supports. In this case, however, the endleaves did not have evidence of either set of lacing-in slips – the alum-tawed slips would not stain the fragment and the tanned-skin slips are too deeply recessed in the channels in the board to have come in contact with the fragment. The fragment, however, has sewing evidence which corresponds to the position of the tanned-skin supports.

### 7.2.2.2.6. The absence of evidence on the fragment and in the binding

The lack of evidence on a fragment for laced-in slips may be due to the fact

i. the support material was alum-tawed skin and so did not stain the fragment.
ii. the alum-tawed skin or the board material (or both) was soft and the supports had been hammered into the board material and were therefore not in relief and could not leave an impression on the fragment.
iii. the parchment of the fragment was too heavy to take an impression
iv. the parchment was not in direct contact with the inner surface of the board as there was another element of the endleaf unit, that acted as a buffer layer between the two.

It is not possible to say which of the above is true in the case of Lanhydrock 96i, ii (Fig. 135). Its source binding, A.19.11 (Paris, 1559), has been rebacked and has new boards so any lacing-in evidence that may be evident will be from the repair.

**7.2.2.3. Endband slips**

The third feature to be examined as part of the process to corroborate the materials and features of the binding are the slips of the core of endbands. These are laced into boards or, in the case of laced-case bindings, covers. [383] They may, depending on their material, leave evidence in an endleaf and also in the textblock. However, if the book has been repaired, there may be no evidence in the boards. The endleaf pair Lanhydrock 116i,ii, for example, has the stains from endband slips (Fig. 193) but these do not remain on their source binding, C.3.19 (Paris, 1518), which has been rebacked (Fig. 194). The only evidence that there were laced-in endbands on this binding is on the fragments. In the case of C.1.23 (Paris, 1513), the source binding for Lanhydrock 27, there was no evidence for the endbands in the new boards (Fig. 195). However, there is staining and an impression from the endband in the title page and this matched the evidence in the fragment (Fig.196, 197). This evidence was key in verifying the source binding which, as it had been re-sewn and had new boards, had very little original evidence on the inner surface of the board.

**7.2.2.4. Ties, clasp fastenings, chain staple, title plates, corner pieces**

The kind of evidence that fastenings, both ties and clasps, chains, title frames, and corner pieces leave in an endleaf fragment has been discussed previously (6.3.3.). This evidence can be matched against the corresponding evidence on the inner surface of the cover and on the textblock. The corrosion of the metal from a chain burned through the endleaves of Clare 4di, ii and the title page of its source binding A.2.3 (Basel, 1552) (Fig. 198). The textblock evidence for the chain was critical in supporting the identification of this as the source binding as the binding itself, its boards replaced and re-covered, had no such evidence.

As noted earlier (6.3.3.2.1.), the pins fixing features to the boards might have gone through the boards at an angle, so the hole left made by the pin need not necessarily be in the exact same place on the outer and inner surfaces of the board. In Stage Three, it is the position of the features on the inner surface of the board (and also often into the adjacent leaves) that is being compared with the fragment. As this is what was actually in contact with the fragment, there should be less discrepancy between the positions of the corresponding evidence here then there might be when looking at the outer surface of the board (Fig. 199). It should also be remembered that the dimensions of a fragment made of parchment may have changed with the result that the evidence in the fragment may not align exactly with the corresponding feature on the binding.

383 http://w3id.org/lob/concept/1310.

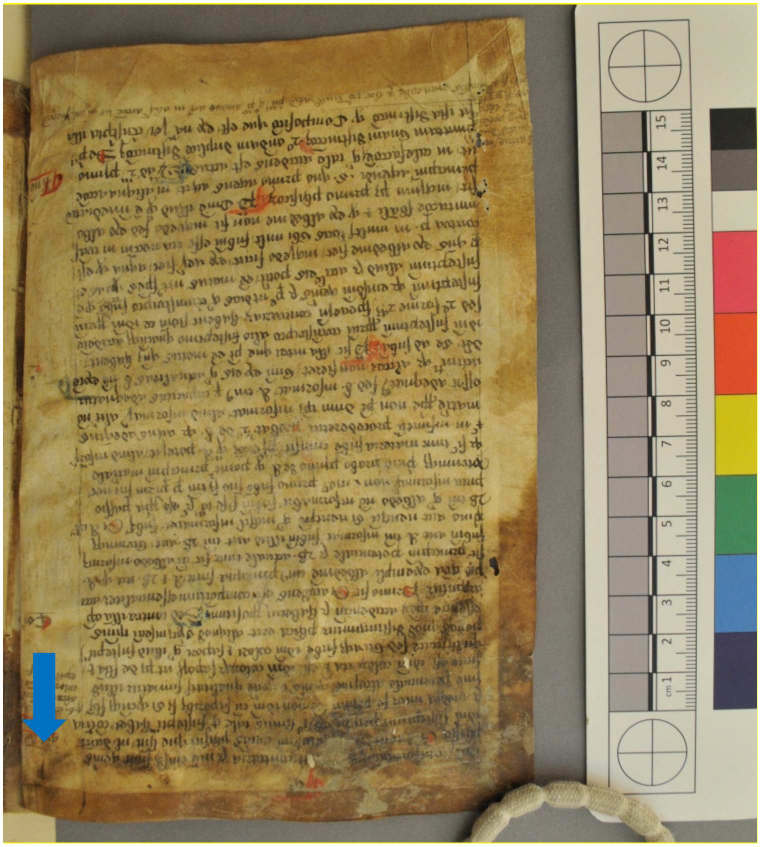


**Fig. 193. Evidence of endbands on an endleaf fragment.**
Lanhydrock 116i, the left endleaf.

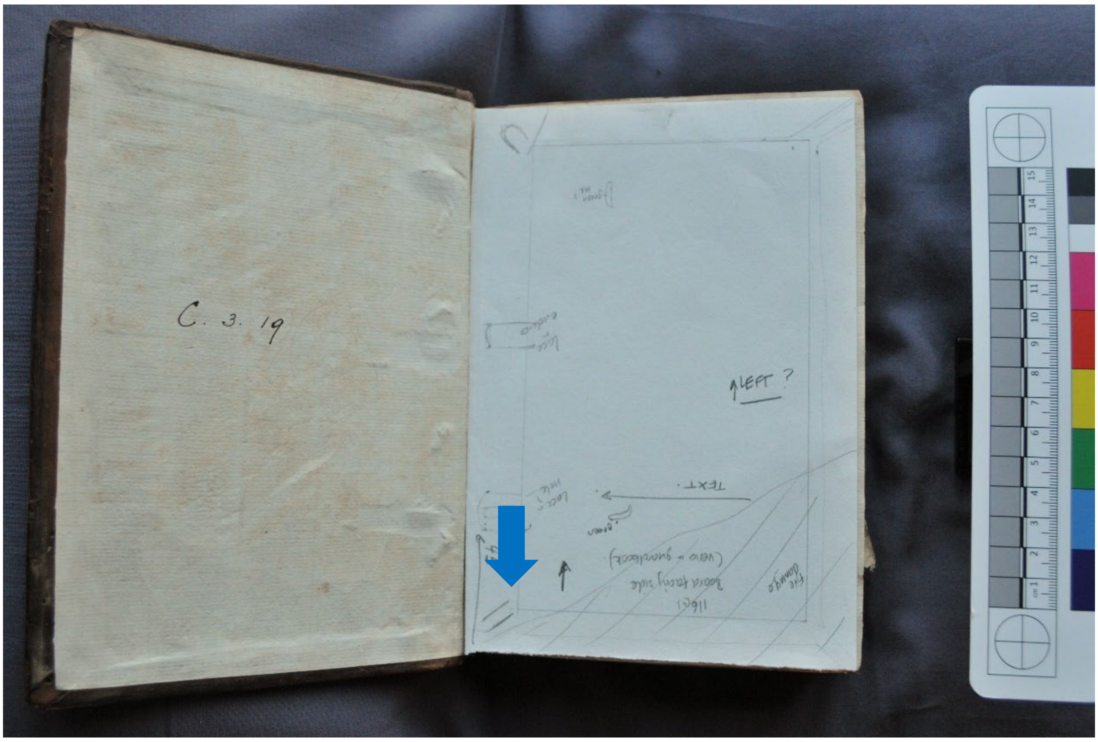



**Fig. 194. The source binding has been repaired leaving no evidence of the endbands**.
Lanhydrock C.3.19 (Paris, 1518) and Lanhydrock 116i.
The original lacing-in channels are visible as are the later slanted lacing-in holes which are part of a repair.

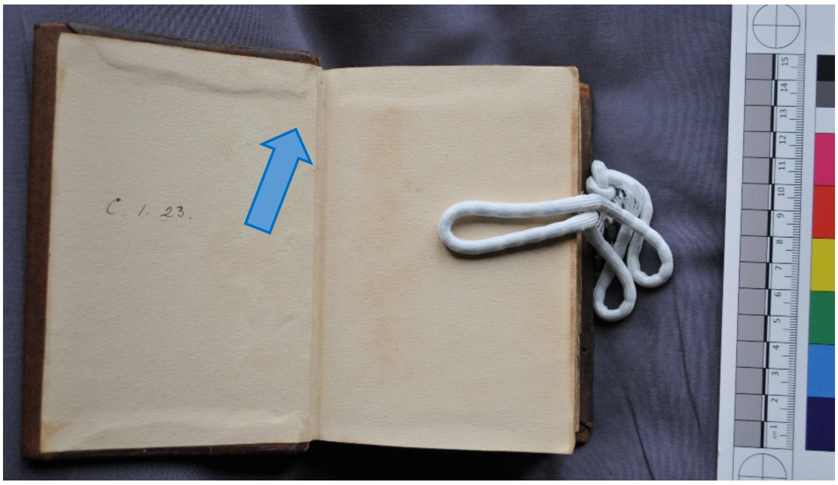


**Fig. 195. New boards with no evidence of old lacing or endbands.**
Lanhydrock C.1.23 (Paris, 1511-1513).
The angled cut ends of the turn-ins at the joint are compatible with laced-in endbands.

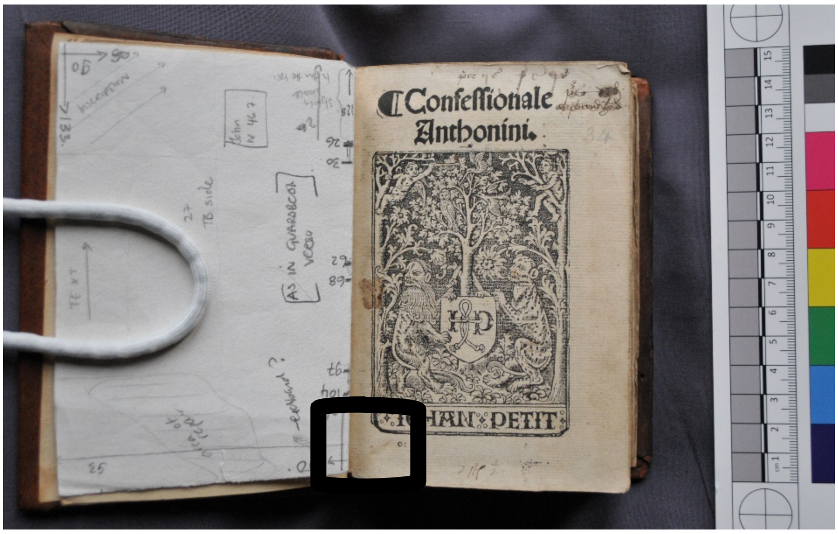


**Fig. 196. Endband staining on the title page matches evidence on the fragment.**
Lanhydrock 27 (drawing) and C.1.23 (Paris, 1511). (Section in red enlarged in following image.)

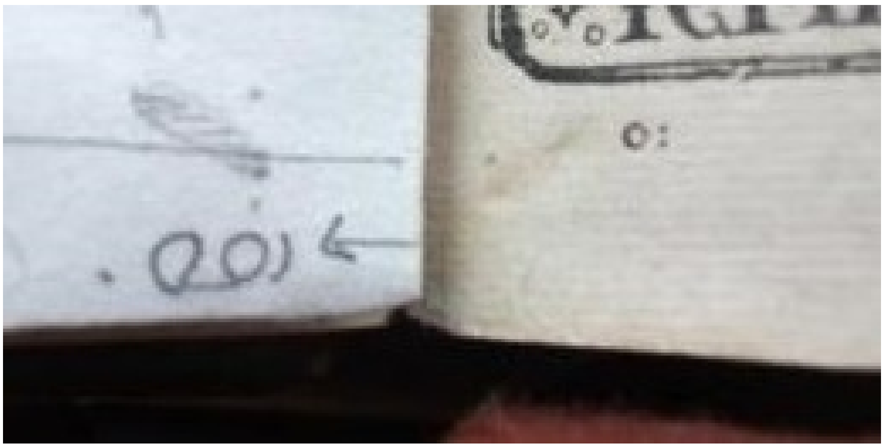


**Fig. 197. Endband evidence on fragment and impression on the title page of the source binding.**
Lanhydrock 27 (drawing) and C.1.23 (Paris, 1511).


**Fig. 198. Evidence of chaining in Clare 4di and the title page of Clare A.2.3. (Basel, 1552).**
This volume was re-covered with new boards. There is no evidence of the chain on the sides of the binding.

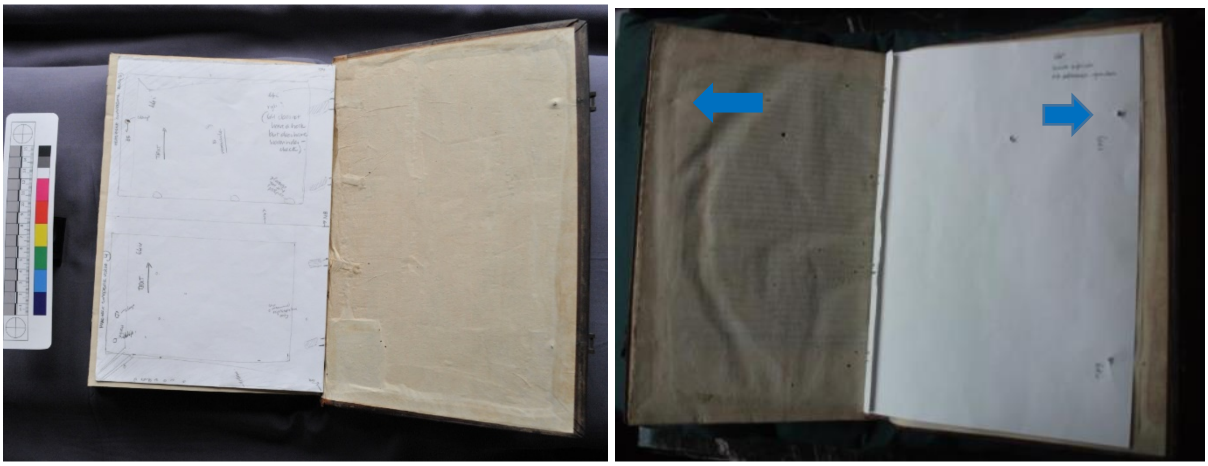


**Fig. 199. Pins from clasps visible on fore-edge of the right board and textblock.**
Left: Drawing of Lanhydrock 64, right endleaf for D.11.11 (Paris, 1515).
Right: Drawing of Lanhydrock 64 facing the last leaf of the textblock. The other holes in this leaf are wormholes.

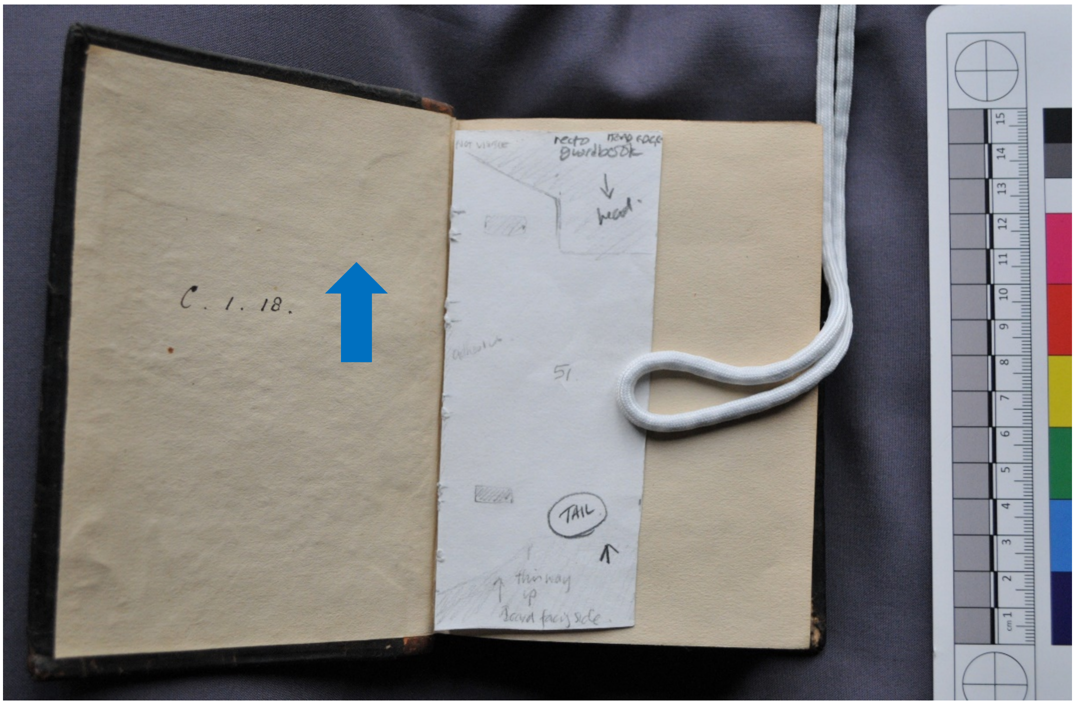



**Fig. 200. A wide guard retaining clear evidence of a distinctive turn-in pattern.**
This volume has been rebacked and now has a smooth spine but the reback has not disturbed the turn-in pattern.
Lanhydrock 51 and source binding C.1.18 (Paris, 1512-20).

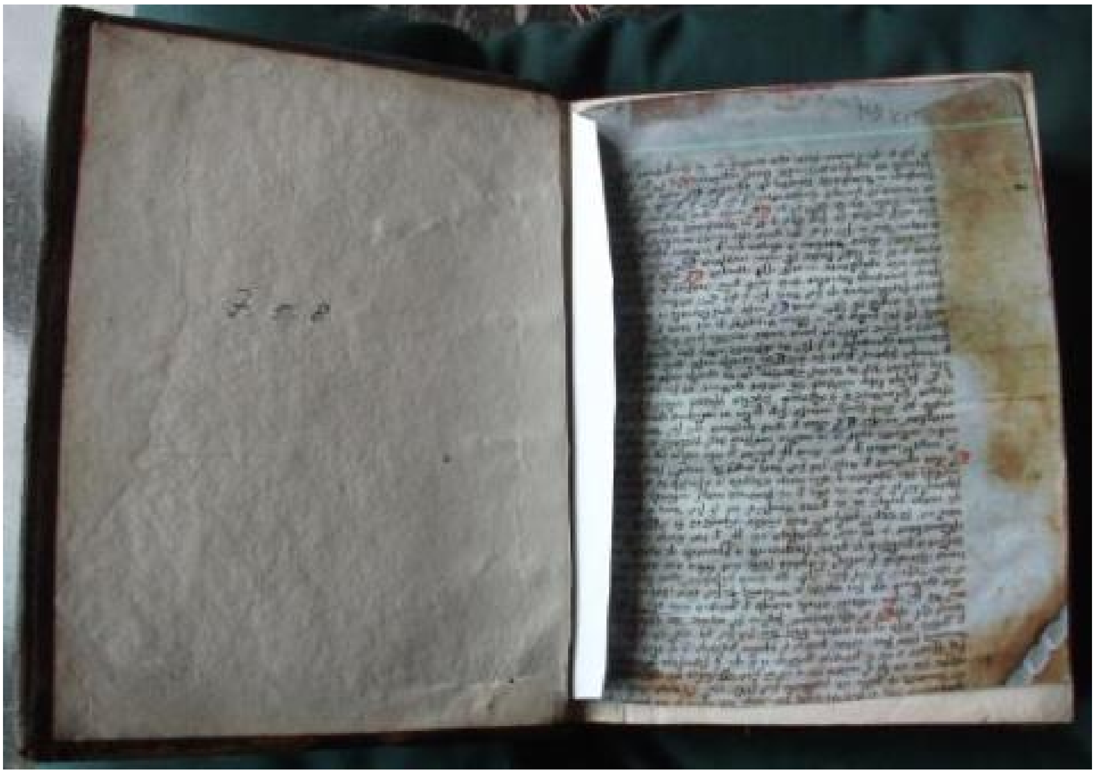


**Fig. 201. Damage to the turn-in is also visible in the endleaf.**
Lanhydrock 109 (a print of the fragment) and source binding F.5.8 (Oppenheim 1640).

#### 7.2.2.5. Edge colour

As discussed earlier (5.4.2.2. and 6.3.6.2.1), colour on the textblock's edges may only be visible when the book has been opened and the leaves of the textblock can be seen, *i.e.* Stage Three. This is due to the colour fading from the edges but still remaining visible where it has encroached into the leaf from the edge.

#### 7.2.2.6 Turn-in shape

Turn-in evidence on a fragment was discussed in Stage One and Two as a means of identifying cover material (5.4.1, 6..3.1), a way of identifying pairs of fragments (4.3.3; Fig. 59) and as a method of checking whether the fragment was the correct width for the binding (6.3.6.2.3.). Here, it is the shape of the turn-ins that is being studied. Turn-ins vary in width - Lanhydrock 51's turn-ins were surprisingly wide for a small volume (Fig. 200) - and their pattern can be sufficiently distinctive to prove a match between a fragment and a binding, as was the case with the same fragment. The turn-in will usually be visible even under a new pasted down endleaf. How well defined it is, though, may depend on the thickness of the covering material and the quality of the surface of the board. Nevertheless, even when a thin parchment is combined with an uneven board, as in the case of Lanhydrock 56, 109 and its source binding F.5.8 (Oppenheim, 1640), it is possible to identify the turn-in shape (Fig. 201).

While the turn-in shape on the fragment and that on the binding may closely resemble each other, it should also be remembered that

i. the turn-in evidence on the fragment represents the turn-in as it was when it was first applied to the binding and came into contact with the fragment.
ii. the shape of the turn-in may have altered since then.

In the case of parchment-covered laced-case bindings with turn-ins, any alteration is likely to be associated with alterations in the dimensions of the parchment. In the case of tanned-skin covered bindings, which, in all the examples found, were inboard bindings, the material was wet with paste when it was first laid down on the boards and when it first came into contact with the fragment. However, after transferring this initial stain to the fragment, the cover material will have

i. dried, and in the process, possibly shrunk as can be seen in Lanhydrock F.1.13 (London, 1581) where a black stain line on the board indicates the point to which the turn-in extended before it dried (Fig. 202). The white line between the stain and the tanned skin shows where the covering material extended to before it shrunk back.[384] Staining may also be from the soluble

[384] Pickwoad, personal communication, 21/12/18.

colour which has been applied to the cover and is rubbed on to the inside of the boards as the edges of the cover are being turned in.

ii. may have been trimmed. When the covering material was pulled over the book's boards the turn-ins on the inner surface of the board may have had uneven edges (Fig. 202). This may have been either because the skin had stretched when wet or because the piece of skin applied to the board was never square in the first place. The turn-ins were then often trimmed either to a straight cut (cut at right-angles to its surface[385]) or an oblique cut (cut at an angle to its surface"[386]). This trimmed line is what is primarily visible on the boards but the staining from the pre-trimmed edge which transferred to the board may also be visible if that board is exposed (Fig. 203). On the fragment, it is the stain marking this pre-trimmed edge that is the more visible and the turn-in line may appear as an impression in that stain (Fig. 203). That impression may be particularly pronounced when the 'step' between the turn-in and the board is significant, and that occurs when the covering material is very thick (Fig. 203).

iii. may have become brittle, depending on the environmental conditions the book was kept in. This may lead to some edges of the turn-in breaking off. This is particularly true in cases where the turn-in had not been trimmed back and the line of the turn-in is uneven with peaks and troughs.

As previously noted, one type of binding repair involves the substitution of a damaged contemporary board with a new board while retaining the original covering material (2.4.1). This kind of repair, if the cover is replaced well, need not interfere with the turn-in evidence. This was the case with Lanhydrock 111i, ii and its source binding, A.4.35 (Nuremberg, 1561) (Fig. 204). Here the turn-in evidence was key to verifying the match as the boards, being new replacements, did not have any lacing-in evidence for comparison with the fragment.

However, often when bindings were rebacked, the part of the turn-in closest to the joint was removed – or at least disturbed - to allow the new material to be pasted down. This is of greater significance when working with guards or comb spine linings which have a limited amount of turn-in evidence – and what they have is precisely here at the joint area. Books that have been re-covered will also have no relevant turn-in evidence on the boards unless the boards are exposed and stains from the turn-ins from the original covering material are visible.

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385 http://w3id.org/lob/concept/3713

386 http://w3id.org/lob/concept/3715

**Fig. 202. The turn-in once extended to the black stain line on the board.**
It has since shrunk back.
Lanhydrock F.1.13 (London, 1581) - identified as candidate match for Lanhydrock 51, but discounted.

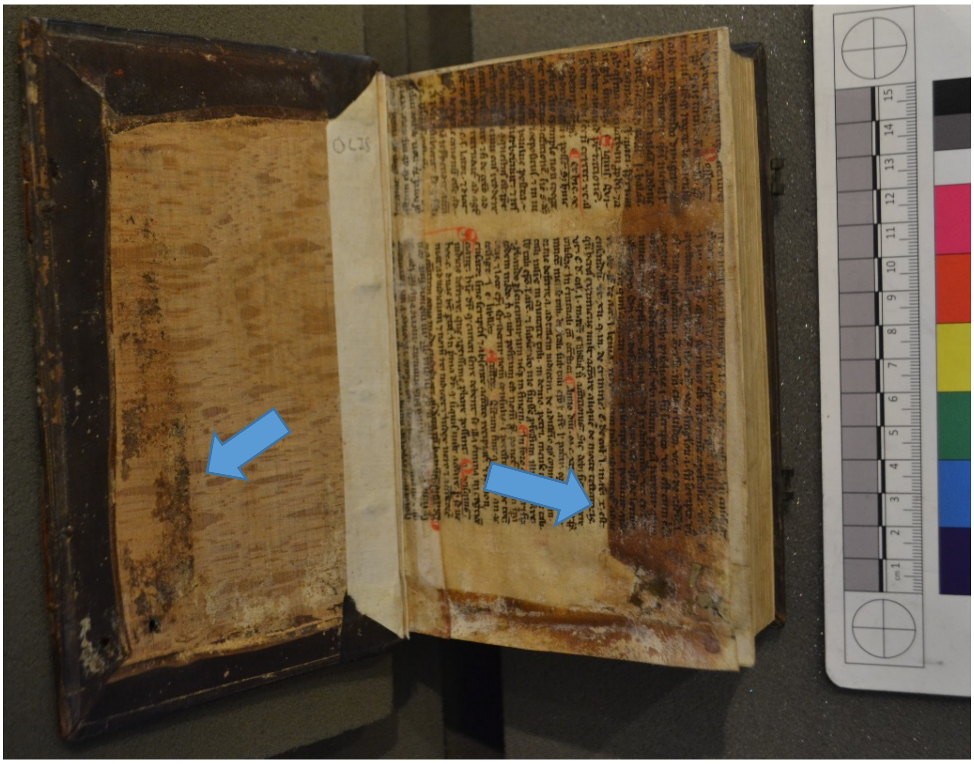

**Fig. 203. An endleaf and board with the stain showing the original line of the turn-in before it was trimmed.**
The trimmed line appears as an impression in the endleaf (arrow). This binding also had a chain which has damaged the endleaf at the lower fore-edge.
Merton 75.d.10 (Paris, 1542), with endleaf *in situ*, the source binding for Lanhydrock D.3.10 (12), the right endleaf.

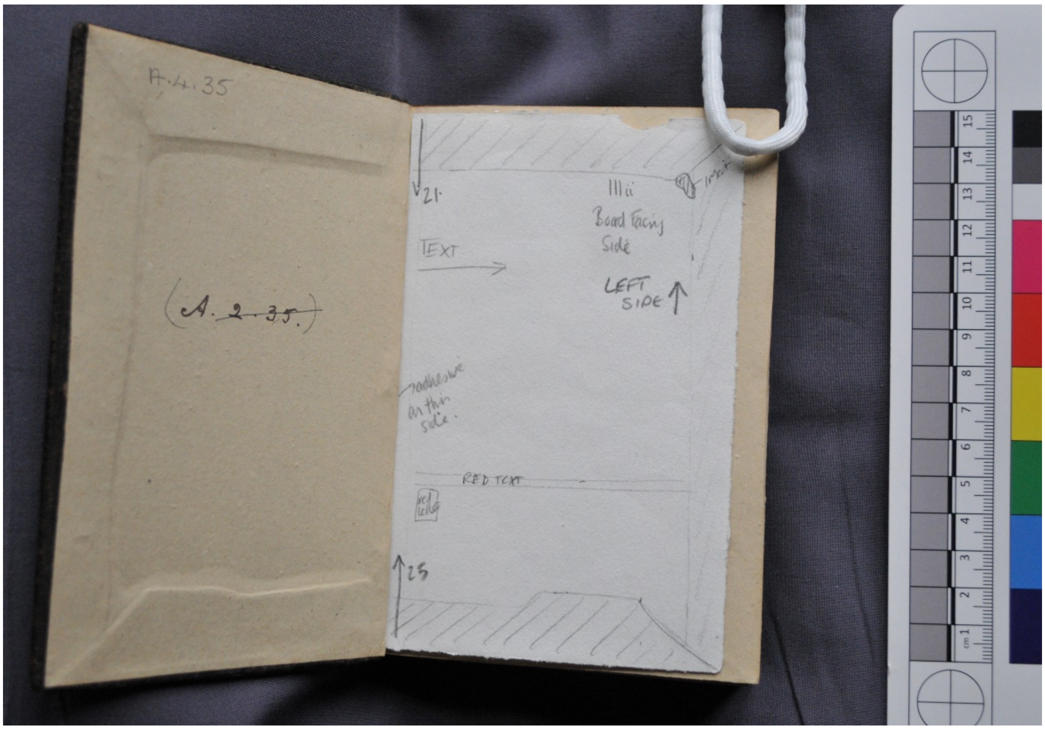


**Fig. 204. A distinctive turn-in pattern retained after the boards were replaced.**
Lanhydrock 111 and its source binding A.4.35 (Nuremberg, 1561).


**Fig. 205. Untrimmed turn-in and lapped mitred corners.**
Merton 54.b.12 (Lyon, 1542) and detail from this image enlarged. The corner here is lapped.

**7.2.2.6.1. Corners in the turn-in evidence**

Corners are shaped or mitred that is trimmed 'at an angle of the ends of the turn-ins of both limp covers and covers over boards to allow them to be turned-in at the outer corners.'[387] They can be

i. lapped mitred (the most frequent corner type), where 'either the fore-edge or the head or tail turn-ins lie one on top of the other at the corners without being locked together' (Fig. 205).[388]
ii. butt mitred, where 'two cut edges meet edge to edge and do not overlap'[389], though as the leather shrinks the two edges may separate slightly (less than 1mm). (Sewn mitre[390], where the two edges of a butt mitre are sewn together have been recorded on some Romanesque bindings and were not found in the case studies.)
iii. open mitres, where there is a gap between the edges from 2-5mm wide.[391]
iv. tongued mitred (previously discussed in relation to what this feature might indicate regarding the board material (6.3.7.1.2.2), where 'the two turn-ins that meet at a corner are trimmed to leave a space between them which is filled by a strip, or tongue, of the covering skin which is pulled over the corner to lie between them' (Fig.171).

In Stage Three, the shape of the corners on the turn-in on the binding is being compared with the evidence for this on the fragment. It can be a useful diagnostic feature. In the case of Lanhydrock 1-4, Stage One of the process identified only two candidate matches in the library and both had different corner shapes – one was tongued, the other lapped. The latter, D.11.18 (Cologne, 1548), was found to be the source binding as it matched the turn-in pattern on the fragment.

Corners on a binding, however, are vulnerable to damage. The central element of a tongued mitre, for example, often falls out so, while it may not be still on the board, evidence will be visible in the turn-in stain on the endleaf. Repairs to corners may also result in the original shape being obscured (if the repair is placed over the original corner) or replaced.

**7.2.2.6.2. Turn-in evidence in the textblock**

When using turn-in evidence as a means of verifying the source binding, the main difficulty is that it may have been altered when the book was repaired. It is advisable to examine both left and right boards as the evidence may be clearer on one than another. Evidence of the turn-in shape can

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387 http://w3id.org/lob/concept/2344
388 http://w3id.org/lob/concept/1421
389 http://w3id.org/lob/concept/1235
390 http://w3id.org/lob/concept/1588
391 http://w3id.org/lob/concept/1465

sometimes be seen in the leaves of the textblock closest to the boards either as a stain or an impression. Gaps in the turn-in evidence can also indicate that elements of an endleaf structure had once been present. With Lanhydrock B.1.10 (Cologne, 1532), for example, identified as a possible source binding for the guard fragment, 134iii, there was a gap in the stain on the turn-in on the blank endleaf which suggests that this volume once had an endleaf guard (Fig. 206, 207). A lack of other evidence, however, means that it is unclear whether this is the source binding.

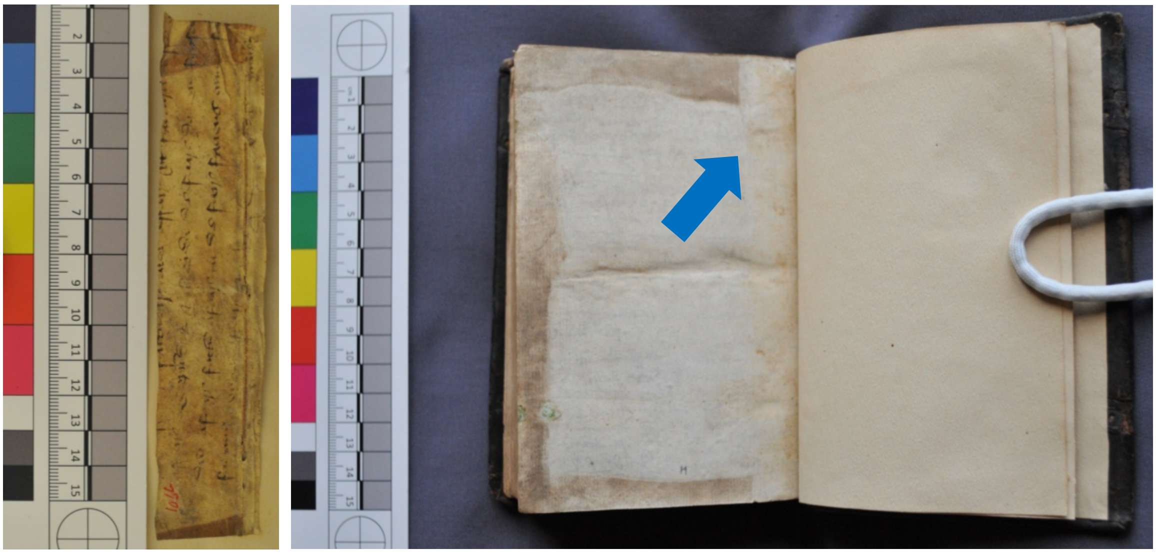

**Fig. 206. A 'ghost' stain in the turn-in stain on an early endleaf.**
Lanhydrock B.1.10 (Cologne, 1532) and the gap in the turn-in stain where the guard Lanhydrock 134iii may have been positioned.

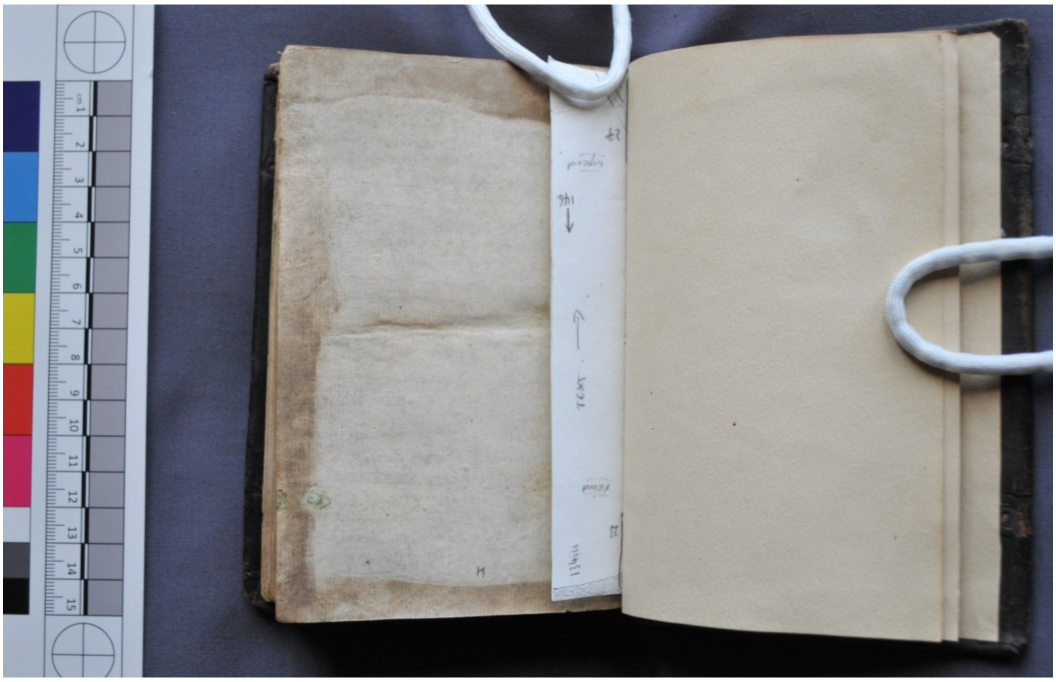

**Fig. 207. Lanhydrock B.1.10 (Cologne, 1532) and a drawing of the guard Lanhydrock 134iii.**

### 7.2.3. Matching non-binding features

#### 7.2.3.1. Offsetting of the ink from the manuscript-waste fragment

Previous attempts to identify the source bindings for removed manuscript-waste fragments have strongly relied on ink and pigment from the fragment offsetting onto the inner surface of the board or the adjacent leaves of the textblock (2.3.2). Both the ink used for the text or the pigments used to decorate initials may simply transfer some of their colour or may detach completely from the fragment on to the board – and, when found, may in fact complete the text on the fragment. Damage to the text or the presence of decorated initials on the fragment may suggest that offset could be present in the source binding. When the offset text is not legible, the size of script and the *mise-en-page* may be other elements to examine.

Offsetting from the ink on the fragment may occur as a result of it being pasted down on to the board, and that paste being responsible for the ink transferring to the board, or it may be caused by the poor environmental conditions in which the book was kept. Certain manuscript features may also be more inclined to offset, for example larger or rounder scripts or coloured initials. In the case of Lanhydrock 45, the red initial alone, and not the text, offset on to the adjacent blank endleaf on A.22.2 (Oxford, 1585). Fragments of leaves from books are more likely to offset than fragments of documents – and with the latter there is also the fact that with text only on one side of the latter, there is a reduced chance of offsetting occurring. Nevertheless, in this research, in one instance the identification of the source binding, St. Canice's CK2577 (Paris, 1620) was possible due to the offset from a fragment of a document, the comb spine lining St. Canice's CK/MS/3 (Fig. 208, 209).

The type of binding, whether in-board or case, or the board material, whether wood or paper, should not affect whether ink from the manuscript-waste fragment will transfer to it. Lanhydrock A.22.2, mentioned above, is a parchment-covered laced-case binding and many of the in-board bindings in Merton College Library have extensive offsetting from manuscript-waste fragments. In some cases, however, there is evidence that the ink was cleaned off the wooden boards as part of the repair of the binding though it still on occasion remained on the tanned skin turn-ins (Fig. 210). While offset on to the binding may be covered by a new pastedown, it may still be visible if that paper is sufficiently light and the offset sufficiently strong. This was the case with the source binding for Lanhydrock 63, 64, D.11.11 (Paris, 1515), where the offset from decorated initials are visible even under the new pastedown (Fig. 211). Even when present and visible, though, offset evidence may not be sufficient to verify the source binding. In the case of Lanhydrock 1-4, the offset ink on the blank leaf of the source binding D.11.18 (Cologne, 1548) was so feint and sparse that other evidence, such as worming, was necessary to verify the match.

**Fig. 208. A document used as a comb spine lining offset onto the adjacent blank endleaf of the source binding.**
St Canice's CK2577 (Paris, 1620) and CK/MS/3.

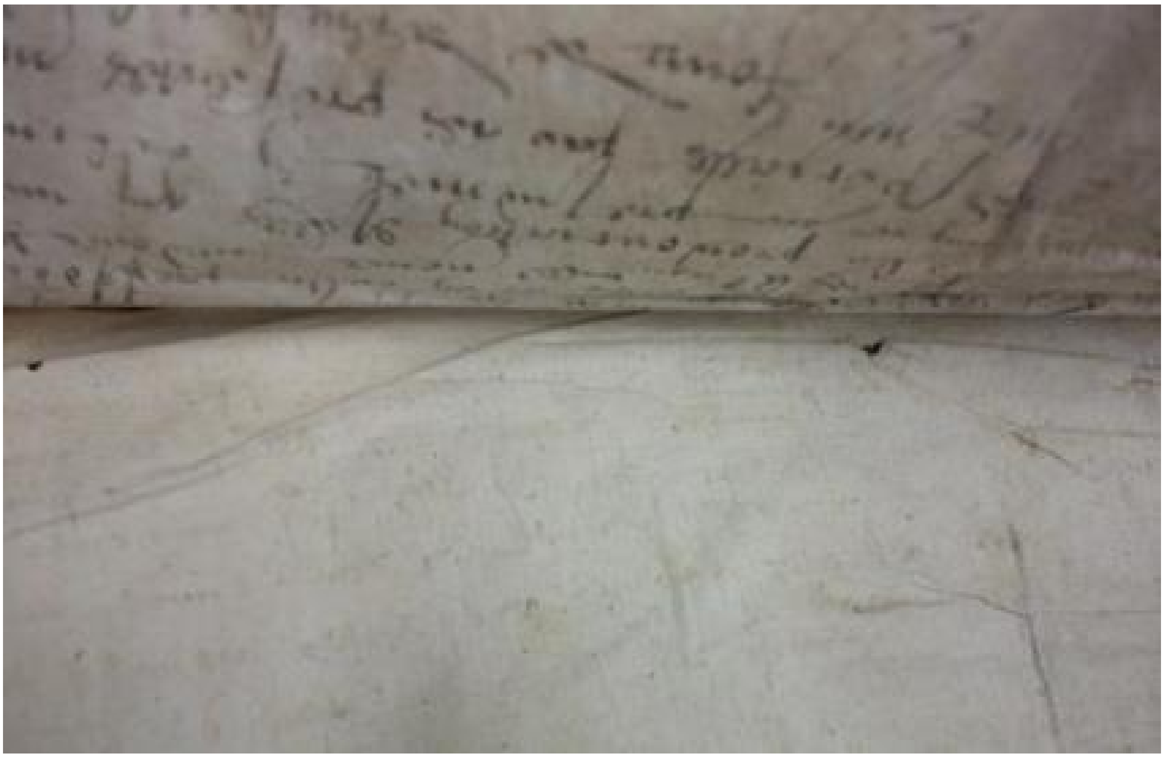

**Fig. 209. A detail from the previous image (rotated).**
St Canice's CK/MS/3 and its offset on the left endleaf of St Canice's CK2577 (Paris, 1620).

**Fig. 210. Offsetting cleaned off boards.**
Merton 54.b.12 (Lyon, 1542). The right board. The offset is still visible on the tanned skin but the boards are clean. The offset on the turn-ins has also offset onto the new endleaf.

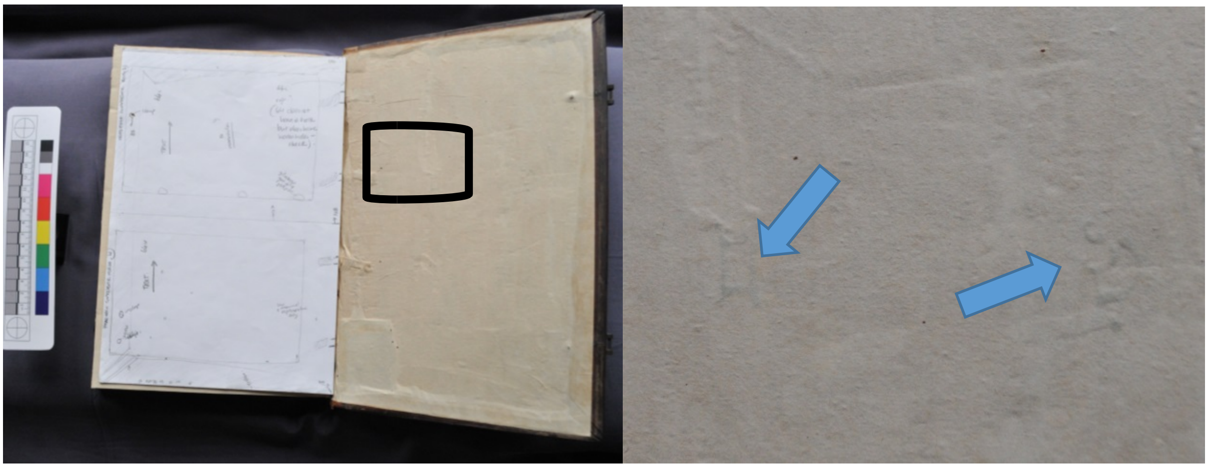

**Fig. 211. Offset ink visible under a blank endleaf pasted down.**
Lanhydrock D.11.11 (Cologne, 1548) source binding for Lanhydrock 64, 65. Lanhydrock 64, right endleaf

In cases where a candidate source binding has been identified based on the evidence on a fragment and the text on that fragment (A) matches the offset in that binding, it is logical to assume that fragment A was once within that binding. However, when the offset does not match, another fragment (B) must be the source for the offset ink. It cannot be ruled out, though, that both fragment A and B were two parts of an endleaf unit[392] and that Fragment B was the leaf immediately adjacent to the offset in the binding. It is also possible that the board had been recycled and offset may relate to an earlier use of that board. In the case of Merton 95.jj.8 vol. II (Basel, 1571) the offset visible on the inner surface of the boards does not seem to come from the fragment to which it is matched D.3.1 (1), though all the other features do match, including wormholes in the textblock (7.2.3.3.1). The offset however has a similar script to D.3.1(1) and so the first scenario, of there being a second endleaf which was responsible for the offset, is a possibility.

#### 7.2.3.2. Remains of the parchment

Another type of residue from the manuscript-waste fragment left in the binding, which may also be used to verify the source binding, may be actual pieces of the parchment adhered to the inner surface of the board. These may have detached from the fragment when it was lifted from the book's boards. It may be possible, if the board is exposed, to match up these patches of parchment with the damaged layers on the fragment.

#### 7.2.3.3. Damage

Another non-binding feature which can be used to verify the source binding are signs of damage. The pattern and location of damage will be unique to a binding and can be used to support its identification as the source binding. This evidence may be in the form of

i. wormholes.
ii. creases.
iii. staining.
iv. mould.
v. dirt.
vi. metal corrosion.

[392] http://w3id.org/lob/concept/2887

### 7.2.3.3.1 Wormholes

Wormholes in a manuscript-waste fragment may relate to worm activity in

i. the book's boards
ii. the textblock
iii. the source manuscript

Correlating worming evidence on a fragment with that in the source binding – cover or textblock –may not be entirely straightforward. This is because the shape of the wormhole will alter as it passes through the book and not all the holes will necessarily continue through the same number of leaves as some may stop earlier. The removal or addition of endleaves or blank leaves will also disrupt the worm pattern. Other elements of the endleaf structure, such as printed-waste endleaves, may also have wormholes related to their previous use which might complicate the picture – the printed waste in Clare C.5.7 (Isny im Allgäu, 1542),[393] for example, has wormholes that do not match up to either the textblock or the manuscript-waste fragments. This being the case, candidate source bindings should not be discounted solely on the basis that there are no wormholes in the binding to match up with the evidence in the fragment. However, evidence of continuous worming running through both the board and the textblock of a candidate source binding but not on the fragment would discount this binding as the worming, if it is in both board and textblock, must have also penetrated the endleaf fragment.

When present in both the binding and the fragment, wormholes are good diagnostic evidence for verifying a match as it is highly unlikely that they would appear in exactly the same place in two books. Of the two candidate matches identified for the Lanhydrock 63, 64 only one, D.11.11. (Paris, 1515), had worm evidence that could match that on the fragment. Clusters of wormholes that match from the fragment to the board or textblock, as seen with Clare 2eii and its source binding A.2.2.vol II (Fig. 212, 213), can prove more convincing evidence than isolated single wormholes. Observing where wormholes occur can also help explain how books may have been altered. For example, a wormhole that is present in both the right free endleaf and the endleaf that is now pasted down on to the right board of Lanhydrock F.5.8 (Oppenheim, 1640) is also present in in the fragment Lanhydrock 56 but it does not extend into the board (Fig. 214, 215). This indicates that the leaf that is now pasted down to the board was once a free endleaf and that the fragment Lanhydrock 56 had been positioned next to the right board.

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[393] The source binding for these fragments was identified by archival evidence on the fragments. I am grateful to Ms Catherine Reid for providing title details for this volume.

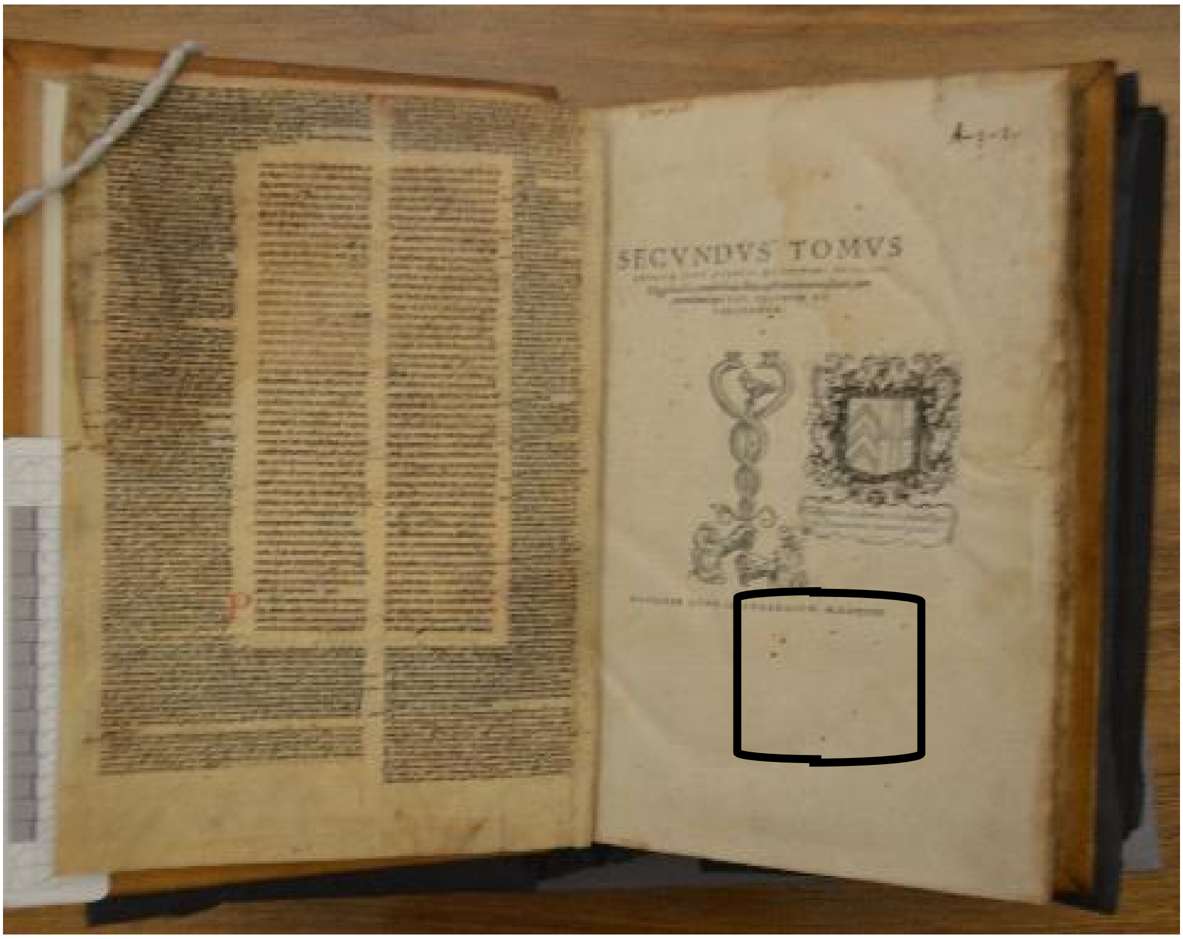



**Fig. 212. Matching wormholes – fragment and title page.**
Clare 2eii and source binding A.2.2. vol. II, (Basel, 1528).

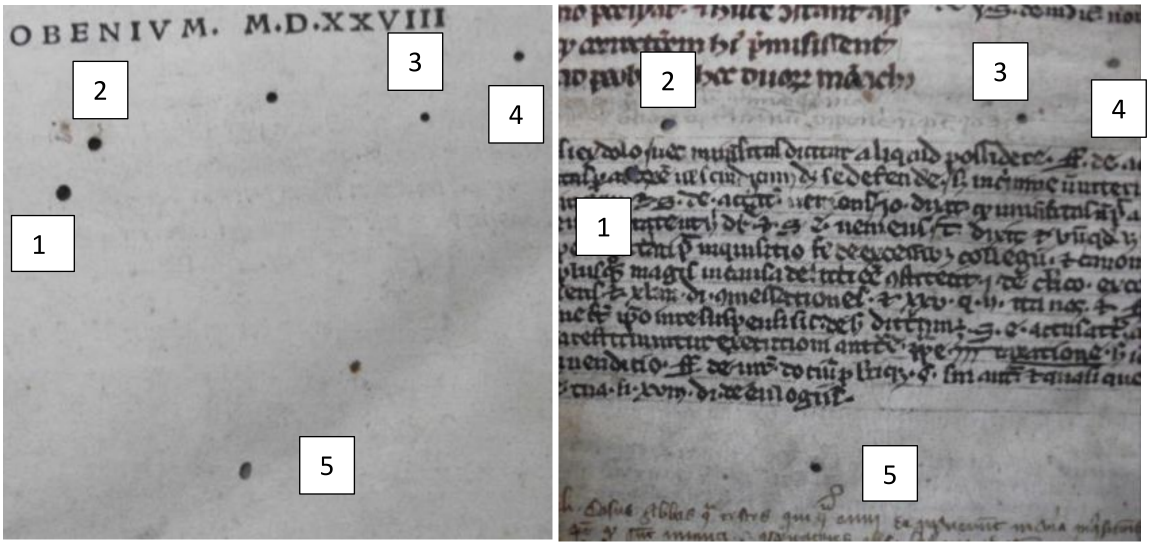



**Fig. 213. Matching wormholes – detail from previous image.**
Left: Clare A.2.2. vol. II. Title page with cluster of wormholes numbered 1-5.
Right: The title page with the fragment, 2eii, placed on top of it, showing how some (though not all) wormholes in a group of wormholes match up.
(Photographed with grey board underneath the title page.)

**Fig. 214. Wormholes in the fragment.**
Lanhydrock 56. (The section outlined in red can be seen in greater detail below.)

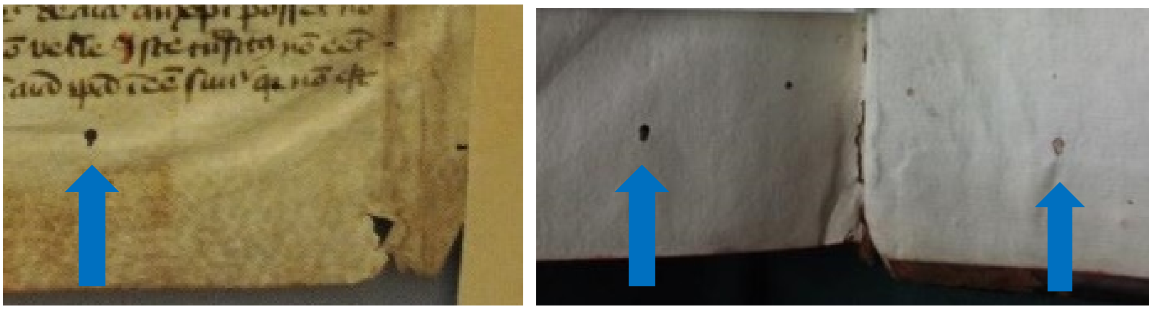


**Fig. 215. Matching wormholes when the endleaf structure has been altered.**
Left: Detail of Lanhydrock 56, showing wormholes.
Right: Source binding F.5.8 (Oppenheim, 1640), showing right free endleaf and endleaf now pasted down with wormholes that do not penetrate the board.

**7.2.3.3.2. Creases**

Creases in both the fragment and the source binding proved relevant matching evidence for the endleaves Lanhydrock 44, 45 and the textblock of A.22.2 (Oxford, 1585) and the cover Lanhydrock 92 and the title page of the rebound A.11.7 (Herborn, 1612), (the latter was identified as the source binding using archival evidence). Fragments used as endleaves may also have adopted the creases in the textblock that are associated with the printing of the text – the distinctive central horizontal crease with four angled creases at the edges of the page. This is the case with Lanhydrock 56, 109 and its source binding F.5.8 (Oppenheim, 1640) (Fig. 216, 217).

**7.2.3.3.3. Staining**

Fire and/or water damage in the textblock of Lanhydrock C.3.19 (Paris, 1518) verified it as the source binding from the two candidate matches identified for the endleaf fragments Lanhydrock 116i, ii. In the case of the fragment Lanhydrock 168, an orange stain which matched with the tail edge of the title page of D.1.31 (Frankfurt, 1604 –this source binding was identified by archival evidence) showed that this fragment had been used, not as a cover as originally thought, but as a fold endleaf. Ink staining verified the source bindings, Clare U.I.6., vol. V (Lyon, 1520) for the endleaves 4ei, ii, Lanhydrock A.22.2 (Oxford, 1585) for the endleaves Lanhydrock 44, 45 and the Wren E.10.69 (Paris, 1634) for the comb spine lining R.11.2./58.

Staining, though, may occur at any point in the book's history. It may be in the paper even before it was sewn as a bookblock, or it may have happened after the fragment was removed or before the fragment became part of the binding. A lack of staining in the fragment, then, when there is staining in the textblock should not be used on its own as a basis for eliminating a candidate match. It should also be remembered that a stain may not penetrate a parchment leaf in the same way as it might a paper leaf. In the case of Lanhydrock 56, 109, their source binding (F.5.8, Oppenheim, 1640) has a light water stain at the tail edge of the title page that is not replicated in the fragments. However, Lanhydrock 109, the fragment which had been adjacent to the title page, is slightly cockled which might suggest that it was damaged by water.

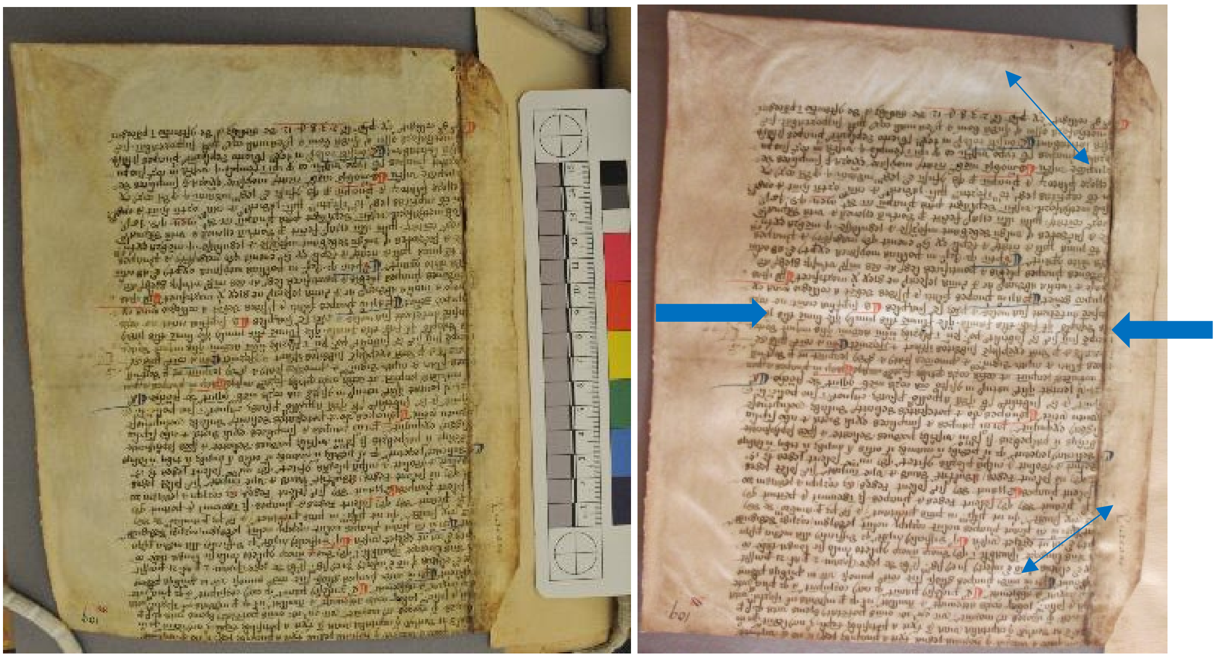


**Fig. 216. Endleaf with creases from the textblock.**
Lanhydrock 109, left endleaf, outer face. This would have been positioned before the blank endleaf. The same markings are present in the parchment and the textblock below.

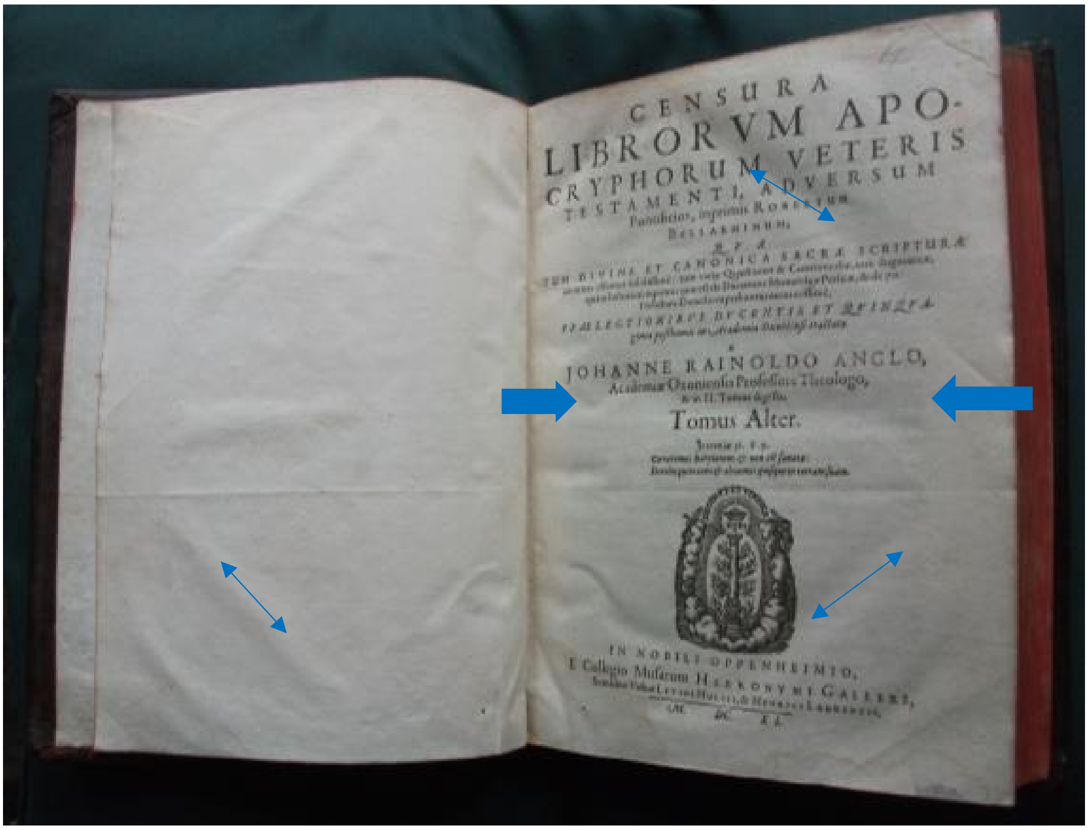



**Fig. 217. Creases in the textblock of Lanhydrock F.5.8 (Oppenheim, 1640).**
Lanhydrock 109 was positioned before the blank paper endleaf seen opposite the title page of F.5.8, both with the impression from the press.

#### 7.2.3.3.4. Mould

Evidence from mould could also prove useful in the identification of the source binding. However, no source binding was found for the one example of mould-damaged endleaves in this research, Lanhydrock 7, 8, which have evidence of a parchment-covered binding. Lanhydrock 50, a fragment which had been a laced-case cover, also has significant mould damage but this does not seem to be a match for the sewing distribution pattern on Lanhydrock 7, 8.

#### 7.2.3.3.5. The absence of soiling

When fragments are *in situ* they protect the area of the leaf on which they are positioned, in some cases masking it off from the transfer of dust or staining which might affect the rest of the unprotected leaf (see 7.2.2.6.2 for similar with the turn-in stain). This creates a clean ‘ghost’ of the shape of the fragment in the otherwise marked leaf. The Lanhydrock guard, 134ii, did just this, masking off an area on the right blank leaf of C.3.29 (Milan & Paris, 1509-1512), protecting it from the soiling which affected the rest of the leaf. The shape of the removed guard appears as a clear patch on the leaf and could be compared with the shape of the fragment (Fig. 218). This guard’s pair, Lanhydrock 139ii, did not leave a similar ‘ghost’ on the adjacent leaf which was the title page. (Neither guard has left an impression in the adjacent leaf, but the paper of both leaves is perhaps too soft for this to happen.[394]) It may be the case that there may originally been another leaf separating the guard from the title page but the fact that it is heavily soiled might suggest that there was no additional endleaf – though the soiling may have happened before the bookblock was sewn. The comb spine lining, St. Canice’s CK/MS/9, could similarly be matched up against the ‘ghost’ outline on the adjacent right endleaf of CK2577 (Paris, 1620) and this proved useful in verifying this volume as the source binding.

[394] The same leaves however, do have an impression of the turn-ins. This might, though, be a more recent impression, arising out of the fact that the new endleaves have been pasted down onto the inner surface of the cover, making the turn-in edge more pronounced. An alternative explanation may be that the parchment of the guards is not thick enough to leave a sharp impression.

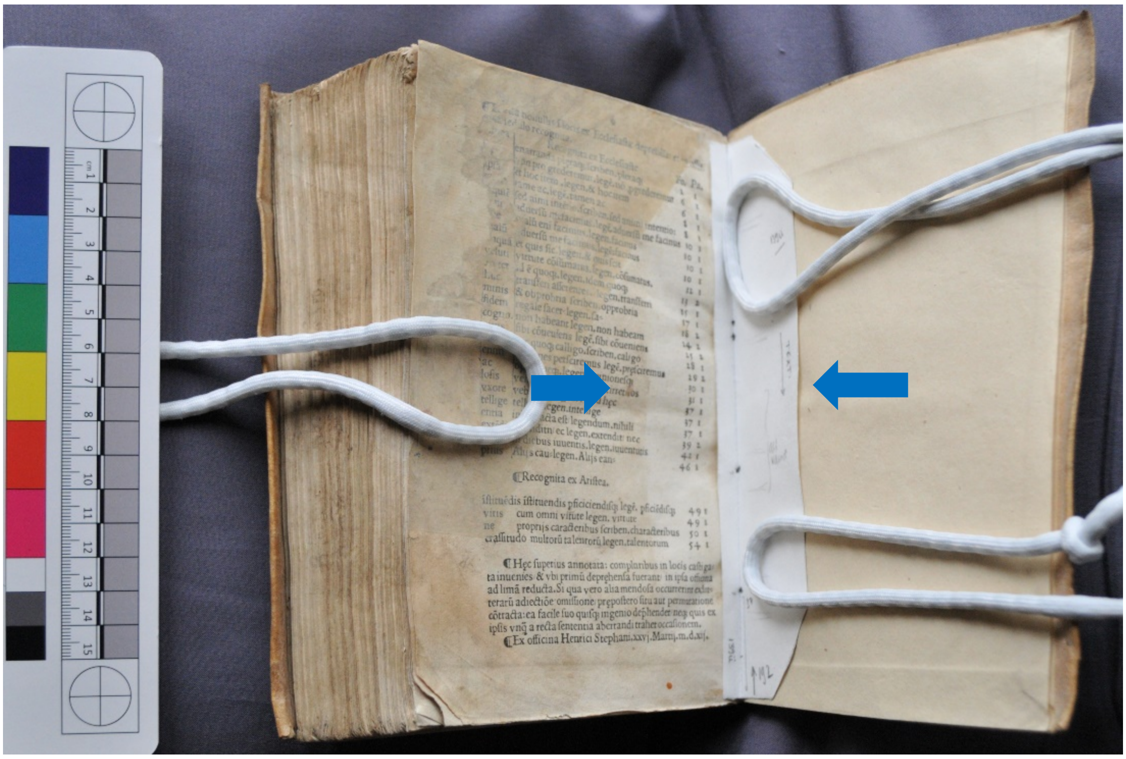


**Fig. 218. Evidence for the guard in the absence of soiling on the adjacent text leaf.**
Lanhydrock 134ii and source binding C.3.29, (Milan & Paris 1509-1512).
(This leaf has a repair stretching diagonally form the inner joint to the fore-edge.)

**Fig. 219 Annotations supporting the identification of the source binding.**
Lanhydrock 96ii and source binding A.19.11 (Paris, 1559).

**7.2.3.4. Other evidence**

The explanation behind evidence on a manuscript-waste fragment may not be clear until it is seen in relation to the binding. Lanhydrock 109, for example, had marks of tiny circles on the fore-edge turn-in stain. These were found to mirror small bumps in the turn in of the source binding, F.5.8 (Oppenheim, 1640), made by some material underneath the turn in. The same fragment also had evidence of a mark in the centre of the fore-edge of that turn-in which was originally through to be evidence of a central fore-edge clasp but, in fact, related to a crease in turn-in.

In the case of Lanhydrock 96i, ii, the main evidence used to verify the source binding as A.19.11 (Paris, 1559) were annotations on the fragment similar to those in the textblock (Fig. 219). Wormhole evidence and the turn-in pattern also matched but the source binding, had little other evidence that could assist with the matching process as it been rebacked and had a smooth spine and new boards which had no evidence of the lacing-in pattern.

A fragment, particularly if it was an endleaf, may also have shelfmarks, though perhaps now obsolete, or ownership inscriptions which may also be found on the title page in the source binding and could be used to verify the link between the two. Shelfmarks and ownership inscriptions might also support the identification of an endleaf as being positioned at the beginning or the end of the book but it should not be used independently of other evidence as often names and shelfmarks can also feature on endleaves at the end of a book. However, as discussed earlier (1.2.) identifying a fragment as being at the beginning or end of a textblock does not in itself identify the fragment as having been adjacent to the left or the right board.

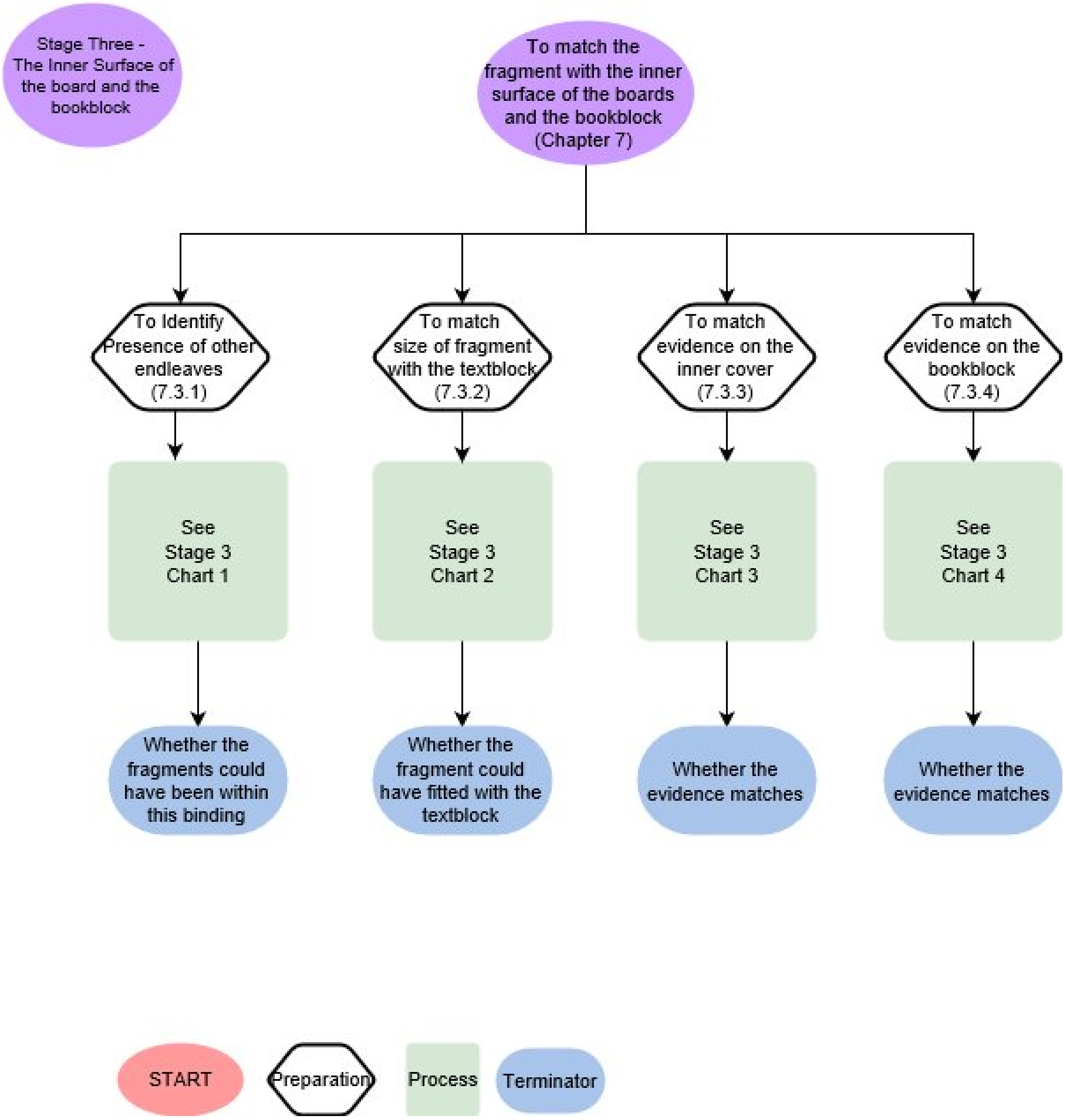



**Chart 3. To compare the fragment with the inner surface of the boards and the textblock**

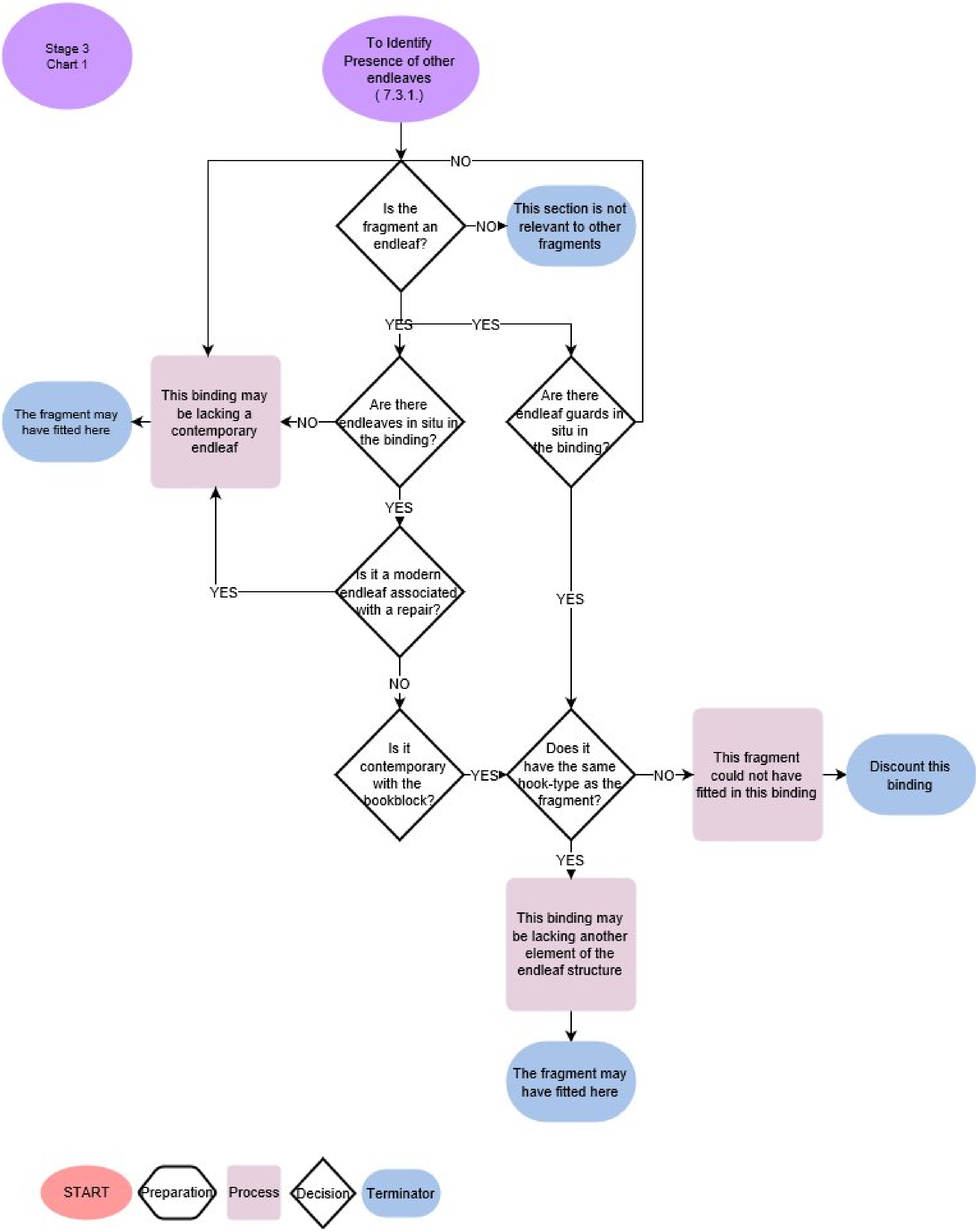



**Chart 3a. To identify the presence of other endleaves**

### 7.3. The process of identifying the source binding after Stages One and Two

As stated in 7.2., Stage Three involves comparing

i. the proportions of the fragment to the textblock.
ii. the evidence on the fragment relating to the materials used and the features of the binding with the binding.
iii. the evidence on the fragment relating to non-binding features such as staining *etc*.

However, before any of these three points are examined, the opening of the cover allows for an assessment of whether it is likely that *any* fragment was removed from that binding.

#### 7.3.1. The presence of other endleaves

On opening the cover, the first thing that is usually noted is whether or not the binding has been repaired and whether elements of the structure have been altered, something which may not be immediately obvious from the exterior. In some cases, it is clear when an endleaf has been removed. Merton 75.c.19 (Lyon, 1553), for example, had no left endleaf and in addition to this, cut sewing thread was visible in the joint, indicating that something, most likely an endleaf, had been removed (Fig. 11). That endleaf was Merton E.3.9 (17).

While a binding's lack of any endleaf component might suggest that one had been extracted, it does not follow that the presence of an endleaf component, whether that be manuscript or printed waste or a blank paper leaf, indicates that another fragment could not have been removed from that binding. Lanhydrock 73.a.11 (London [1582]), for example, has a number of blank leaves before the title page,[395] possibly intended for annotations, and yet it was the source binding for the fragment D.3.10 (13). The format of a removed fragment, however, must be compatible with the endleaf structure still *in situ*. The endleaves Lanhydrock 96i, ii, which have an outside hook with cut stub format, could not have fitted with the outside-hook endleaf found *in situ* in F.10.14 (Antwerp, 1582), a binding which had been selected as a candidate match for the fragments. The fragment itself may have evidence - usually in the form of a crease or a stain or in the interruption of staining evidence on the fragment - of their being another component to the endleaf unit. The second component of that unit, however, may not still be *in situ* in the source binding. Lanhydrock 19, 20, for example, are outside hook endleaves which do not have a turn-in stain on the side of the stub which faced the board, suggesting that there was another endleaf or guard folded around each of these fragments blocking the

395 The Merton catalogue gives this volume's format as [16], 108, [4].

transference of the stain from the tanned-skin cover (Fig. 220). With Lanhydrock 56, 109 the gap in the turn-in stain indicates a stub that had straight edges but the stubs of these fragments have canted corners. This again indicates that there must have been another endleaf component, one with straight edges to its stub which was folded around Lanhydrock 56 and 109 (Fig. 221).

Even when endleaves are *in situ*, their present appearance may not be as it was when the fragment was still in the binding. Current pastedowns may once have been endleaves that were, after the book was repaired or the fragment was removed, pasted down. This was the case with D.11.11 (Paris, 1515), the source binding for fragments Lanhydrock 63, 64, the latter being the endleaf which faced the right board. Today that board is covered with a pasted down leaf. As discussed earlier (7.2.3.3.1), wormholes in this pastedown match those in the fragment (64) and in the current free endleaf but not in the board. This indicates that the present pastedown must have also been a free endleaf. When the fragment was removed, the free endleaf immediately faced the right board and was pasted down to it. It should also be remembered that *in situ* endleaves may themselves be recycled leaves and so their appearance, such as staining, wormholes *etc*., may be related to their earlier use. The *in situ* right endleaf in St. Canice's CK2577, the source binding for the comb spine linings CK/MS/3 and 9, for example, has worm damage which is not found in either the textblock or the boards or the fragment (CK/MS/9) and may be related to a previous use.

In addition to the retention of earlier endleaves and guards, bindings may also have new endleaves (some of which may have been pasted down) which were added either as part of a repair or to "tidy up" the appearance of the book (and so may be present in books that have not been repaired). It should also not be expected that left and right endleaves will be the same. In the case of Lanhydrock E.4.32 (Tübingen, 1571) - a parchment-covered laced-case binding examined as a candidate match for the guards Lanhydrock 134ii and 139ii but discounted for not having the correct sewing support distribution pattern - the left pastedown was an old endleaf while the right pastedown was a new leaf.

In many cases, during this research, the presence of endleaves in candidate matches were the reason for their elimination. (See the spreadsheets for each fragment examined on the accompanying USB.)

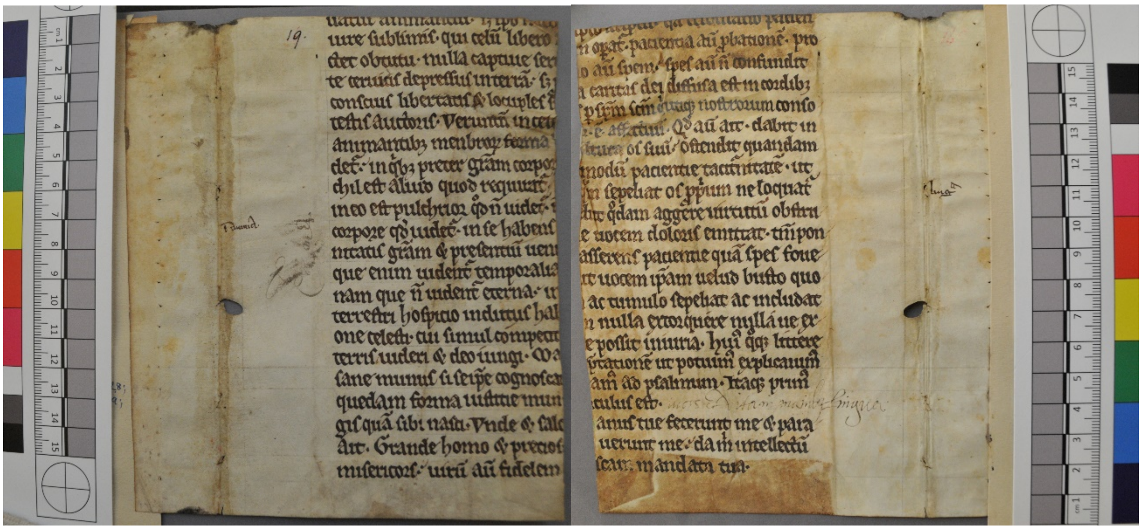


**Fig. 220. When the stub does not have the turn-in stain.**
Left: inner face of Lanhydrock 19, right endleaf for D.8.33 (Antwerp, 1566).
Right: outer face of the fragment.
There is no turn-in stain on the stub of this outside-hook endleaf (which if present would have been visible on the left image) suggesting that there must have been another component to the endleaf unit and the turn-in stain would have been on that.

**Fig. 221. When the shape of the stub does not match the shape of the gap in the turn-in stain.**
Left: outer face of Lanhydrock 56, right endleaf.
Right: Inner face of the fragment.
The stub is visible on the right image. The turn-in stain is visible on the left image. The canted corners of the stub do not match the gap in the turn-in stain. This suggests that there was another element to the endleaf unit.

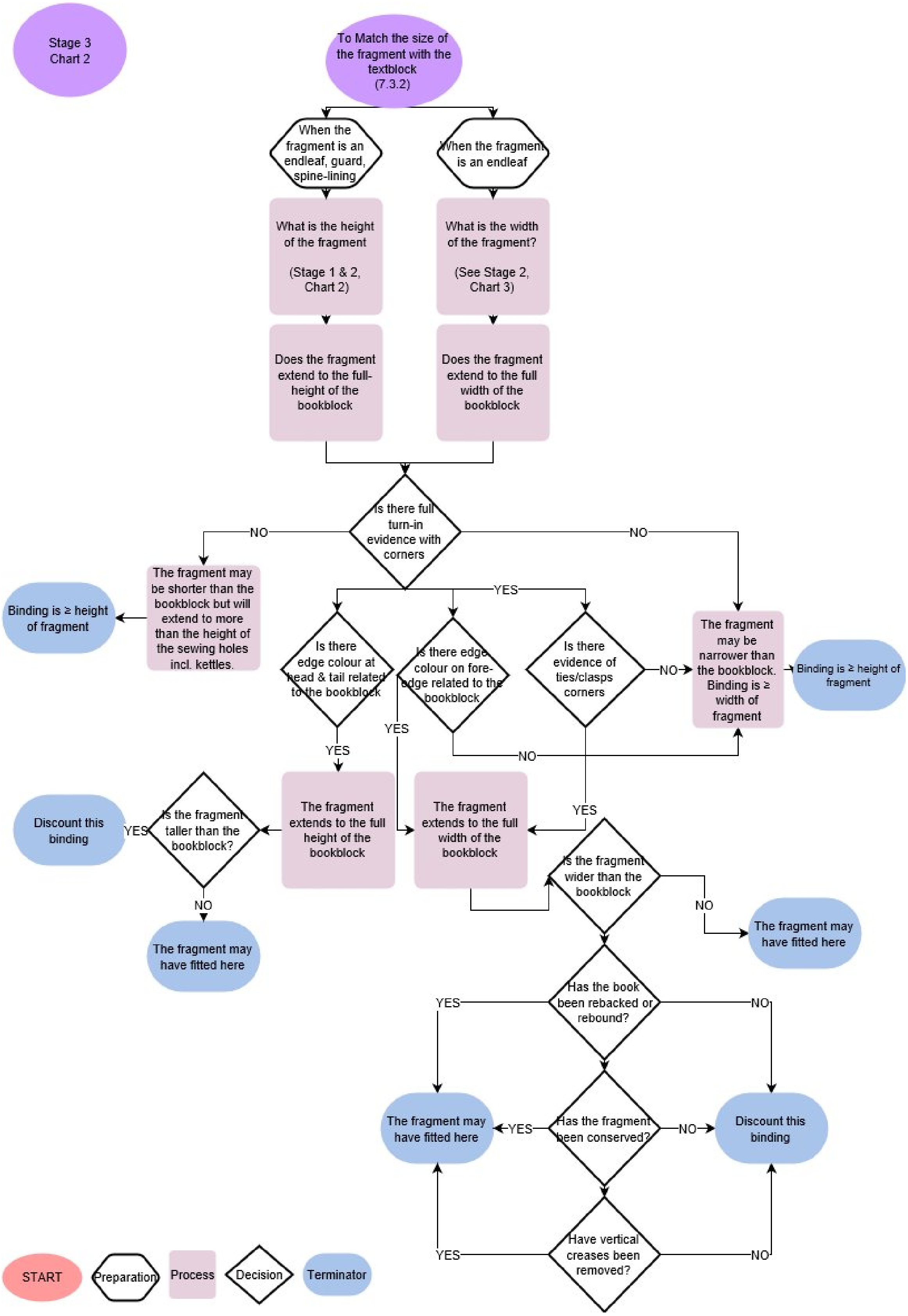



**Chart 3b. To compare the size of the fragment to the textblock**

**7.3.2. Matching the size of the fragment against the textblock**

After determining whether

i. the endleaf structure in place in the binding is contemporary with the binding or not and
ii. whether the binding in question could be lacking an endleaf or guard or spine lining,

the next stage is to check whether the fragment could have fitted into that binding. Up until this point, the size of the fragment has been used as a guide for, first, the height and (depending on the fragment) second, the width of the *cover*. Relating the size of the fragment to the *textblock*, however, has only been an approximation, as it has not been possible to check the squares or, specifically in relation to the width, the joint and shoulder area (6.3.6. and 7.2.1.2). When the book is opened it is now possible to check the size of the endleaf against the textblock and, as noted earlier (7.2.1.1), the inner surface of the cover. In terms of guards and comb spine lining, this stage will relate only to the height of the textblock.

**7.3.3. Matching evidence on the inner surface of the cover – binding and non-binding features**

Having verified that the fragment could fit with the textblock, the next stage is to match the 'image' of the inner surface of the cover which is visible on the manuscript fragment against the actual inner surface of the cover. As parchment is given to expanding and contracting, it is often important to evaluate the features, identified in 7.2.2 and 7.2.3, in relation to each other. While a pair of fragments will have more evidence to match than a single fragment, single fragments were found to still have sufficient evidence to identify the source binding. An endleaf will, as stated before, have more evidence than a guard or a comb spine lining and in the case of the latter two, it is more likely that the turn-in evidence on the fragment may not be a reflection of the turn-in evidence on the source binding today (7.2.2.6).

The evidence on the fragment refers to the binding as it was when the fragment was *in situ*. Alterations to the binding may have obscured or removed features for which there is evidence on the fragment. One of the most common changes to books that have been repaired is the addition of new pastedowns (7.3.1). In Merton, the trend was more towards leaving the inner surface of the board uncovered, but in the other libraries examined, it was very much a common style of repair. The paper of these new pastedowns varies in weight and so the degree to which they conceal the binding features underneath will also vary. All the features on the inner surface of the boards of A.21.4, (Lyon, 1517), the source binding for Lanhydrock 32i, ii, can still be seen under the new pastedown (Fig. 148, 149). This, however, may also be due to the fact that the binding has wooden boards, lacing in channels recessed below the surface of the board and a cover of thick tanned skin – which was trimmed back – and which, because of the thickness of the material, is at a notably higher level than the boards. This means that the inner surface of the board is not on one plane and so features can be easily distinguished beneath the new pastedown. Even with paper boards, though, evidence can be visible under modern-paper pastedowns. In Lanhydrock C.1.18 (Paris, 1512), the source binding for the guard Lanhydrock 51, evidence of the irregular surface of the boards can be seen under the pastedown. In cases where the board features are less visible due to presence of a pastedown, imaging techniques could be used. This, however, was not found to be necessary in the course of this research.

**7.3.4. Matching evidence on the adjacent book leaves**

While new endleaves (pasted down on not) may obscure or lack evidence relating to the binding, other leaves at the extreme ends of the textblock, such as old endleaves still *in situ*, or the last leaves or title page may retain this kind of evidence. It is, therefore, not necessarily sufficient to look just at the inner surface of the board. The surviving parts of textblock, both front and back should also be examined for offsetting, binding features or damage, as discussed earlier (7.2.3).

Similarly, when the cover that was contemporary with the removed manuscript fragments has been replaced, there will be no relevant lacing-in evidence, turn-in evidence, fastenings *etc*. on the new cover to relate to the evidence on the fragment. The identification of the source binding, then, will depend on the evidence that may be found in the textblock – and this on occasion will be sufficient. Five out of the eight identified source bindings in Clare College, for example, had been rebound and their association with the fragments was verified through worm evidence, of which there was a great deal due to the fact that the boards had been wooden, corrosion from the chain staple, and ink stains. Unfortunately, when the structural elements of the binding that were contemporary with the fragments have been removed, the identification of the source binding will rely more on the presence of various types of damage in the textblock that can be used for identification purposes. Whether this kind of evidence is available will very much dependent on the conditions that the book had been kept in and as such it will not be available in all cases.

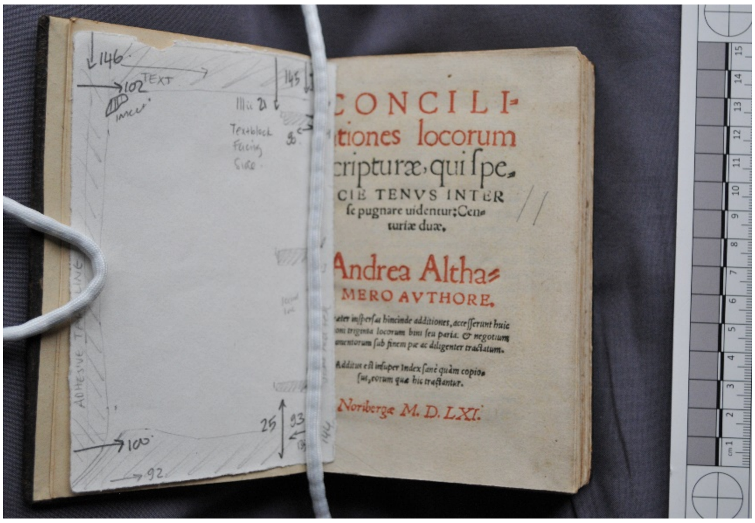
The relevant matching evidence may also not be present if the textblock is incomplete and lacks the leaves which were adjacent to the boards. This is the case with what is thought to be the source binding for Clare 2ei, A.2.2. vol. III (Basel, 1528), which ends on leaf Qq5. This volume was rebound and has no evidence of the original binding and, as it lacks its final leaves, no evidence of corrosion stains from fore-edge clasps - for which there is evidence on the fragment and which might be expected to be visible in the adjacent textblock leaves. There is, though, some traces of the lace-in impression and the fragment is clearly from the same manuscript as the other endleaves used in this series of volumes (2di, ii and its source binding A.2.2. Index volume (Basel, 1529) and 2eii and its source binding A.2.2. vol. II (Basel, 1528)). However, the association between 2ei and A.2.2. vol. III cannot be proved due to lack of evidence in the incomplete textblock.

In the course of this research one suspected instance of a textblock being bleached was found and this was in Lanhydrock, the private country house collection. The source binding A.4.35 (Nuremberg, 1561), the match for Lanhydrock 111i, ii has no evidence of staining on the unusually clean title page (Fig. 222). Later pages are soiled and the dirt is ingrained as if the page had been washed without first dry cleaning it to remove the dirt (Fig. 223). There are also yellow stains on a small number of leaves in the textblock (Fig. 224). Whether books were bleached or not may depend on the type of library and as this was a country house library, the books here are more likely to have been treated this way than the collection in a college library. The result of this is that there is very little evidence at either the beginning or end of the textblock which could support the identification of the source binding.

### 7.4. When Stage Three does not identify the source binding

If Stage Three fails to identify the source binding from the candidate matches first identified in Stage One and then further refined in Stage Two, the next stage should be to examine the library again to include bindings of the correct height with smooth spines. Eliminating the key identifier – the distribution of the sewing supports on the spine – will produce more matches and these can then be examined. However, minus the key identifier, too many bindings with smooth spines and of the appropriate height for the fragment may be identified to make this practicable. In Lanhydrock, the fragments 96i, ii matched nine bindings with raised bands but nineteen with a smooth spine. The source binding (A.19.11, Paris, 1559) was found amongst the smooth spines.

It may be, though, that the source binding may not be identified even if it is in the library. This may happen where a volume has been repaired, and no early endleaves remain and there is no evidence in the textblock to verify a match. Merton 46.a.2 (Basel, 1532), a rebacked volume  is one such example. It seems a strong possibility as a match for D.3.2 (9) but there is not sufficient evidence to confirm this. Nevertheless, in many rebound books, it was possible to identify elements that could be used to match the textblock back to a source fragment.



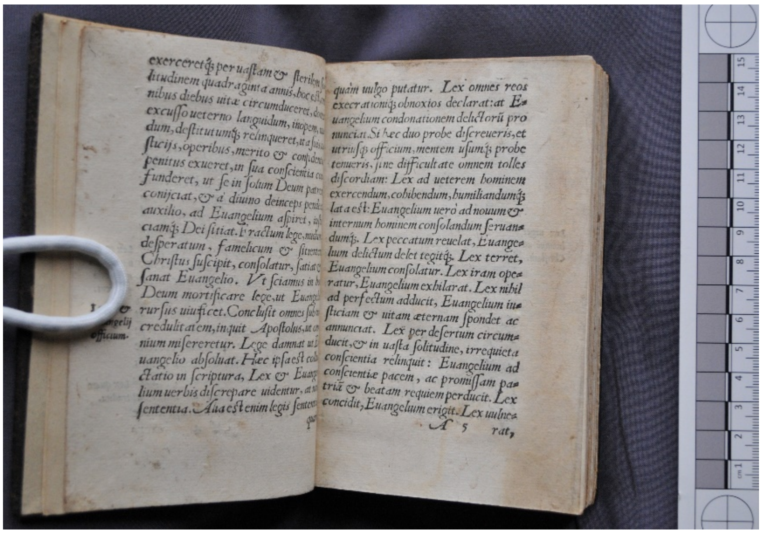


**Fig. 222. Lanhydrock A.4.35 (Nuremberg, 1561), title page.**
**Fig. 223. Lanhydrock A.4.35, page with soiling.**
**Fig. 224. Lanhydrock A.4.35, page with possible signs of bleaching.**
Source binding for 111i, ii.

## 7.5. Summary of stage three: Matching images

While Stage One and Two of this process involves analysing the evidence on a manuscript-waste fragment to identify features which are visible on the spine and sides of a binding, Stage Three involves matching the position and shape of those same features to what can be seen on both the inside of the cover and the adjacent leaves.

Features analysed in Stage One to determine the position of the sewing supports such as the lacing-in holes are also examined in Stage Three where both the pattern of the holes in the board and the material of the supports are compared to the evidence on the fragment. Similarly, features examined in Stage Two, which are visible on the sides of the binding but in some way penetrated through to the inner surface of the cover to leave evidence on the fragment, are now matched against the evidence on the inner surface of the cover. This includes the covering material present in the form of turn-ins and also the position of pins which secured the fastenings, chain sites and title plates to the boards and ties. In Stage Three these features are verified as the book is opened and examined. In addition, while the board material may be visible on the sides of the binding and the edge colour may be clearly visible on the textblock, both may need to wait to Stage Three to be verified, where the board material will be visible or, if covered by a pasted down endleaf, discernible, on the inner surface of the cover and the edges of individual leaves of the textblock can be examined for faded colour.

The main difficulty encountered in this stage is the level of interference on the part of binders and to what degree this has compromised the evidence. The process of identifying the source binding for removed manuscript-waste fragments will always be more difficult for fragments that were used as comb spine linings and guards compared to endleaves, and with endleaves the most complete record is available when endleaves from both sides of the book are examined together. In the case of covers, evidence for the cover will have to be present in the textblock to verify a match. In the examples examined, this was not always found to be the case  (see Chapter 9).

The next chapter looks at samples of fragments, and how the process works in each of these cases from Stage One to Stage Three. Following on from that, the process outlined in these three chapters 5-7 will be assessed in Chapter 9.

# Chapter 8
## Examples from the Case Studies

### 8.1. Overview

This chapter will present one example of each fragment type (endleaf, guard, comb spine lining, cover) and demonstrate how the source binding was identified. The images for the fragment and its source binding are presented at the end of each section

## 8.2. A pair of endleaves: Lanhydrock 47, 49

### 8.2.1. The fragments

This was a pair of endleaves (Fig. 227-8). These fragments were not housed next to one another in the guardbook but were easily identified as being a pair due to their size, the ties on three edges, and the width of the turn-ins. They were also two leaves from the same manuscript. These endleaves had an inside hook as the stain from the turn-in extends to the spine fold and there is no stain on either side of the stub.

The two fragments were both attached to guards in the guardbook. The stub was pasted down on to the guard making it difficult to see the sewing. In both cases the inner face of the fragment is on the recto of the guardbook leaf.

### 8.2.2. Evidence for the source binding on the fragments

On the basis of the evidence on the fragment, the source binding should be

i. greater than 205mm in height (Lanhydrock 47: 205mm and 49: 200mm)
ii. covered in tanned skin
iii. sewn on three sewing supports, therefore with three bands visible on the spine. The supports are quite close to the head and tail edge – and so very close to the turn ins. One of the lace-ins slips is not visible in Lanhydrock 47.
iv. greater than 137mm in width
v. possibly with paper boards – there is no evidence for lacing-in channels that might suggest wooden boards
vi. with ties on three edges
vii. there is no evidence for chains or other furniture

### 8.2.3. Identifying candidate matches

Two candidate matches were identified on the shelf but one was immediately discounted when it was removed and the support distribution examined more closely. The remaining one candidate match was A.21.5. It had been repaired and the boards had been replaced but the sewing positions had not been altered and the original cover had been replaced on to the new boards. This volume could be verified as the source binding by its dimensions and also the position of the ties. In Stage Three, evidence of the original laced-in supports in the textblock matched the evidence on the fragments, as did the shape of the turn-ins.

| **STAGE ONE** | **Board height mm** | **Cover material** | **No. of Supports** | **Distance from Tail Edge mm** | **Distance from Head Edge mm** |
|---|---|---|---|---|---|
| **47 (LEFT)** | >203 | Tanned skin staining | 3 - sewing holes, stretched | 38 (measured to sewing hole) | 26 (measured to middle of support) |
| **49 (RIGHT)** | >202 | Tanned skin staining | | 35 | 22 |
| **A.21.5 - SOURCE BINDING** | Spine: 210 - 213 Boards: 213 | Tanned skins | 3 | 38 | 28 |

| **STAGE TWO** | **Board width mm** | **Ties** | **Clasp** | **Straps** | **Chain** | **End-band** | **Repair** | **Edge Colour** | **Board material** |
|---|---|---|---|---|---|---|---|---|---|
| **47 (LEFT)** | >135 | YES. On three sides. | N/E* | N/E | N/E | N/E | | N/E | Paper as had ties |
| **49 (RIGHT)** | >137 | YES. On three sides | N/E | N/E | N/E | N/E | POSS. | N/E | Paper as had ties |
| **A.21.5** | 145 | Yes- holes in cover but not in boards. Position a match | NO | NO | NO | NO | Repaired at caps, boards replaced new endleaves, edges uneven - resewn | Uneven – has been resewn (can see this with the title) | Paper |

- N/E - No Evidence

| **STAGE THREE** | **Textblock Height mm** | **Textblock width mm** |
|---|---|---|
| **47 (LEFT)** | >203 | >137 |
| **49 (RIGHT)** | >202 | >137 |
| **A.21.5** | 206 | 138 (title page)<br>143 (but board edge to inner joint) |

**8.2.4. The source binding**

A.21.5 matched perfectly the evidence on the fragment for the distribution of the sewing supports and the height (Fig. 229-232). The fact that the book has been rebacked has altered the record on the inner surface of the board at the joint edge. In the fragment the turn-ins extend in a straight line to the joint but post repair, the edges at the joint are slanted inwards. The rest of the turn-in, however, is as it was and its 'image' on the fragment matches what can be seen on the board. The lacing-in holes are new because the boards are new and are angled as opposed to the perpendicular arrangement in the earlier boards. However, in the last original leaf in the book, the original lacing in pattern can be seen and this matches up with the evidence on the fragment. There is a title on the fore-edge, the edge of which is now uneven. It is a sixteenth-century roll-stamped binding with Hannibal Gamon's ownership inscription (1582-1651; 3.4.1, p.62)

**8.2.5. The associated text**

The printed text in this binding is Pierre Richard**,** *Sermonum opus*. [Paris]: ab Joanne Paruo, [1518].

**8.2.6. The source manuscript**

Both fragments were identified in the guardbook as being late thirteenth century, Lanhydrock 47 is identified as 'Distinctiones in Canon Law' and Lanhydrock 49 is identified as 'De Sacramentis'.

**8.2.7. The manuscript, the text and the binding**

This is an example of an early sixteenth century binding sewn on three supports. The binding, as expected for this period, had endleaves with an inside hook, in this case made from manuscript waste.

The very distinctive "three ties" also provided a link to another pair of fragments, Lanhydrock 126i, ii (Fig. 225-6). These fragments had been selected as examples of layers of a laminated board. They were fragments of a manuscript on paper and found to fit A.21.5 – Lanhydrock 126ii with the right board and the incomplete 126i with the left board. The measurements and the distances between the lacing-in holes of these fragments varies in the two fragments which shows that they are from different boards. The lace-in holes match up to the lace-in marks in the textblock. The fragments look to be slightly too tall for the boards. However, these boards are new and might be slightly shorter than the originals. The distances between the tie holes match those on the boards, as do the lacing-in holes. These fragments were from a manuscript of Terence's Andria from the fifteenth century (noted on fragments). A.21.5 was not identified as the source binding for Lanhydrock 126i, ii using the new method but rather when A.21.5 had been identified as the source binding for Lanhydrock 47, 49 it was noticed that the thee-tie feature was similar and the fragments 126i, ii were then checked against the binding.

### 8.2.8. A review of the process

A.21.5 is an example of a book that has had its boards replaced and been resewn but none of this is evident from the spine of the cover. A.21.5 is a case where basing a selection of candidate matches only on examining repaired books will not always result in an identification of a source binding – however, focusing on the spine features will. The covering material must have been removed from the boards, to allow those boards to be removed, new boards inserted and the bookblock attached to these new boards with new lacing-in slips (also not evident on the spine). It only becomes apparent that the book has been repaired when examining the sides where the new board can be seen through the lacing in holes. On the inner surface of the sides, the new lacing-in evidence can be seen along with the new smooth board. On the fore-edge, the unevenness of the edge suggests that the book has been resewn.

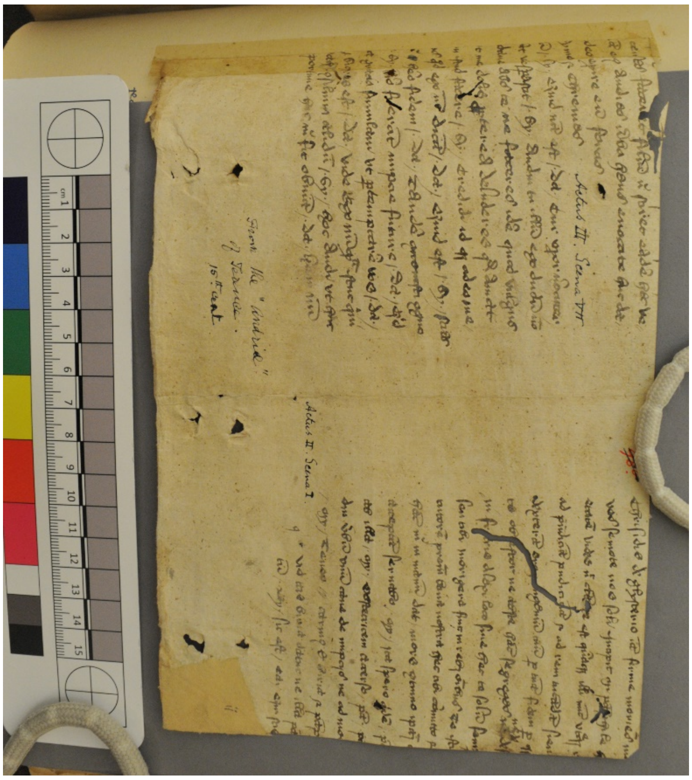


**Fig. 225. Lanhydrock 126i, ii.**
**Fig. 226. Lanhydrock 126ii – image rotated to the right.**
This fragment was from the right board

**Fig. 227. Lanhydrock 47, left endleaf, outer face.**

**Fig. 228. Lanhydrock 49, right endleaf, outer face.**


**Fig. 229. Lanhydrock A.21.5 and Lanhydrock 47.**

**Fig. 230. A.21.5, left cover.**


**Fig. 231. Lanhydrock 47 and inner surface of left board of A.21.5.**


**Fig.232. Lanhydrock 49 and inner surface of right board of A.21.5.**

## 8.3. A pair of guards: Lanhydrock 134ii and 139ii.

### 8.3.1. The fragments

These are two guards which were identified as a pair by their unusual shape (Fig. 233). They are both fragments of a document.

### 8.3.2. Evidence for the source binding on the fragments

On the basis of the evidence on the fragment, the source binding should be

i. greater than 195mm in height
ii. greater than the width of the fragment (55mm)
iii. sewn on four supports

Identifying the covering material proved more problematic. There is no stain that would suggest tanned skin. However, there are marks perpendicular to the sewing holes that are similar to the marks left by the edges of lacing-in channels – two parallel lines exending from each sewing hole - a feature associated with wooden boards. However, wooden boards have only been found, in this research, covered in tanned skin (bar the repaired Merton 95.jj.8 vol. II (Lyon, 1571). If it is the case that the fragments were from a binding with wooden boards covered in tanned skin, the absence of staning on the guards could be explained by the fragments being too short to be in contact with the turn-ins. However, there is also a crease on the tail edge of 134ii that could be a mark from the turn in of a (non-staining) cover. As the covering material could not properly be determined, bindings in both tanned skin and parchment were examined.

### 8.3.3. Identifying candidate matches

139ii was identified as the right endleaf and 134ii the left on the basis of the taller tail panel. Comparing the fragments to both tanned skin and parchment covered bindings in Stage One, seven candidate matches were identified. The bindings varied in height to allow for the possibility that the guards might be shorter than the textblock.

| Shelf mark | Date | Place of Printing | Board height mm | Cover material | No. of Supports |
|---|---|---|---|---|---|
| **139ii** | | | **>192** | **no stain** | **4** |
| **134ii** | | | **>195** | **no stain** | **4** |
| C.3.29 | 1512 | Milan | 201 | Parchment | 4 |
| A.21.16 | 1610 | Mainz | 225 | Tanned skin | 4 |
| A.6.1 | 1606 | London | 226 | Tanned skin | 4 |
| E.4.3 | 1583 | Basel | 218 | Tanned skin | 4 |
| E.8.43 | 1646 | Amsterdam | 202 | Tanned skin | 4 |
| A.14.3 | 1596 | Oxford | 203 | Parchment | 4 |
| A.21.11 | 1596 | Venice | 225 | Tanned skin | 4 |

None of these seven candidate matches could be eliminated in Stage Two as there is too little evidence on guards to use for comparison with the sides of the bindings.

| **Shelf mark** | **Board width mm** |
|---|---|
| **139ii** | **>42** |
| **134ii** | **>55** |
| C.3.29 | 133 (to start of cover extension, *i.e*. the yapp edge) |
| A.21.16 | 175 |
| A.6.1 | 166 |
| E.4.3 | 161 |
| E.8.43 | 133 |
| A.14.3 | 154 |
| A.21.11 | 162 |

In Stage Three, one binding was discounted as it had endleaves in place which the fragments would not have fitted with - they had a different type hook (inside as opposed to the outside hook of the *in situ* endleaves); another was discounted as it already had a guard; another on the basis that the lacing-in material did not match and another two had no evidence that could be used to either confirm or discount the association with the guards.

| **Shelf mark** | **DISCOUNT** |
|---|---|
| **C.3.29** | **NO. A MATCH. Soiling on last leaf identifies the guard 139 as the right guard** |
| A.21.16 | No evidence in textblock to confirm or discount |
| A.6.1 | No evidence in textblock to confirm or discount |
| E.4.3 | YES - printed waste endleaves in place with outside hook. Lace ins do not match and turn-ins would have touched the guard |
| E.8.43 | YES - no match for lace in material and no evidence in textblock for guard |
| A.14.3 | Yes - lace in evidence does not match |
| A.21.11 | Yes, as has endleaf guard already |

One, C.3.29, was a match.

| **Shelf mark** | **Date** | **Place of Printing** | **Board height mm** | **Cover material** | **No. of Supports** | **Distance from Tail Edge mm** | **Distance from Head Edge mm** |
|---|---|---|---|---|---|---|---|
| **139ii** | | | **>192** | **no stain** | **4** | **37** | **27** |
| **134ii** | | | **>195** | **no stain** | **4** | **33** | **28** |
| **C.3.29** | **1512** | **Milan** | **201** | **Parchment** | **4** | **38** | **33** |

| Shelf mark | Board material | Endleaf | Support Material | Lace-in evidence | Corners | Turn-in | Staining | DISCOUNT |
|---|---|---|---|---|---|---|---|---|
| 139ii | wood? | | Non stain | Yes – 2 pallel ridges perpendicular to joint | N/E | N/E | NO | |
| 134ii | wood? | | Non stain | Yes – as above | N/E | N/E | NO | |
| C.3.29 | No board | New paste-downs and endleaves tipped to title and last leaf of text | Alum | Two supports per station | Lapped fore-edge | Even all round - except left fore-edge - which is extended | Soiling on last leaf of text - except for area where guard was. Title heavily soiled and very soft which may explain lack of impression? | NO. A MATCH. Soiling on last leaf identifies 139ii as the right guard |

**8.3.4. The source binding**

The modern endleaves on this binding have a clear impression from the turn-in which seems at odds with the lack of similar strong evidence on the guard fragments. However, the sharpness of the impression on the new endleaves may be due to the endleaf being pasted down to the cover. The match is verified by the pattern of the lace-in slips on the inner surface of the cover and the non-soiled area on the last leaf where Lanhydrock 139ii was positioned. Lanhydrock 139ii initially seems slightly too wide for this ghost stain in the textblock. However, the early leaf that the fragment is being measured against is tipped to the new endleaf and so has been pulled back into the cover, making it difficult to measure the fragment against the true width of the leaf. In addition, creases on the fragment around the fold indicate that it was pushed up against the joint when it was *in situ*. Taking these two points into consideration would explain why the drawing of the fragment looks marginally too wide for the gap in staining on the page. That there is no impression of Lanhydrock 134ii in the title page may be explained by the fact that the paper of this leaf is very soft and may not have taken an impression from the guard.

**8.3.5. The associated text**

The texts within the source binding were Varagius, *Flores totius, sacre teologie* (Milan, per Io. Iacobum De Ferrariis [1509]) and Olympiodorus, *Vetus editio Ecclesiastae* (Paris: H. Estienne, 1512). The volume belonged to Hannibal Gamon and is annotated in red ink in a sixteenth-century hand.

**8.3.6. The source manuscript**

The following information relating to the fragments is taken from the guardbook:

139ii: "Fifteenth century vellum. Part of a document in French, relative to a payment of 5000 livres to the King of France; 3 Feb"

134ii: "Latin deed on vellum of Hardonymus (Harduin de Bueil). Bp. Of Angers, notifying that Jean Bouchier, Benedict Pidalet, Guillaume Guerin, Gervase Gysembart and Jean Morell, are his counsellors, keepers of his wardrobe, and his proctors. At Ghent, date cut off. Early 15th century".

**8.3.7. The manuscript, The text and the binding**

These two fragments of fifteenth-century documents, both French, were used in the binding of two texts, one printed in Milan, in 1509 and another printed in Paris in 1512. The origin of the binding is unclear but it once belonged to Hannibal Gamon and has his ownership inscription. It is a parchment-covered, laced-case binding with cover extensions (yapp edges) which was sewn on four alum-tawed supports. It has a manuscript title on both the spine and the fore-edge.

**8.3.8 Review of the process**

This example shows that when working with guard fragments, it is unlikely that candidate matches will be discounted in Stage Two as there is often little evidence that is of use. What is also clear with this example is that the sewing distribution is key and can be used independently of the covering material.

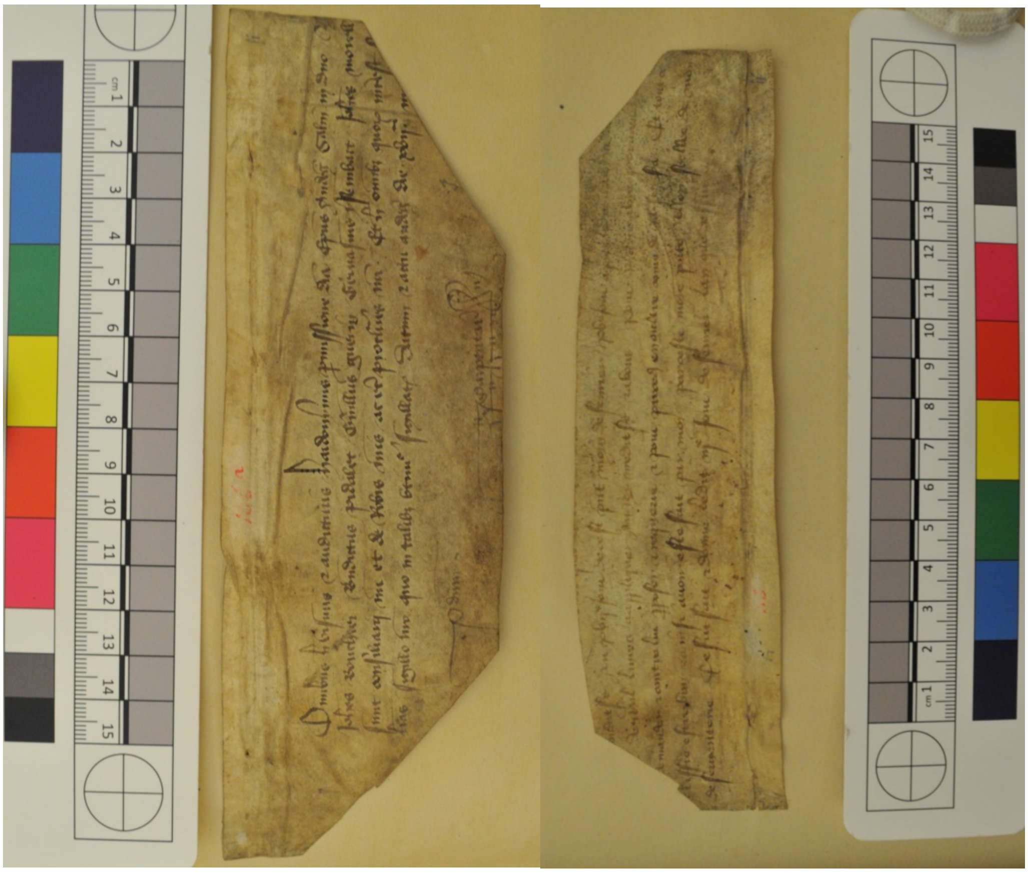


**Fig. 233. Lanhydrock 134ii (the left guard) and 139ii (the right guard).**

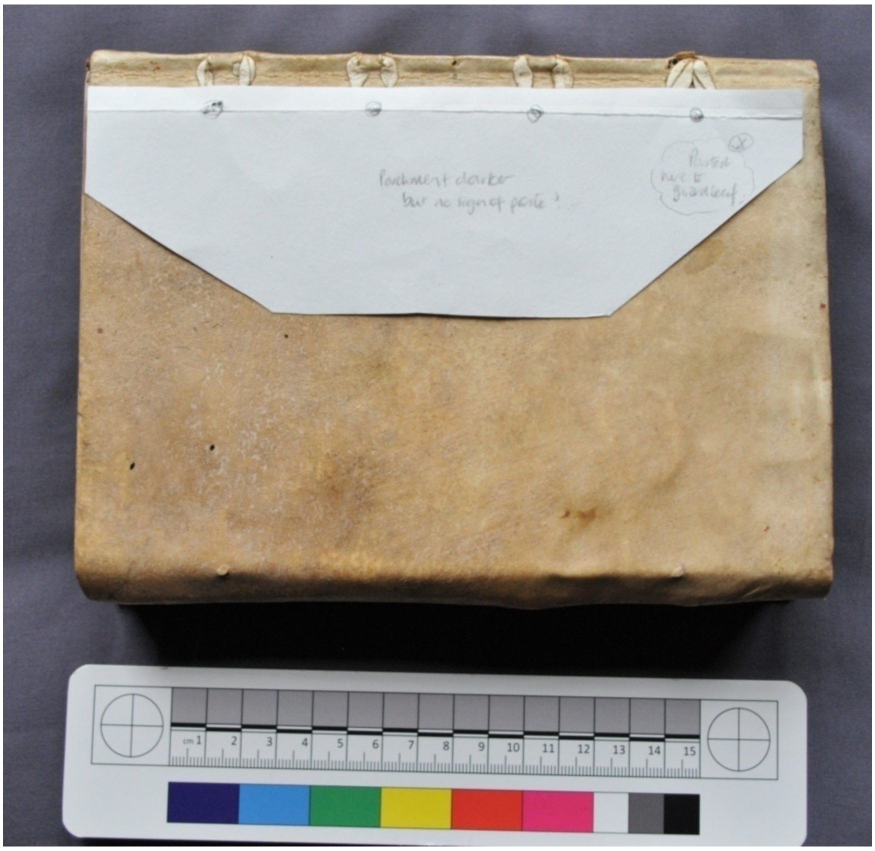



**Fig. 234. Lanhydrock C.3.29, left cover.**


**Fig. 235. C.3.29, inner surface of left cover with new endleaves.**


**Fig. 236. C.3.29 and Lanhydrock 134ii.**

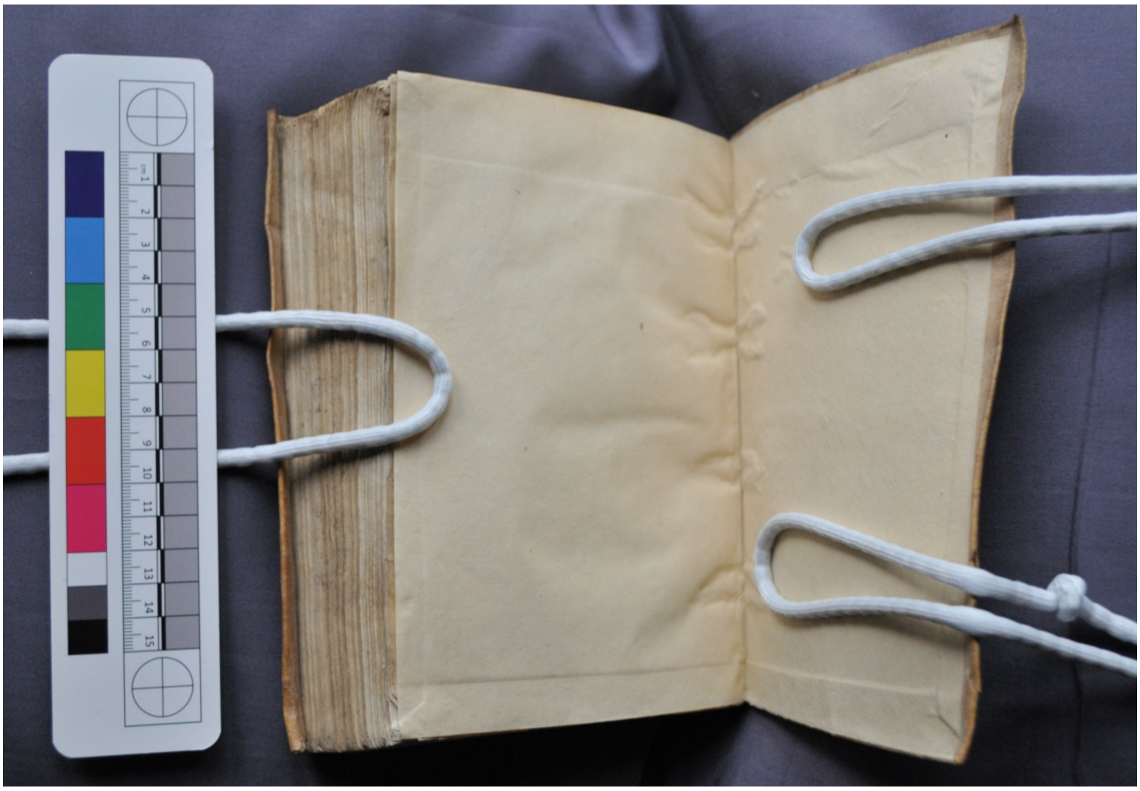


**Fig. 237. C.3.29, inner surface of right cover– new endleaves.**

**Fig. 238. C.3.29, inner surface of right cover – last text leaf – and 139ii.**

## 8.4. A comb spine lining: St. Canice's CK/MS/3 and CK/MS/9

### 8.4.1. The fragments

These fragments were selected as an example of a comb spine lining (Fig. 239, 240). The two fragments were from two archival documents and were written on one side only. It was possible to identify these fragments as a pair as one of the 'teeth' on the comb had a peculiar shape which could be seen impressed on the other under lining. They were both lacking one of the panels from one of the ends. CK/MS/3 has the impression and staining from the 'teeth' extensions of CK/MS/9 which indicates that CK/MS/3 was pasted to the spine and CK/MS/9 was positioned on top of it.

### 8.4.2. Evidence for the source binding on the fragments

On the basis of the evidence on the fragment, the source binding should be

i. greater than 360mm in height: There is evidence in one panel of the endband tiedowns (tied in three places) so this lining must have extended almost to the end of the spine.
ii. 111mm width for the spine: It was possible to see where one fragment was positioned on top of the other – from both the impression mentioned above and also by lining up the holes in the fragments for the endband tie-downs.
iii. sewn on six supports.
iv. covered in tanned skin: On the spine-area of the fragment, the parchment was discoloured due both to the adhesive on one side and also, on CK/MS/9 (the fragment which was positioned on top of CK/MS/3), from the cover material. (It can though be difficult to know when the discolouration is a stain or when it is the natural differentiation in shade in the parchment.)
v. possibly with paper boards: There were remnants of paper on both sides of CK/MS/3 - one could relate to the inner surface of the board, the other the endleaf.
vi. with some insect damage.
vii. width of the boards unknown.
viii. with sewing supports made from a non-staining material.
ix. unclear whether there will be fastenings, furniture or edge colour on the binding as there is no evidence for this on the fragment .

Despite the fact that one of the spine panels was missing from both fragments, it was still possible to identify the taller panel by identifying the spaces for the head and tail supports. This allowed the left and right sides of the comb spine lining to be identified: CK/MS/3 was the under lining and its extension element was positioned on the left board and CK/MS/9 was the upper element and positioned on the right board. In both cases, the blank side of the parchment faced the inner surface of the board and the writing on the parchment faced the bookblock.

### 8.4.3. Identifying candidate matches

Some of the bindings in this collection were covered in tissue. In some cases, it was possible to see the position of the raised bands under the tissue, in others not. Candidate matches were first identified on the basis of the height and width of the spine and, where it was possible to see them, the distribution of the sewing supports. Of this collection of 3200 volumes there were 104 of the correct height and of these seven had the correct spine width (Fig. 45 shows one of the shelves with the tissue now removed from the bindings). The tissue was removed from these seven and

i. two could be immediately eliminated as they were sewn on five supports,
ii. one had been selected in error and in fact the spine was too narrow
iii. two could be eliminated as where the covering material was damaged on the spine, a comb spine lining still *in situ* could be seen.

This meant that, when the tissue had been removed, there were two candidate matches for these fragments, CK655 (Paris, 1645) and CK2577 (Paris, 1620). CK655 had a narrower spine than the fragments but was still selected as the spine panels of the lining could have been positioned over the joints making a narrower spine possible. CK655 was in good condition. CK2577 was a damaged binding that had not been repaired. The cover was missing from the left board and the spine. The cover was still intact on the right board.

Neither CK2577 or CK655 could be eliminated in Stage Two as the fragments had little evidence which could be compared to the sides of the binding. In Stage Three, CK2577 was verified as the match by evidence in the book - wormholes, creases and offset. The written side faced the bookblock and offset on to the endleaves. It is, then, the evidence of damage, a result of the conditions in which the book was kept, that enabled CK2577 to be confirmed as the source binding.

| STAGE ONE | Board height mm | Spine width mm | No. of Supports | Distance from Edge 1 | Distance from Edge 2 | Board width mm | TB height mm | TB width mm |
|---|---|---|---|---|---|---|---|---|
| MS 3 - Left | >360 | 111 | 6 | 60 | 65 | N/E | >360 | N/E |
| MS 9 - right | >360 | 107 | 6 | 57 | 51 (damaged) | | | |
| CK2577 | 385 | 112 | 6 | 69 | 50 | 243 | 379 | 236 |
| CK655 | 367 | 102 | 6 | 65 | 55 | 236 | 362 | 230 |

The other candidate match, CK655 could be discounted as it was clear that the binding had not been disturbed and a spine lining could not have been removed.

### 8.4.4. The source binding

CK2577 was a damaged binding and the fragments may have fallen off the binding and then been retained. The tanned skin cover remains only on the right board, the left board and spine are exposed. Worm damage can be seen in the tail panel of the spine and in the paper board. There is some staining on the board where the spine labels sat. There are no surviving endbands and two blank endleaves remain to the left. The initials 'SB' are found on the right cover, and an ownership inscription 'Stephanus B….?' is crossed out on the title page.

### 8.4.5. The associated text

The accompanying text Thomas Stapleton, *Opera omnia*, vol. II, was printed in Paris, 1620.

### 8.4.6. The source manuscript

The two fragments were from two archival documents and could be quite accurately dated by the written content.

### 8.4.7. The manuscript, the text and the binding

Both manuscripts were Royal decisions from the law courts of Henry of Navarre. CK/MS/3 could be dated to 1590 while CK/MS/9 was from 1603. They were used to line the spine of a text printed in Paris in 1620. The date of the binding is not clear.

### 8.4.8. A review of the process

This example of a damaged binding being the source binding for a pair of fragments shows that it cannot be assumed that a source binding would have been a repaired binding.

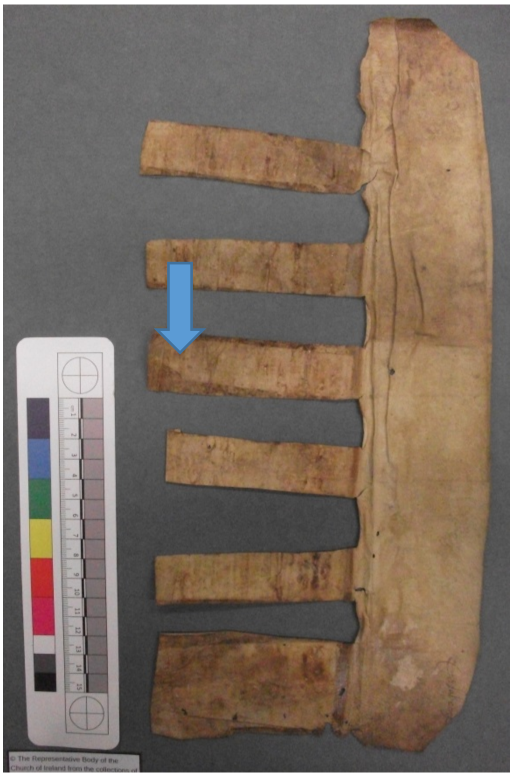


**Fig. 239. St. Canice's CK/MS/9 – extension on to right board.**
**Fig. 240. St. Canice's CK/MS/3 - extension on to left board.**

**Fig. 241. St. Canice's CK/MS/3 on the spine of St. Canice's CK2577.**

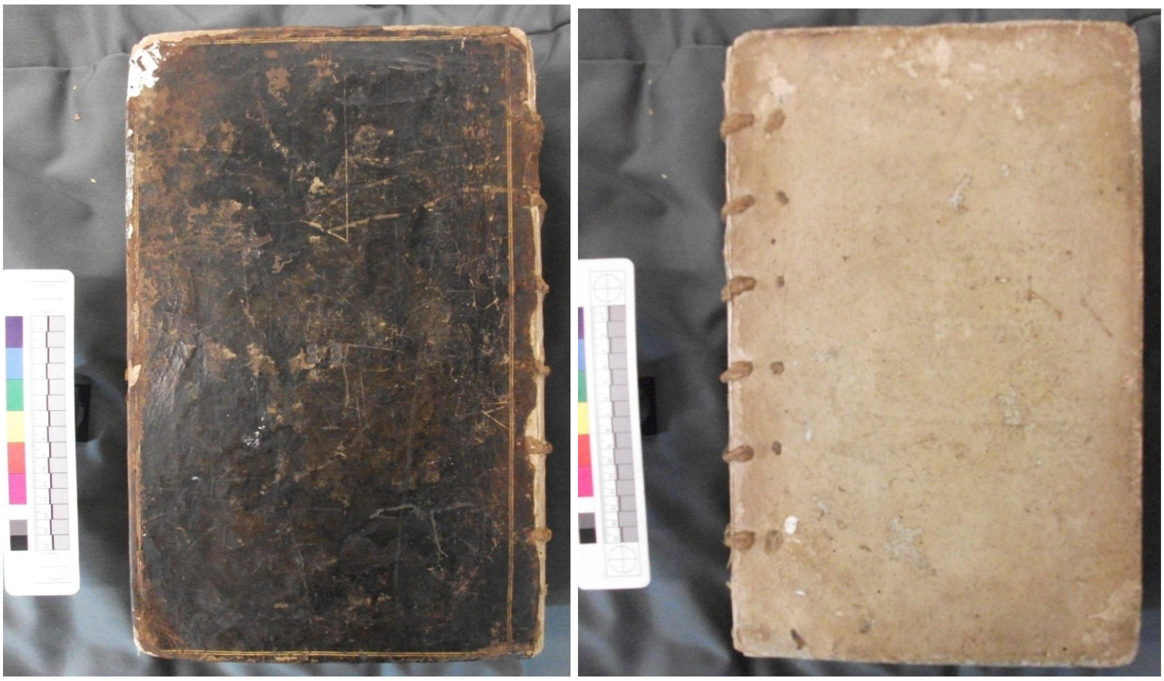


**Fig. 242. St. Canice's CK2577, right and left board.**

**Fig. 243. St. Canice's CK/MS/3, the blank side of the extension faced the board.**
The side with manuscript faced the blank endleaf.

## 8.5. A cover: Lanhydrock 168

### 8.5.1. The fragment

This is a fragment of a document – the blank side of the document was the outer side of the cover (Fig. 244) while the written side was the inside of the cover (Fig. 245). This fragment was selected as an example of a laced-in cover. It was part of the Lanhydrock control sample as a title was written on the spine which, in the event of the associated volme not being found using the method developed, would allow it to be identified via a library catalogue.

### 8.5.2. Evidence for the source binding on the fragment

The fragment has evidence for the height of the binding. There are no sharp lines along the spine or joint edge which might indicate the position of the spine. However, the parchment is discoloured where it faced outwards on the shelf and this indicates the width of the spine and from that, the width of the sides. There are three sets of lacing-in holes visible. One is 27mm from its closest edge while another is 20mm from its closest edge. The lacing-in hole which was 27mm from the edge is taken to be the one at the tail. This would mean that the titling on the spine begins in the middle of spine and runs upwards. There is a crease parallel to the fore-edge on one of the sides. It is not clear what the purpose of this crease is but if it is also present in the textblock of the source binding, it could be used to verify the match. On the basis of the evidence on the fragment the new binding covering the associated text should be

i. c.188mm in height. There were no turn-ins on the fragment which could indicate that the textblock was smaller which might then indicate that the new binding could be shorter if it was close in height to the textblock.
ii. the spine should be c.19mm width. This was notably wider than many of the new bindings in the library.
iii. the number of bands on the spine is not relevant. New bindings in this library usually have five raised bands, some of which are false bands.
iv. the sides of the binding should in c.140mm wide.

The focus, then was on a new cover that had a similar height and width of spine. As discussed earlier, the width of the spine is not always reliable but, in this case, it was a more distinctive feature than the height as it was, in the context of this library, unusually wide.

### 8.5.3. Identifying candidate matches

Comparing the spines in the library to the fragment's evidence for the height and width of the spine, identified three candidate matches were identified from shelf A. A.4.2. (London, 1610) and A.4.1

(London, 1608) were both covered in tanned skin with marbled paper sides, with five raised bands on the spine. The third volume, A.24.23, (London, 1577), was covered in a purple tanned skin, and also had five raised bands on the spine. (In the case of all three volumes, while there were five bands on the spine, the bookblock had been sewn on four supports, visible on the inner surface of the boards).

| STAGE ONE | Board height mm | Spine height mm | Cover material | No. of Supports | Distance from Tail Edge mm | Distance from Head Edge mm | Spine width mm |
|---|---|---|---|---|---|---|---|
| **168** | **188** | **186** | **Fragment is a cover. Modern cover sought** | **3** | **27** | **20** | **19** |
| A.24.23 | 200 | 198 | Purple tanned-skin | On spine 5 – laced in 4 | Not relevant | Not relevant | 23 |
| A.4.1 | 196 | 195 | Purple half calf & marbled paper | 5 on spine – 4 laced in | Not relevant | Not relevant | 23 |
| A.4.2 | 196 | 195 | Purple half calf & marbled paper | 5 on spine - 4 laced in | Not relevant | Not relevant | 29 |

The width of the sides of these bindings varied. The fragment, as a cover, should be larger than the associated textblock, but it could also have been the same size - this cover did not have turn-ins – and the dimensions may also have altered due to environmental conditions. None of the three could be eliminated on the basis of the width of the sides.

| STAGE TWO | Board width mm |
|---|---|
| **168** | **140 - measured from lacing entrance hole** |
| A.24.23 | 145 |
| A.4.1 | 135 |
| A.4.2 | 143 |

| STAGE THREE | TB height mm | TB width mm |
|---|---|---|
| **168** | **189** | **140** |
| A.24.23 | 192 | 142 |
| A.4.1 | 192 | 132 |
| A.4.2 | 199 | 137 |

There were also two candidate matches from case C (C.15.3: Edinburgh, 1593, and C.15.5: London, 1595), one from case D (D.15.1: Oxford, 1659) and two from case F (F.10.1: London, 1635 and F.16.12: Leiden, 1542) (see Fig. 44 for case B).

### 8.5.4. The source binding

The source binding was identified as A.24.23. It was selected by the method devised in this research project but it could only be verified by archival evidence - the title written on the spine of the fragment which matched the title of the textblock in A.24.23. The raised bands on the spine are false. The laced-in supports on the inner surface of the board do not relate to the evidence on the fragment – either in number or position. The fragment is slightly narrower than the spine of the new cover but it is an appropriate size for the textblock. There is no evidence in the textblock for the crease that can be seen in the cover. This crease may be related to a previous housing-system for the fragment where the fragment had to be folded back at its edge so that it could fit in a box or another guardbook.

There is no evidence in the textblock that suggests that this is the cover. It was possible to see evidence of sewing in some leaves of the textblock: two sewing holes in the textblock align with the evidence on the fragment (Fig. 249). It may be that the original sewing holes were re-used for the second sewing, or for part of it. There is no evidence for this on the spine of the binding and it is not conclusive evidence of the association between the fragment and this volume. The spine of the new binding is wider than that on the fragment but this may be on account of new sewing or spine linings or how the spine was shaped. There is some water staining in the textlbock but it is very feint. There is no evidence of water damage on the parchment.

### 8.5.5. The associated text

The text within this binding is Luther, *A commentarie upon the fiftene psalmes / Translated out of Latine into Englishe by Henry Bull* (London: Vautroullier, 1577).

### 8.5.6. The source manuscript

A note in the guardbook identified this fragment as ‘Temp. Eliz. Lease of the rector of St. Erven Cornwall by Jamys Rilston to Nicholas Turbervile’

### 8.5.7. The manuscript, the text and the binding

This is a manuscript with a local connection used as a cover on a text printed in London in 1577. It belonged to, and was annotated by, Hannibal Gamon.

### 8.5.8 A review of the process

While the method devised could select the correct binding, it would not have been possible to verify this as the source volume without the title of the associated printed text being written on the fragment.

Given that the height and spine width of a cover fragment can only serve as a guide, the number of candidate matches if one were to include bindings that have a narrower spine width (possible if texts have been removed from the textblock) or a shorter or taller height (possible if the new cover has different sized squares to the original) would make the method more complicated.

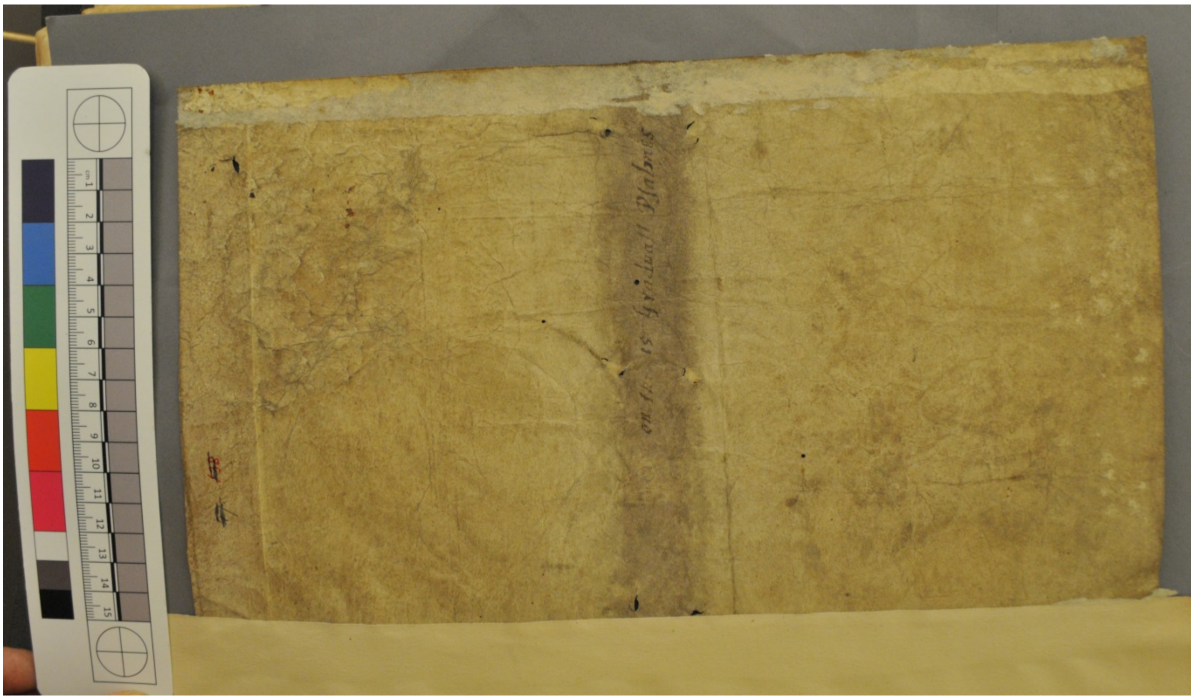


**Fig. 244. Lanhydrock 168, outer face of cover, head edge visible with the title going up the spine**. (The fragment is adhered to the guard and has grey paper placed underneath it the obscure the other fragments in the guardbook.)

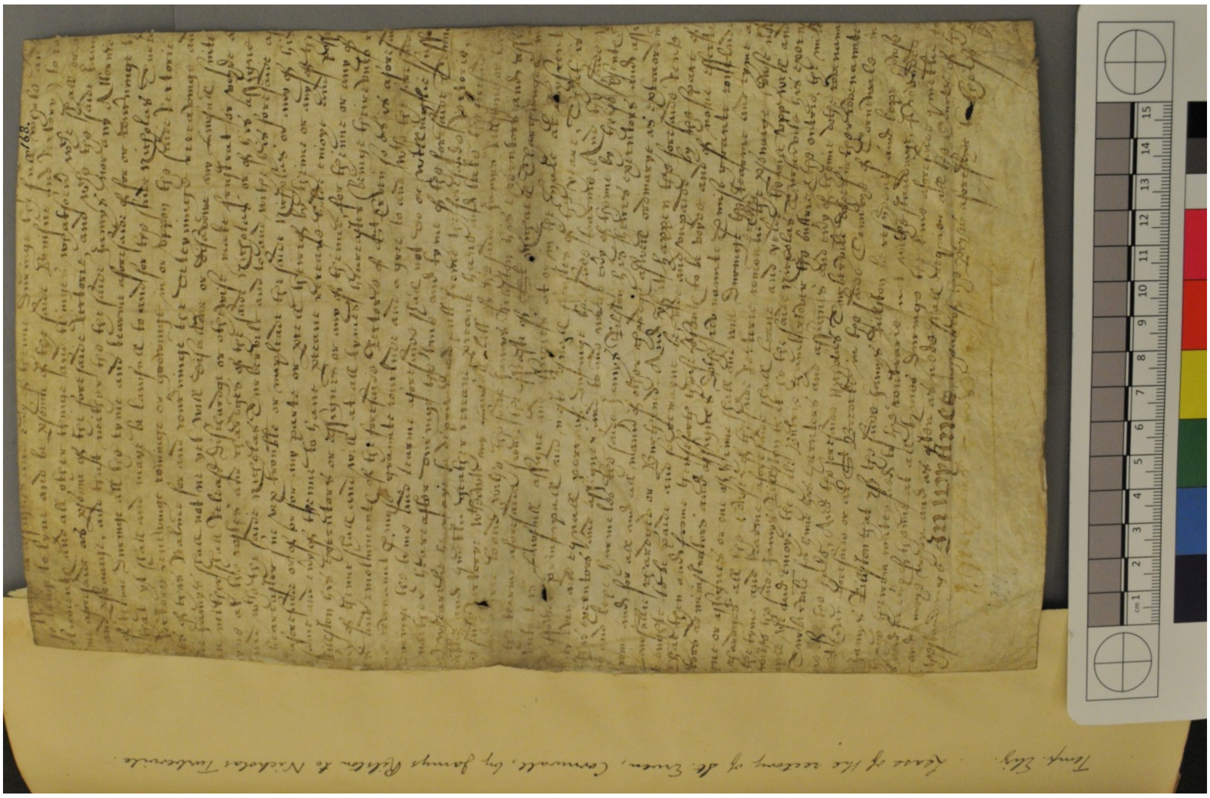


**Fig. 245. Lanhydrock 168, inner face of cover, head edge.**

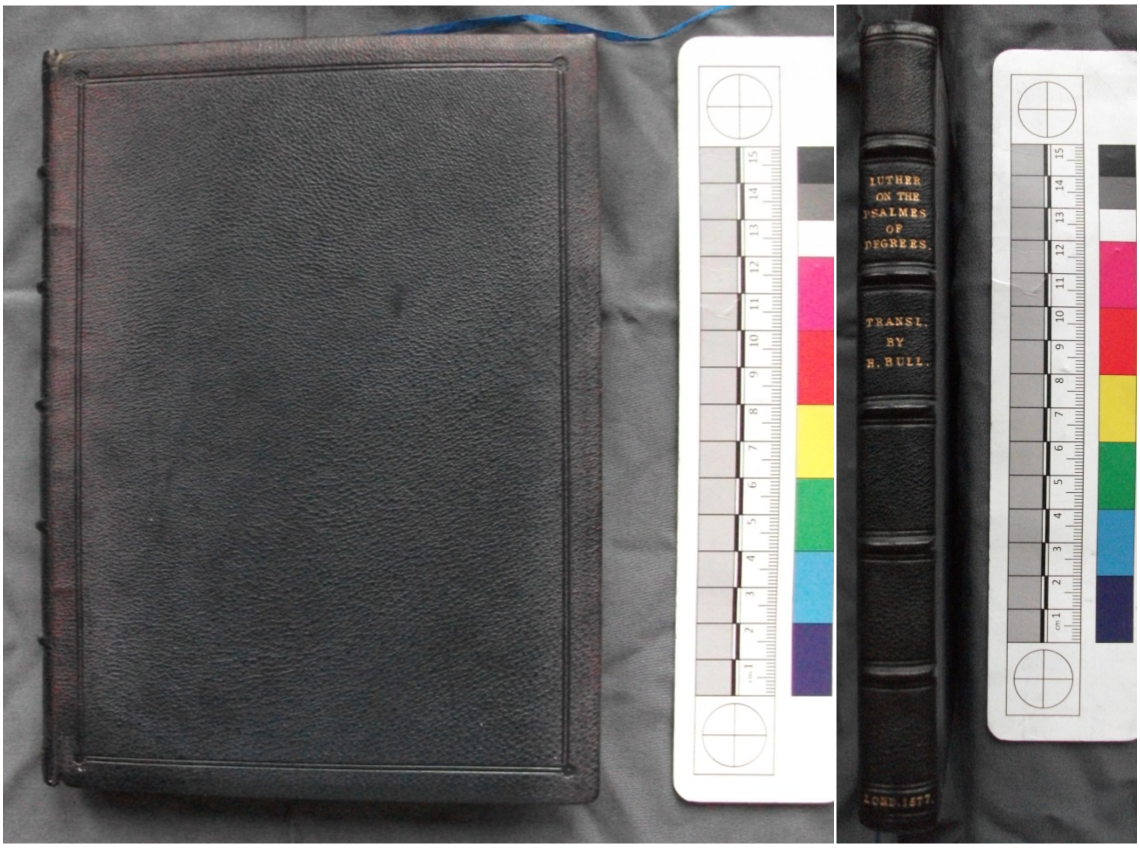



**Fig. 246. Lanhydrock A.24.23, new binding on the associated text with five raised bands on the spine.**

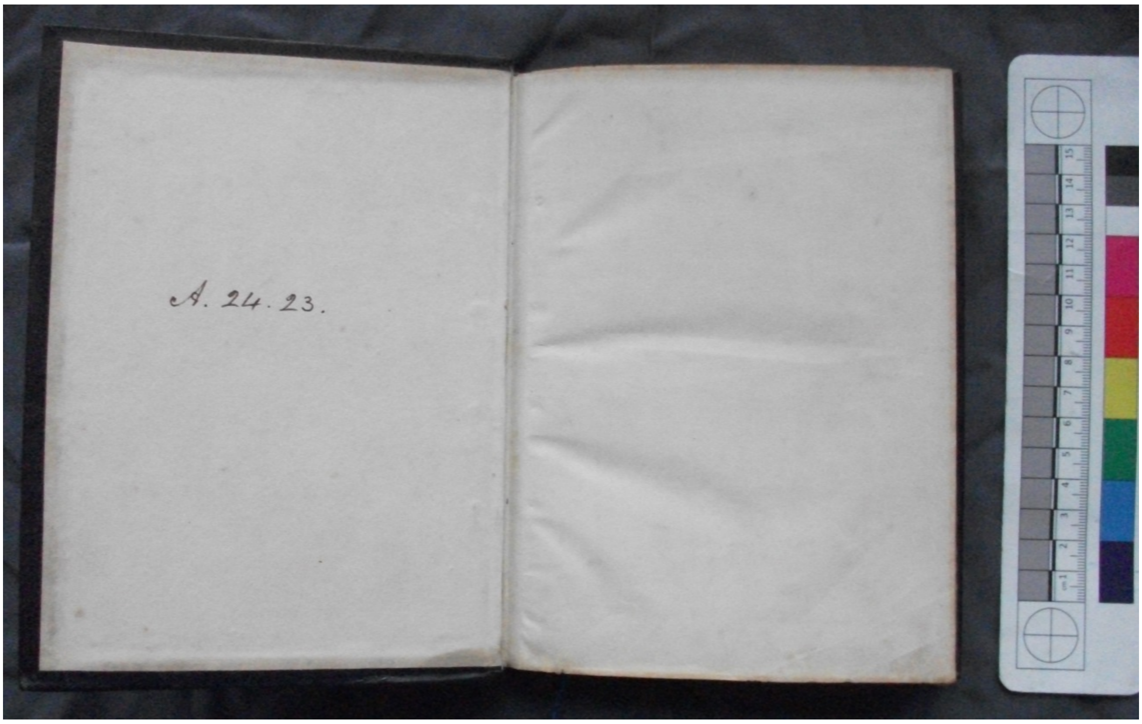



**Fig. 247. A.24.23, inner surface of the left board with evidence of four slips laced in to the board.**

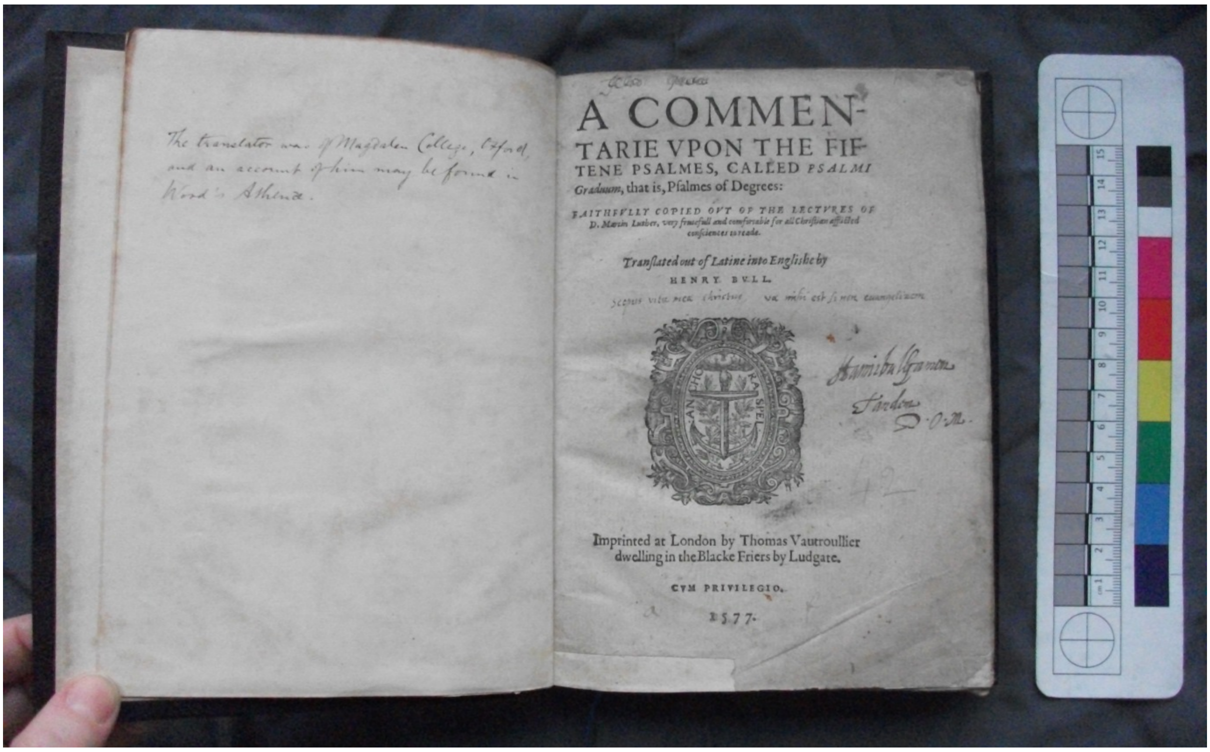


**Fig. 248. A.24.23, title page.**

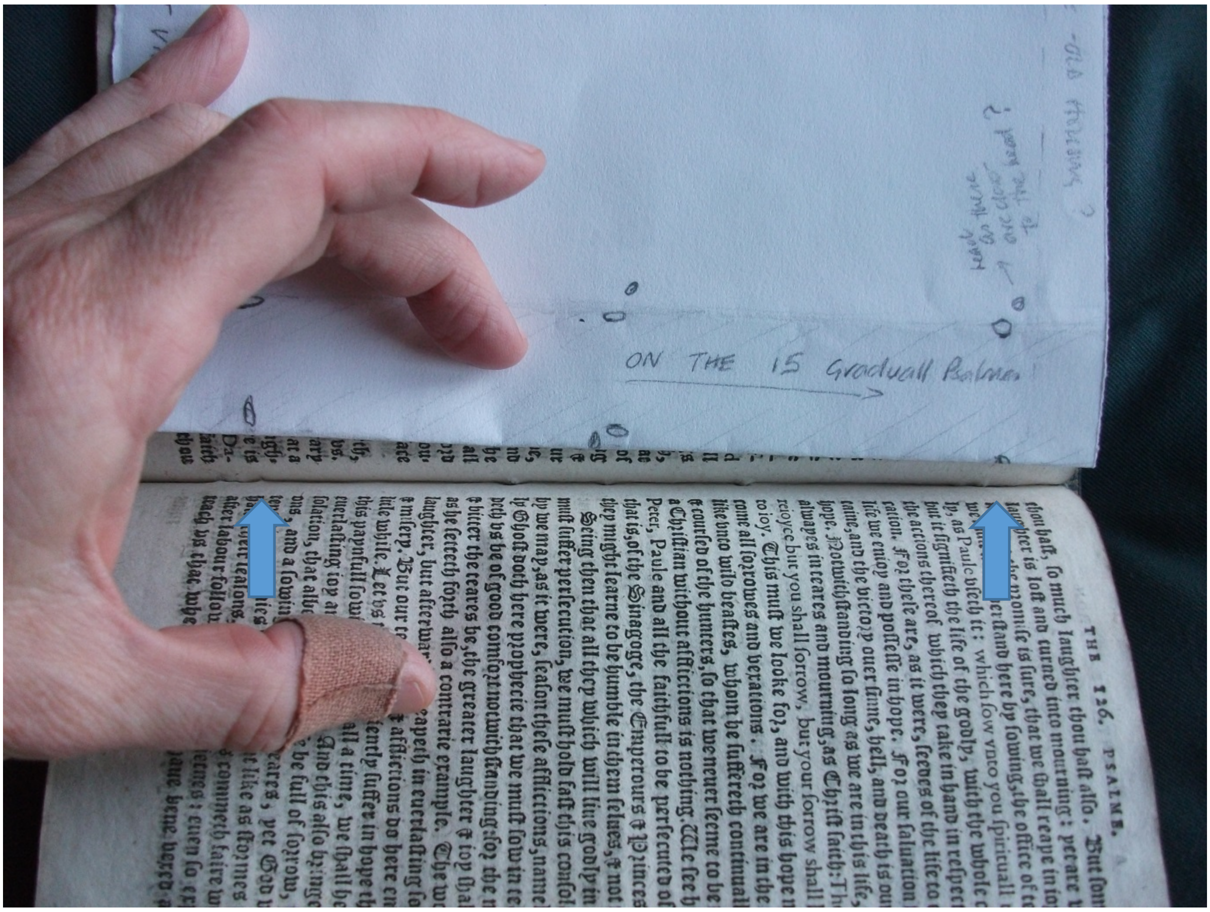


**Fig. 249. A.24.23, sewing holes, possibly two coinciding with the three lacing-in holes on the fragment.**

# Chapter 9
## Assessing the New Method

## 9.1. Overview

The process described in the previous chapters was developed from working on the fragments selected from the case-study libraries. This chapter looks at how successful this process was in identifying the source binding for these fragments. It will examine

i. the results of the case studies (9.2 - 9.3).
ii. factors affecting the effectiveness of the method (9.4).
iii. an assessment of the method (9.5 -9.8).

### 9.1.1. Review

Fifty-five fragments (where a pair of fragments is counted as one) drawn from five different libraries were selected (Table 6). The fragments represented four different fragment types (and an additional one – a fragment which had been used to make boards – was selected to act as a comparison for endleaves). The fragments chosen varied (3.6) according to

i. whether they were a pair or single.
ii. type of sewing evidence.
iii. type of binding evidence.
iv. condition of the fragments.

The libraries varied according to their size, layout, level to the access given to the researcher and level of organisation (Table 5) and these factors were also considered when assessing the success of the process. This variation also meant that the fragments could be examined in relation to other factors such as whether they had been removed from their bindings by a librarian or a binder and also the way they were housed (3.5.3).

Of the fifty-five fragments selected, twenty-seven were endleaves. This reflected their predominance in the collections examined, which in turn may also have reflected the predominance of Oxford bindings in the libraries. It also verified Gumbert's observation that larger fragments were more likely to be preserved (1.3.2). Covers were acknowledged to be a type of a fragment distinct from the others as what is being sought is not a new binding with the associated textblock (5.6). Stitched covers, as they do not have evidence of a sewing structure on the spine, were selected only to act as comparison to laced covers.

Within these fifty-five fragments was a control sample of nine fragments from Lanhydrock. The results of this sample are included in Lanhydrock figures. This 'control sample' did not include guards because few guards in the collection had the title of the source binding noted on them. As an additional method of evaluating the success of the process, the number of candidate matches identified for each fragment was noted for all the libraries bar Merton College, where the focus was on developing the method.

## 9.2. The results of the case studies

The following chart (an update on Table 6) lists the success rate for the fragments, here presented divided by type and library. The number of successfully identified source bindings appears in red over the total number of fragments for which bindings were being sought. In four cases a possible candidate match is also noted. These are cases (represented by an asterisk) where the identification of the source binding is almost certain but has not absolutely been proved. These cases are explained below the charts. The figures for Lanhydrock include the control sample. The control sample is detailed separately in Table 12.

| LIBRARY | Endleaves Pair | Endleaf Single | Board Lining | Guards Pair | Guard Single | Comb spine lining | Cover Laced | Cover Stitched | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| **Merton** | 5/7 | 2/5 | - | - | - | - | - | - | **7/12** |
| **Clare** | 5/6 | **2/4 | - | 0/1 | 0/1 | - | 0/1 | 0/1 | ****7/14** |
| **Lanhydrock** | *12/14 | 1/1 | 0/2 | ***1/3 | ****1/2 | - | 0/3 | 0/1 | *****15/26** |
| **St. Canice's** | - | - | - | - | - | 1/1 | - | - | **1/1** |
| **Wren** | - | - | - | - | | 0/2 | - | - | ******0/2** |
| **TOTAL** | ***22/27** | ****5/10** | **0/2** | *****1/4** | ******1/3** | **1/3** | **0/4** | **0/2** | ******31/55** |

**Table 11. The results.**

*Lanhydrock 76,77: The source binding for this pair was not found in the library. These fragments were part of the control sample and the author and date ('Galen 1528') were written on the fragment. These fragments[396] are listed in Ker where the source binding is noted as F.1.14. This was checked in the catalogues held on site. F.1.14 was identified in this catalogue as having been sold and the title of the edition was given as 'Galen. De usu partium corporis' and 'Paris, 1528'[397] which would tally with the information written on the fragment in the guardbook. Here, Lanhydrock 76, 77 is listed as possibly successful as it was not possible to verify that F.1.14 was the match as it is no longer on site. However,

396 Ker, 130a, b; Ker, 2nd edn., 2004.
397 Collins, 2009.

if it is taken that this was the source binding, this would bring the number of paired endleaves in Lanhydrock for which source bindings were found up to thirteen meaning that there was only one case where the source binding was not identified.

** Clare 2ei: It is possible that the source binding for this fragment was found (9.3.1.2). If it has been correctly identified, this would bring the number of single endleaves for which the source binding was found up to three.

*** Lanhydrock 29, 30: A candidate match was found but the verification was based on the left turn-in only (9.3.2).

**** Lanhydrock 134iii: It is possible that the source binding for this single guard has been identified but this is not included here as a match (9.3.3).

The source binding for one single guard (Lanhydrock 51) was identified. However, it was mistakenly overlooked on the shelf and was identified by chance when it was examined in relation to another fragment. If it had been seen on the shelf, it would have selected as it is the correct height. (No match was found when comparing the fragment with bindings with raised bands and the search was extended to include bindings with smooth spines – which this binding has.) It is listed here as a positive identification.

If the above are taken into consideration, the results are as follows:

| LIBRARY | Endleaves Pair | Endleaf Single | Board Lining | Guards Pair | Guard Single | Comb spine lining | Cover Laced | Cover Stitched | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| **Merton** | 5/7 | 2/5 | - | - | - | - | - | - | **7/12** |
| **Clare** | 5/6 | **3/4 | - | 0/1 | 0/1 | - | 0/1 | 0/1 | ****8 /14** |
| **Lanhydrock** | *13/14 | 1/1 | 0/2 | ***2/3 | ****1/2 | - | 0/3 | 0/1 | ****** 17/26** |
| **St. Canice's** | - | - | - | - | - | 1/1 | - | - | **1/1** |
| **Wren** | - | - | - | - | | ***** 1/2 | - | - | ******* 1/2** |
| **TOTAL** | ***23/27** | ****6/10** | **0/2** | *****2/4** | ****** 1/3** | ******* 2/3** | **0/4** | **0/2** | ****** 34/55** |

**Table 11a. The results including possible matches.**

The results for the Control Sample from Lanhydrock (which are included in the numbers above) are:

| LIBRARY | Endleaves - Pair | Endleaves -Single | Cover - Laced | Cover - Stitched | TOTAL |
|---|---|---|---|---|---|
| **Lanhydrock** | 3*/4 | 1/1 | 0**/3 | 0/1 | **4/9** |

**Table 12. The results for the control group.**

### 9.3. An analysis of the results.

The case study results will be discussed along two points of comparison

1. the fragment type.
2. the library.

#### 9.3.1. Endleaves: Overview

| LIBRARY | ENDLEAVES: PAIR | ENDLEAVES: SINGLE | SOURCE BINDING FOUND |
|---|---|---|---|
| **Merton** | 5/7 | 2/5 | 7/12 |
| **Clare** | 5/6 | **2 (3 including Clare 2ei)/4 | **7 (8 including Clare 2ei) / 10 |
| **Lanhydrock (including control sample)** | *12 (13 inlcuding Lanhydrock 76,77) /14 | 1/1 | *13 (14 including Lanhydrock 76,77) / 15 |
| **TOTAL** | *22 (23 including Lanhydrock 76,77) /27 | **5 (6 including Clare 2ei) /10 | *27 (28 inlcuding Lanhydrock 76,77) – or **29 (including Clare 2ei) /37 |

**Table 13. Endleaves overview**

Fragments were matched when

i. there was a pair of endleaves.
ii. there was only a single endleaf.
iii. when the sewing evidence was limited to only one source (see Table 33-35).
iv. when the source binding was an octavo, quarto or folio.
v. when the board material was wood or paper.
vi. when the source binding was covered in tanned skin or parchment.
vii. when the source binding was sewn on tanned skin or alum-tawed skin supports.
viii. when the fragments had been torn out of an unrepaired volume.
ix. when the fragments were of parchment or paper (Lanhydrock 124, 125 was a pair of endleaves from a paper manuscript).
x. when the fragment had been damaged.
xi. when the source binding had been rebacked (see Table 36-39).
xii. when the source binding had been re-covered (see Table 36-39).

(See Tables 14-16, 18, 19, 21, 22, 25, 260 for a description of the fragments. The full list of fragments and source bindings is presented on an Excel spreadsheet with accompanying images on the USB.)

Endleaves were the fragment type most successfully matched. This might be due to the fact that, as there were more of them, there was more opporunity to practice the method on them. However, as the same method, based on the identification of the sewing structure, was applied to all the fragments, there was as much chance of selecting the correct guard as there was the correct endleaf. The difficulty arose when it came to verifying the match - endleaves had more evidence on which to base a comparison and so could source bindings could be more easily verified. Given the number of endleaves, each libary will be considered in separate sections.

**9.3.1.1. Endleaves: Merton**

In Merton, source bindings for seven (five pairs and two singles) of the twelve fragments were identified using the method. The source binding for an additional single fragment, D.3.1.(1), was found by deciphering an old shelfmark written on it (5.9). This example was not initially identified on the shelves because a binding with a tanned-skin cover was being sought and the spine of this binding was covered in parchment. Such a change in cover material had not initally been considered. However, the band distribution and height was a match and if these two features had been considered alone, the source binding would have been selected. The source binding for D.3.7 (2, 3), which was similarly re-covered, was identified after the previous example had been found and the possibility of a change in the covering material had been noted. The eight fragments for which source bindings were identified, including D.3.1 (1), varied in size, condition and board material. All the matched fragments in Merton had been removed from inboard bindings which originally had been covered in tanned-skin and all bar one pair of fragments (E.3.9 16, 17) had been conserved. The source bindings identified were a mixture of rebacked bindings and those which had not been repaired (Tables 36-39). The source bindings for four fragments, however, were not identifed.

These four varied in size – two octavo, two folio. The two smaller fragments, D.3.5 (35, 36) and E.3.35 (3-5), relied solely on sewing-holes to indicate the position of the sewing supports and this might be considered insufficient evidence of the position of the bands (Table 33). However, a sole dependence on sewing-hole evidence did not impede the identification of the source binding for two Clare fragments (4ei, ii and 2eii). While a combination of sewing evidence (sewing holes, adhesive gaps, lace-in stains or impressions and indentation on the spine-fold) will give clear and supported evidence of the position of sewing supports, one of the above features may suffice. D.3.10 (12), E.3.9 (16, 17) and D.3.10 (12), which were all successfully matched to their source bindings, also had only one source of sewing evidence, but in their cases it was lacing-in channels. There may have been another factor which affected the ability to identify the source bindings for the octavo fragments, namely the inaccesbility, due to their height, of some of the shelves housing the smaller volumes. (For the variety in the sewing evidence on the fragments see Tables 33-35).

With regard to the two folio fragments for which source bindings were not identified, the sewing evidence for one of these, D.3.7(1), was confusing. This fragment was a full manuscript leaf complete with sewing holes relating to the source manuscript. Alongside these sewing holes, were the sewing holes relating to the source binding. In the case of the latter, the sewing holes had torn. This made it more difficult to identify precisely where the relevant sewing supports had been. While matches were found for the spine distribution, these could not be verified as there was no remaining evidence in the volumes and blank endleaves had been pasted down obscuring evidence on the inner surface of the boards. Stack 120 d.3 ([Lyon, 1507]) had creases on the free endleaf which match up with the fragment and the area of loss also matches a depression in the leaf. However it is not sufficient to confirm the match. The width of this binding would also explain why there is no evidence of clasps on the fragment. The other unmatched folio fragment, D.3.2 (9) (a left endleaf), on the other hand, had very clear sewing evidence including lacing-in holes and on this basis it was assumed that it would be an easy example to match. Two candidate matches, Stack 120.h.14 (Venice, 1546) and 112.c.13 (Venice, 1526) were a good match for the size and sewing distribution but there was no evidence to confirm the association with the fragment and there was no worming that compared with the worming in the fragment.

It was considered whether D.3.2.(9) or D.3.7 (1) might have undergone the type of binding repair seen on D.3.1(1) and D.3.7 (2, 3) – a parchment spine over the original wooden boards. D.3.2 (9) was, like these other two, also from a folio volume with wooden boards. However, no examples of this type of binding were found to match the sewing distriubtin of D.3.2.(9) or D.3.7 (1) in either the Upper Library or in the Special Collections room. The manuscripts, which are also kept in the Special Collections room, were not checked as these are all boxed. For both D.3.2 (9) and D.3.7 (1), while candidate mathces could be identified, the difficulty related to finding the evidence in the potential source binding that could confirm the match.

Another explanation for the non-identification of the source bindings for any of these four fragments may be that they are no longer in the library.  The significance of the taller tail panel was identified while working in this library (5.8.1).  It was not initially noted when the fragments were first selected (9.5.1).

**Merton College Library, Oxford: (21,635 books)**
**Results: The source bindings for 7 out of 12 endleaves (5 pairs, 2 singles) were identified – 8 if D.3.1(1) is included.**

| No. | FRAGMENT MERTON | QUESTION: Does the method work for ...? | SOURCE BINDING FOUND |
|---|---|---|---|
| 1. | D.3.5 (32, 33) | a pair of endleaves (height: **156mm**) sewn on **four** supports with clear sewing evidence? | YES |
| 2. | D.3.5 (35, 36) | a pair of endleaves (height: **156mm**), sewn on **four** supports, with clear sewing holes but no lace-in evidence, and clear edge colour? | NO |
| 3. | D.3.5 (10, 11) | a pair of endleaves (height: **307mm**), sewn on **four** supports with clear sewing holes and evidence for wooden boards? | YES |
| 4. | E.3.9 (16, 17) | a pair of endleaves (height: **165mm**), sewn on **four** supports, where sewing holes not visible but support indentations are present and the fragments have not been conserved? | YES |
| 5. | D.3.7 (2,3) | a pair of endleaves (height: **297mm**), sewn on **four** supports, with no evidence of sewing holes, but with lace-in impressions? | YES |
| 6. | E.3.35 (3-5) | a pair of endleaves (height: **151mm**), sewn on **four** supports with clear sewing evidence on one endleaf only and no lace-in evidence? | NO |
| 7. | D.3.5 (25, 26) | a pair of endleaves (height: **338mm**), sewn on **five** supports, with only one endleaf with sewing evidence? | YES |
| 8. | D.3.2 (9) | a single endleaf (height: **303mm**), sewn on **four** supports, good evidence for the position of the sewing supports? (This was presumed to be a straightforward example.) | NO |
| 9. | D.3.1 (1) | a single endleaf (height: **378mm**), sewn on **five** supports, no sewing evidence just lacing-in hole staining, clasps, chain, tie? (It was presumed that this would be a straightforward example.) | FOUND – using archival evidence, but if examining only sewing evidence and not cover material, method works (p.311) |
| 10. | D.3.10 (13) | a single endleaf (height: **145mm**), sewn on **four** supports, with a damaged spine-fold but some adhesive gaps, small format example with red edges? | YES |
| 11. | D.3.10 (12) | a single endleaf (height: **166mm**), sewn on **three** supports, with a damaged spine-fold? | YES |
| 12. | D.3.7 (1) | a single endleaf (height: **412mm**), sewn on **five** supports, sewing evidence confused (both manuscript and binding sewing evidence, the turn-in staining (lacking from the fore-edge) might indicate that the fragment did not extend to the edge of the bookblock? | NO |

**Table 14. Merton: endleaves results**

### 9.3.1.2. Endleaves: Clare

In Clare, the source bindings for seven (or possibly eight) out of ten endleaves were found. These were five pairs and two (or possibly 3) single endleaves. The 'possible' match is 2ei whose source binding has been re-covered and whose textblock lacks its last leaves. This inhibits the verification of the match as neither the boards or cover remain and the leaves of the textblock which were closest to the right board (and 2ei is a right endleaf) and which may have retained some evidence of the binding are also missing. However, other fragments from the same source manuscript (2di, ii and 2eii) were identified as having source bindings from the same set of volumes (A.2.2.) and it is very likely that the source binding has been identified correctly – there is no question that the distribution of the sewing supports matches.

If it is taken that this 'possible' is a match, this leaves two fragments for which no source binding was found. 6a was a quarto-sized fragment and many of the bindings of this size were housed on the upper shelves in the library. Access to these shelves was possible on one day only and it was not possible to check these shelves thoroughly. (The second non-match was 3ai & ii, a pair where the evidence had been misunderstood and due to time constraints, it had not been possible to examine these fragments a second time.)

In Clare, all the source bindings, bar one (the match for 2ai & ii) were repaired volumes. Of the repaired volumes, five had been re-covered and had new boards and new covering material. However, the position of the sewing supports had not been altered and so this evidence could be matched against the relevant evidence on the fragments and evidence in the textblock confirmed the match. The fragments in Clare had had minimal interference from a conservator and were loose in archival-quality polyester sleeves. The fact that they could be manipulated easily and placed against the textblock assisted greatly in the verification of the source binding as, in the cases where the boards and covers had been replaced, this depended on matching up the wormholes or ink stains on the fragment with those in the textblock. Information of this kind is difficult to record accurately on a drawing and to be able to align the fragment with what would have been its adjacent textblock leaf is preferable.

**The Fellow's Library, Clare College Cambridge.**
**Results: The source bindings for 7 out of 10 endleaves (6 pairs, 3 singles) were identified - 8 if 2ei is included.**

| NO. | FRAGMENT CLARE | QUESTION: Does the method work for ...? | SOURCE BINDING FOUND |
|---|---|---|---|
| 1. | 4ei & ii | a pair of endleaves (height: **349mm**), sewn on **four** supports with good sewing evidence, left and right endleaf identified? | YES |
| 2. | 2c, 4c | a pair of endleaves (height: **299mm**), sewn on **four** supports, sewing evidence from one (2c), one endleaf (4c) with no stub and therefore no sewing holes, left and right endleaf identified? | YES |
| 3. | 2di & ii | a pair of endleaves (height: **362mm**), sewn on **four** supports, clear sewing evidence, left and right endleaf not identified? | YES |
| 4. | 4di & ii | a pair of endleaves, one incomplete, (height: **367mm**), sewn on **five** supports, with sewing hole evidence difficult to see and from one endleaf only, left and right identified? | YES |
| 5. | 2ai & ii | a pair of endleaves (height: **159mm**), sewn on **five** supports, with either no stub (2aii) or only a partial stub (2ai) - and therefore no sewing holes - but with evidence of laced-in supports, left and right not identified (Key identifier - large number of supports for small book. ) | YES |
| 6. | 3ai & ii | a pair of endleaves (height: **357mm**), sewn on **five** supports, one endleaf with no stub, no covering material evidence. (There is no indication that there was a second endleaf folded around these endleaves – something which could explain the lack of evidence from the covering material. The adhesive on the spine-fold of 3ai would suggest that it had not been covered by the spine-fold of another endleaf). | NO |
| 7. | 3b | a single endleaf (height: **257mm**), sewn on **four** supports, good sewing evidence (impression, staining, indentation), identified as the left endleaf? A straightforward example. | YES |
| 8. | 2ei | a single endleaf (height: **348mm**), sewn on **five** supports, which cannot be identified as left or right endleaf? | Possible match |
| 9. | 6a | a single endleaf (height: **205mm**), sewn on **four** supports, only sewing holes as evidence of band position, identified as a left endleaf? | NO |
| 10. | 2eii | a single endleaf (height: **370mm**), sewn on **four** supports | YES |

**Table 15. Clare: endleaves results**

**9.3.1.3. Endleaves: Lanhydrock**

In Lanhydrock, the source bindings for one single endleaf (the collection was predominantly of pairs) and 12 out of 14 pairs of endleaves were found. As stated in 9.2, the source binding for the thirteenth pair (Lanhydrock 76, 77) was no longer in the library. The source binding for the fourteenth pair, Lanhydrock 7, 8, was not identified. The evidence on these fragments pointed to the source binding being a parchment-covered binding but it was not found in the library. It was considered whether the source binding could be in the fragment collection and Lanhydrock 50, a fragment which had been a cover was examined – it, like the endleaves, had evidence of mould damage - but the match could not be verified. It may also be the case that its cover had been removed and not retained – possible if the cover had been made from a blank piece of parchment rather than a recycled leaf – and the textblock had been rebound. It may also be the case that the source binding is no longer in the library. However, the fact that the source binding was not found does not imply that the method is only applicable to inboard bindings covered in tanned skin: a parchment-covered laced-case binding was identified as the source binding for Lanhydrock 44, 45. However, the majority of fragments in the collections examined were from inboard bindings covered in tanned skin. An effort was made to include in this study fragments that had evidence of parchment-covered bindings but there were few examples to be found. This may be because there were fewer examples of this type of binding in the case-study libraries or that these bindings, being quite robust, were not being repaired in the same number as the inboard bindings and so were less likely to have had fragments removed and placed in fragment collections (see note 197). It is not the case that laced-case bindings do not have manuscript waste endleaves.

In Lanhydrock, the source binding for an endleaf made from a manuscript on paper (Lanhydocrk 124, 125) was identified, indicating that the material of the fragments is not a factor in the method. The source bindings for neither of the two fragments, both of paper, which had been used to make boards (141, 142 and 126i, ii) were found. However, the distinctive ties on three sides of 126i, ii enabled it to be associated with the endleaves 47, 49 whose source binding was identified. Lanhydrock 141, 142 had evidence of four supports but with a gap between support 2 and 3 that might have meant that there had been a fifth support that had not been laced in to the board – it is likely to be too early to be an example of a wide-in-the-middle support lacing[398] which was known in France in the late seventeenth century. Bindings with both four and five supports were examined as candidate source bindings but no match was identified.

[398] http://w3id.org/lob/concept/3093

Source bindings were identified even though they had been repaired, as also seen in Merton and Clare. In contrast to these two other libraries, however, the type of repair executed at Lanhydrock could alter the appearance of the spine of the books as in some cases they were repaired as smooth spines. This was particularly the case with smaller volumes such as the source binding for 96i, ii (height: 167mm). Despite this, it was possible to identify and verify the source binding for these fragments. There were, however, significantly more candidate matches generated by Stage One of the process. This was because the identification had to be based on the height of the spine alone since there were no visible bands on the spine. This meant that the key evidence for the method was not present. Other alterations to the bindings as a result of repair included the addition of new endleaves which were pasted to the inner surface of the boards. Despite these leaves being a heavy paper, the turn-in evidence could still be seen. In other cases, the boards were replaced but the covering material was retained. This kind of repair left no relevant binding evidence on the inner surface of the boards which could be used to compare with the fragment, bar the profile of the turn-in. Despite this, they could still be identified as source bindings (for example, Lanhydrock 47, 49).

Fragments in the Lanhydrock guardbook were either adhered to the guard leaf or inset into the leaf. In the latter case, not all the edges of the fragments were always visible. This meant that on occasion evidence was more difficult to identify. It did not, however, prohibit the identification of the source binding. The fact that the fragments could not be consulted during the search but that drawings and photographs had to be relied on did not negatively impact the work. The high success rate in Lanhydrock – only one of the endleaves could not be matched back to its source binding – may be attributable to the fact that it was the easiest library to work in as all the shelves were accessible and the working day was long and uninterrupted. It was also the last library worked in when the method was most developed and had already been practiced in the other libraries.

**Lanhydrock House, Cornwall**
**Results: The source bindings for all 14 out of 15 endleaves (14 pairs, 1 single) were identified.**

| NO. | FRAGMENT LANHYDROCK | QUESTION: Does the method work for ...? | SOURCE BINDING FOUND |
|---|---|---|---|
| 1. | **IIIi, i** | a pair of endleaves (height: **145mm**) on **three** supports with clear sewing evidence and left and right endleaves identified? | YES |
| 2. | **34, 35** | a pair of endleaves (height: **142mm**) on **four s**upports with clear sewing evidence and left and right endleaves identified? | YES |
| 3. | **96i, ii** | a pair of endleaves (height: **167mm**) sewn on **four** supports with sewing-holes only as evidence, and left and right endleaves identified? | YES |
| 4. | **19, 20** | a pair of endleaves (height: **165mm**), sewn on **four** supports, with sewing holes only as evidence, left and right endleaves identified? | YES |
| 5. | **44, 45** **Control** | a pair of endleaves (height: **215mm**) sewn on **four** supports, left and right endleaves identified, no staining from cover material suggesting a parchment-covered book? | YES |
| 6. | **32i, ii** | a pair of endleaves (height: **197mm**), sewn on **three** supports, with clear sewing evidence (sewing holes only), left and right endleaf not distinguished? | YES |
| 7. | **47, 49** | a pair of endleaves (height: **203mm**), sewn on three supports, left and right endleaves identified - a straight-forward example, sewing evidence from sewing holes and lace-in mpressions, smaller no. of supports than expected and ties head and tail and fore-edge? | YES (link to 126i, ii) |
| 8. | **56,109** | a pair of endleaves (height: **238mm**) sewn on **four** supports, left and right endleaves identified, not housed as a pair but identified as a pair by red edges? | YES |
| 9. | **116i, ii** **Control** | a pair of endleaves (height: **198mm**), sewn on **three** supports, good sewing evidence (sewing holes, adhesive gaps, lace-in impression) - a straight-forward example, smaller no. of supports than expected for the height? | YES |
| 10. | **124, 125** | a pair of endleaves (height: **240mm**), from paper (and so no shrinkage), with clear sewing holes butsome tear-back and no other sewing evidence, sewn on **four** supports? | YES |
| 11. | **1-4** **Control** | a pair of endleaves (height: **305mm**), sewn on **four** supports, each single endleaf made up from two fragments - with good sewing evidence (holes, adhesive gaps, lace-in impression? | YES |
| 12. | **63, 64** | a pair of endleaves (height: **290mm**), sewn on **four** supports, good sewing evidence on one fragment (63) but other fragment (64) did not have stub, housing inhibits some of the information (2 endleaves are presented as 2 bifolia, one folded around the other) evidence of wooden boards, insect damage? | YES |

| NO. | FRAGMENT LANHYDROCK | QUESTION: Does the method work for ...? | SOURCE BINDING FOUND |
|---|---|---|---|
| 13. | **76, 77** **Control** | a pair of endleaves (height: **228mm**), sewn on **four** supports, only 77 with stub and therefore with sewing-hole evidence, both with lacing-in evidence? | NO – library catalogue indicates sold |
| 14. | **7,8** | A pair of endleaves (height: **193mm**), sewn on **four** supports – evidence of sewing holes and lace-in impressions - no staining from cover material suggesting a parchment-covered book? | NO |
| 15. | **27** **Control** | a **single** endleaf (height: **133mm**), sewn on **three** supports, with clear evidence of sewing holes but not possible to identify whether a left or right endleaf? | YES |
| 16. | **141, 142** | a pair of board linings/layers of laminated board (height: **285mm**) from a book with evidence of **four** supports but with a gap between support 2 and 3 that might have meant that there was a fifth support that had not been laced in? (Chosen to compare with an endleaf fragment.) | NO |
| 17. | **126i, ii** | two pieces of a board-lining (or layers of a board) (height: **215mm**) – one full width, one only a third of the width - sewn on **three** supports, with ties on three sides? (Chosen to compare with an endleaf fragment.) | Not by the method – source binding identified by chance- link to Fr. 47, 49. |

**Table 16. Lanhydrock: endleaves results**

### 9.3.2. Guards: Overview

| LIBRARY | GUARDS: PAIR | GUARDS: SINGLE | SOURCE BINDING FOUND |
|---|---|---|---|
| **Clare** | 0/1 | 0/1 | 0/2 |
| **Lanhydrock** | 1, 1 possible /3 | 1, 1 possible /2 | 2, possibly 4/5 |

**Table 17. Guards overview**

Guards were chosen from only Clare and Lanhydrock. (The work in Merton was dedicated exclusively to endleaves as the method was being developed while the Wren Library and St Canice's were selected exclusively for comb spine linings.) As guards have the same sewing features as an endleaf, Stage One of the process, which produces the first group of candidate matches, follows the same pattern. However, when it comes to Stage Two, there is less binding evidence visible on the fragment due to its size and so there is limited evidence which could be used to match against the covers. This means that the number of candidate matches cannot really be significantly reduced in Stage Two. In Stage Three there is again reduced evidence due to the size of the fragment and so it becomes more difficult to securely identity the match. Added to this, of course, is the fact that with bindings that have been rebacked, the section of the turn-ins that is most affected, the area closest to the joint, is the only area of turn-in for which there is evidence on the guard.

In Clare, the source bindings were not identified for either of the two examples. There was an issue with the fact that candidate matches for 1ai, ii may have been, due to their size, on the largely inaccessible higher shelves. However, an error may also have been made when assessing the height of the binding from the fragment. Several examples of *in situ* guards in bindings in the library in Clare College were much shorter than the textblock. They extended only to the kettle stitches or to the first and last support, indicating that the guard was intended to support the sewing. This is not a feature that was noticed in the other libraries and was not noted until after the search for the bindings in Clare.

| NO. | FRAGMENT CLARE | QUESTION: Does the method work for ...? | SOURCE BINDING FOUND |
|---|---|---|---|
| 11. | 1ai , ii | a pair of endleaf guards (height: **204mm**), sewn on **four** supports, good sewing evidence, left and right guard identified? A straightforward example | NO |
| 12. | 1b | a single endleaf guard (height: **320mm**), sewn on **four** supports, sewing hole evidence only, identified as left guard? | NO |

**Table 18. Clare: Guards results**

In Lanhydrock, despite the poor results seen in the chart, there was only one definite fail. This was the pair 104, 105, where, owing to some confusion over the sewing evidence, it was difficult to accurately determine the band distribution. The one straight-forward case where a source binding was identified was for the pair 134ii, 139ii. This parchment-covered laced-case binding was verified by marks left in the textblock by the fragment. The binding had not been repaired. The source binding for Lanhydrock 134iii, a single guard, is also possibly identified. In this case, what would have been the adjacent blank leaf shows a gap in the turn-in stain where a fragment this size could have been positioned. However, the turn-in stain is not precise but again, this binding has been rebacked. (This is counted as a possible match.) Lanhydrock 51, the second example of a single guard, was discussed in 9.2. The source binding identified for this fragment is the correct height (it was rebacked and has a smooth spine and so the sewing distribution was not valid) and should have been selected from the shelves. It was, however, the first book on the shelf, an area which was poorly lit, and was slightly hidden by the larger book next to it. It was identified by chance when it was examined in relation to another fragment and it was noted that the distinctive turn-in pattern was noted could be matched to fragment 51. This fragment was at 55mm just over half the width of the board (103mm) and so had more extensive evidence of the turn-in shape which could be used to identify the match.

The pair 29,30 is complicated. Lanhydrock 29, has a distinctive turn-in shape that seems to be replicated in the binding, B.9.8 (Tübingen, 1611). Its pair, however, is less securely a match for its respective turn-in. While there is clear lacing-in evidence on the fragments, this cannot be used to verify the source binding as the boards are replacements and have no corresponding evidence. The fact that one guard matches but the other does not, might seem to suggest that they are not a pair but they are the same size and have lacing-in evidence angled in one direction on one guard and the other direction on the other side. This pair is counted as a fail in the absence of clear evidence to verify the match.)

The two fragments (29, 30 and 134iii) for which it was difficult to verify the source binding were from inboard bindings covered in tanned skin. These were two of the three guards (the other being 51) which were from smaller volumes, and as with other books of this size in Lanhydrock, the three had been rebacked and given smooth spines. This kind of repair creates a difficulty for identifying candidate matches, as noted in 9.3.1.3. Added to this, is the difficulty with verifying the source binding for guards when the turn-in evidence has been compromised by repair.

| NO. | FRAGMENT LANHYDROCK | QUESTION: Does the method work for ...? | SOURCE BINDING FOUND |
| --- | --- | --- | --- |
| 18. | **134ii, 139ii** | a pair of guards (height: **195mm**), sewn on **four** supports**,** with no staining from turn-ins of cover material? The fragments were not housed together - the pair was connected by their shape. | YES |
| 19. | **29, 30** | a pair of guards (height: **145mm**), sewn on **three** supports, evidence of tanned skin | Possibly? |
| 20. | **134iii** | a single guard (height: **146mm**), sewn on **three** supports, evidence of tanned skin | Possibly? |
| 21. | **51** | a single guard (height: **138mm**), sewn on **four** supports, with good sewing evidence (sewing holes, adhesive gaps, lace-in impressions) and distinctive turn-in shape? | YES (identified by chance – see 9.2 p.309 – but an error not to select) |
| 22. | **104, 105** | a pair of guards (height: **292mm**), sewn on **four** supports, with no staining from cover material (parchment-covered binding?), sewing evidence only from one of the guards? Few books of this size in the library are sewn on four supports. Should have been a straight forward example. | NO |

**Table 19. Lanhydrock: Guards results**

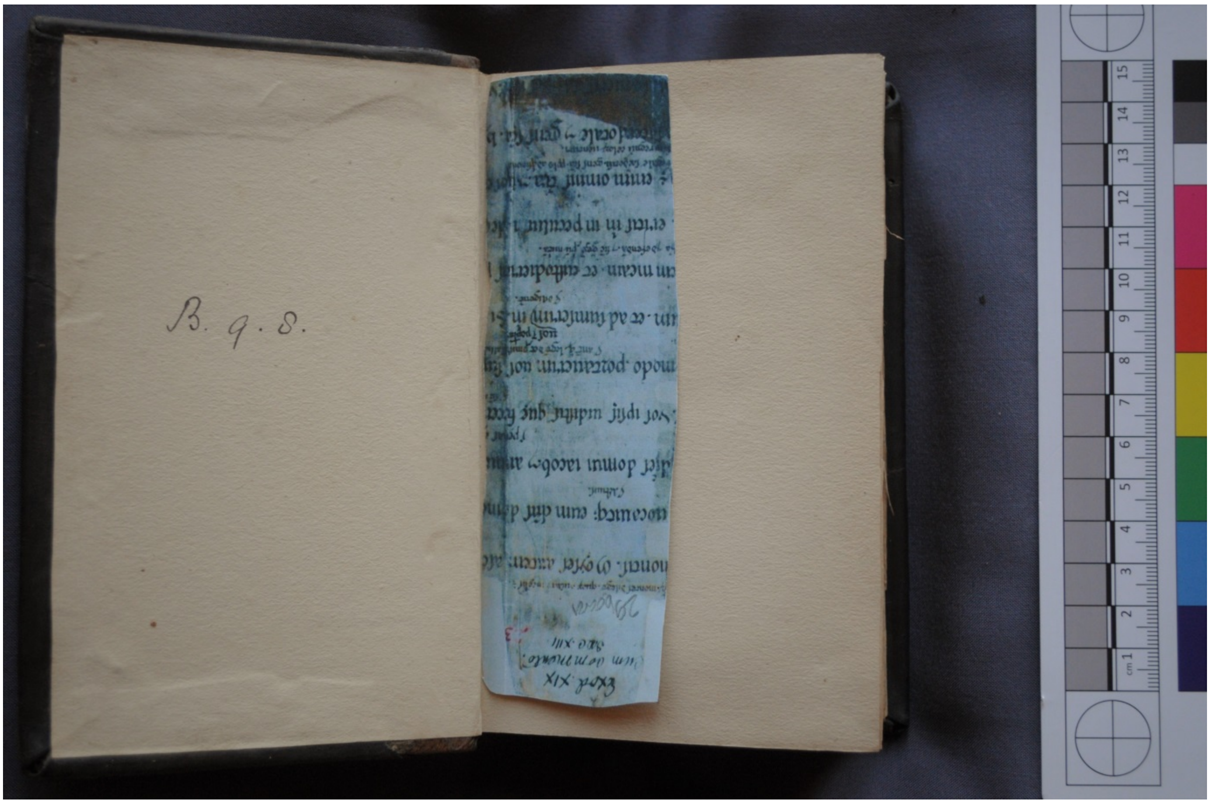



**Fig. 250. Lanhydrock 29 (a print-out of a photograph of the fragment) and B.9.8 (Tübingen, 1611**). A possible match?

**9.3.3. Comb spine linings. Overview**

| LIBRARY | COMB SPINE LINING: PAIR | COMB SPINE LINING: SINGLE | SOURCE BINDING FOUND |
|---|---|---|---|
| **St. Canice's** | 1/1 | - | 1/1 |
| **The Wren Library** | 0/1 | *****1/1 | 1/2 |

**Table 20: Comb spine lings overview** ****very strong possibility

The Wren Library and St. Canice's were selected because they had comb spine lining fragments in their collections. This fragment type had not been found in the other collections (3.4.1). Working with these linings, Stage One of the process had the additional evidence of the width of the spine to help in the identification of candidate matches. However, this would only be accurate if both parts of the comb spine lining were present. As with the guards, there was little evidence for Stage Two of the process due to the narrowness of the comb-lining extension that was in contact with the inner surface of the board. The identification of the match, then, rests on Stage Three. In both cases, the verification of the match was dependent on evidence in the textblock, either offsetting (St. Canice's) or ink stains (Wren). There was not sufficient evidence on the inner surface of the board to verify either match.

In the case of the Wren R.11.2/21, which was the full lining as it was a pair of fragments, the most common reason for eliminating a candidate match was that the binding had not been disturbed and so there seemed to be no way that a spine lining could have been removed. Unlike endleaves or guards which can be cut out of the sewing, removing a comb spine lining is more invasive. This does not necessarily mean that the binding must have been repaired but even if the adhesive on the spine had failed and the lining could be pulled out from the binding, as the St. Canice's fragments had been, there would still be some evidence that the spine could have been accessed in this way.

It was not possible to identify the source binding for the Wren's R.11.2/21. It was thought that candidate source bindings for this fragment would be on the lower, more accessible, shelves due to their size but some of the upper shelves in the Wren also hold books of this height and accessing those shelves was difficult. For the fragment which was the single side of a comb lining (R.11.2/58), there is a very strong possibility that the source binding (E.10.69, Paris, 1634), a rebacked volume, was identified. (The extension of R.11.2/58 is thought to have been positioned against the left board.) The verification was based on small ink stains at the head and tail of the spine extension. This might seem a very tenuous connection. However, there was also a crease and a corresponding gap in the turn-in stain on the adjacent blank endleaf (two blank endleaves with outside hooks). The turn-in stain was larger on the extension of the lining than on the boards. On volume two of this work. E.10.70, which did not have a pastedown, it was clear that there had been a stain applied to the tanned skin and this extended on to the board beyond the mark of the turn-in. E.10.69 has a pastedown covering the board so it is not possible to see whether there is a similar stain on its board. However, if there is, then this stain might have transferred to the lining extension which would explain why the staining from the turn-in on the lining extension is larger than the turn-in itself.

Of all the fragments in all the libraries, this fragment was matched with the greatest number of candidate matches (nineteen). This would have been an unusually large binding for Lanhydrock or Clare but there were many bindings of this size in the Wren Library, including two series of volumes, which are included in the numbers. It should also be remembered that The Wren Library, was by some considerable distance, the largest library and the nineteen candidate matches taken as a proportion of the 70,000 volumes is in line with the results from the other libraries (9.3.6).

On a second visit to this library, the pair of this fragment was found (R.11.2/61b). This was the side that had been positioned immediately under the covering material on the spine. It was complete – its pair, R.11.2/58, lacked the ‘teeth’ which had been in the head panel. The width of the spine is the same width as one of the teeth and so searching for candidate matches based on the width of R.11.2/58 alone was accurate. There is little evidence to suggest that 61b sat against the right board but there is an impression on the fragment that matches up to the line of the turn-in. There is also a small ink stain.

This is a confusing fragment, but it seems highly probable that this is the comb spine lining from this volume. The difficulty with the identification of E.10.69 as the source binding for R.11.2/58 is that there is also a small ink stain in the same position on the right endleaf so it could sit either to the left or the right. R.11.2/58 matches the left board with the ink stain, the break in the turn-in but not the shape of the turn in, and the crease in endleaf. R.11.2/58 matches the right board with the ink stain.

**St Canice's.**
**Results: The source binding for this one comb spine lining was found.**

| NO. | FRAGMENT ST. CANICE'S | QUESTION: Does the method work for ...? | SOURCE BINDING FOUND |
|---|---|---|---|
| 1 | CK/MS/3 and CK/MS/9 | a comb spine lining (height: **360mm**), positioned between **6** supports | YES |

**Table 21: St. Canice's: Comb spine lings results**

**The Wren Library, Trinity College Cambridge**
**Results: The source bindings for 1 part of a comb spine lining was found but the source binding for one complete comb spine lining was not.**

| NO. | FRAGMENT WREN | QUESTION: Does the method work for ...? | SOURCE BINDING FOUND |
|---|---|---|---|
| 1. | R.11.2/58 | a single part of a comb spine lining (height: **353mm**), positioned between **6** supports, spine width possibly unclear as only one part of lining remains | Very strong possibility |
| 2. | R.11.2/21a, 21b | a comb spine lining (height: **289mm**), positioned between **5** supports, spine width precise as it can be seen where one part of the lining sat on top of the other | NO |

**Table 22: Wren: Comb spine lings results**

### 9.3.4. Covers: Overview

| LIBRARY | NO. OF LACED COVERS | SOURCE BINDING FOUND |
|---|---|---|
| **Clare** | 2 | 0 |
| **Lanhydrock** | 3 | 0 (2 selected by method but verified by archival evidence) |

| LIBRARY | NO. OF STITCHED COVERS | SOURCE BINDING FOUND |
|---|---|---|
| **Lanhydrock** | 1 | 0 (1 selected by method but verified by archival evidence) |

**Table 23: Covers overview**

Covers proved the most difficult fragment type to work with. For laced-case bindings, the success of the process would depend on whether these books had been

i. re-covered - that is not re-sewn and so retaining the distribution of the sewing supports, or
ii. rebound, and so resewn, and therefore with a different sewing distribution pattern.

Stage One of the method could only be effectively applied in the first case. In the second case, if the book had been rebound and resewn, possibly using new supports in different positions, only the height and the width of the spine would be relevant features for the selection of candidate matches. That is not to say that it would not be possible to find the associated textblock - in Lanhydrock it was possible, when working with endleaves and guards, to identify source bindings that had a smooth spine, where only the height was relevant. It is however more complicated and would involve examining more books than when the sewing support distribution is visible on the spine. With covers, verification of the match would only be possible if there was evidence in the textblock, such as staining *etc*., which could be used to match the two. For the same reason, the method is not appropriate for covers which were stitched to the textblock as the fragment would provide only a guide to the height and width of the originally-associated bookblock. It might also be difficult to see evidence for the stitching in the inner margin of the bookblock, which might be used to verify a match, if the opening of the book has been restricted. The source binding for the one stitched example (Lanhydrock 52) was not identified using the method but was found thanks to the archival evidence. The volume in question, F.16.1 (London, 1614), was the expected height and spine width, and as such, should have been selected from the shelves but, due to an error, was not.

In Lanhydrock, new bindings had five bands on the spine – some of these were false. Stage One of the process, then, was of little use as only the height and width could be compared. Stage Two was of no relevance as the cover was new. Stage Three, which would have considered the evidence within the bookblock was not usually conclusive. All the cover fragments selected in Lanhydrock were part of the control sample. In two of the three cases, all laced-case covers, while the source binding was identified by the process (and using only the height and width as points of comparison), it could only be verified thanks to the archival evidence on the fragments. In the third example, the match was not selected by the process. For all three, the spine width of the fragment was found not to be reliable evidence. In one case it was narrower than that of the source binding (Lanhydrock 168), in another the same (Lanhydrock 167) and in the third wider (Lanhydrock 167) (Table 24.). In the latter, it may be the case that an edition was removed from a composite volume and bound as a single item.[399]

| | **FragmentL LANHYDROCK** | **Width of spine on fragment - mm** | **Width of spine on new binding -mm** |
|---|---|---|---|
| 23 | **168 Control** | 19 | 23 (A.24.23) |
| 24 | **162 Control** | 37 | 37 (C.15.26) |
| 25 | **167 Control** | 20 | 15 (D.7.38) |
| 25 | **52 Control (Stitched)** | 15 | 15 (F.16.1) |

**Table 24. Spine width of fragment compared to spine width of binding**

In Clare, it was not possible to identify the associated textblock for either of the cover fragments. It should be noted, though, that the source bindings, if they are in the library, may, due to the size of the fragments, be on one of the higher shelves. One of the fragments, 2b, has a presentation inscription on what would have been the left cover. There is a possibility that this inscription relates only to the fragment and that, in fact, the associated bookblock had never been in the library.

In the cases examined, the cover fragments were not successfully mateched. However, with covers, there is often additonal archival evidence such as shelfmarks or the title on the spine which can be used to select books for examination and therefore there may be less need for this method. In other libraries where laced-case bindings were re-covered while retaining the original supports and without the addition of false bands that were seen in Lanhydrock, the method might be more successful. The difficulty, though, in both cases would be to identify evidence of the cover in the textblock. Craft showed, when working with medieval bindings, that it is possible to identify binding evidence in the

[399] Pickwoad, personal communication, 23/11/18.

bookblock[400] (2.5) but did not have to address the issue of how to select bookblocks as candidate matches.

(One point on the fragments in Lanhydrock is that all three laced-case bindings were made from legal documents, dating from the Elizbethan period with, in two cases a local link - the other related to the sale of land in Essex - and had all been used to cover texts printed in London in 1577, 1580 and 1610. This might suggest that the covers were made locally. One (168) had the ownership inscription of Gamon.

| NO. | FRAGMENT CLARE | QUESTION: Does the method work for ...? | SUCCESS OF METHOD |
|---|---|---|---|
| 13. | 2b | a cover (height: **200mm**, spine width: **20mm**) which had been a laced-case cover, **four** supports, for a 4to-sized textblock? | NO |
| 14. | 6b | a cover (height: **165mm**, spine width: **15mm**) which had been stitched through **three** holes? | NO (shelf 1 was not examined due to access issues) |

**Table 25: Clare: Covers result**

| NO. | FRAGMENT LANHYDROCK | QUESTION: Does the method work for ...? | SUCCESS OF METHOD |
|---|---|---|---|
| 23. | **168** **Control** | a laced-case cover (**height: 188mm, spine width: 19mm**) on three supports, fragment of a document with local (Cornwall) association? | Selected by the method; verified by archival evidence |
| 24. | **162** **Control** | a laced-case cover **(height: 186mm, spine width: 37mm**) with turn-ins, 3 supports, a dated and localised document (Devon, 1525)? | Selected by the method; verified by archival evidence |
| 25. | **167** **Control** | a laced-case cover (**height: 135mm, spine width: 20mm**), sewn on 3 supports, with no turn-ins, a fragment of a localised document (Essex)? | NO. The method did not select the match. Found using archival evidence |
| 26. | **52** **Control** | a stitched cover (**height: 202mm, spine width 15mm**) , stitched over 4 holes, spine width not well defined. Provenance evidence: Jane Gamon. | Selected by the method; verified by archival evidence |

**Table 26: Lanhydrock: Covers result**

400 Craft, 1999, p.3.

### 9.3.5. The sucess of the method in reducing the number of candidate source bindings

The aim of this method was to identify the source bindings for removed fragments based on the binding evidence on the fragment. The previous section looked at the success of this method in terms of whether the binding was identified or not. It is, however, also important to consider *how many* bindings have to be examined before the correct one is found, that is, how many candidate matches are identified by Stage One. The process is based on the premise that the spine evidence on the fragment will be sufficiently detailed and the bindings will be sufficiently diverse that the evidence on one will match only a small number of the other. In all the libraries bar Merton, where the emphasis was on developing the method, there was the additional aim of identifying how many volumes in the library *could* have matched the spine evidence. This data could then be used to show whether this was an effective selection process which identified a manageable number of books that could then to be examined more fully. (While it is recognised that on some occasions, in some libraries, the covering material may be altered, as with Merton 95.jj.8 vol. II, the number of candidate matches presented here is for bindings which matched all the spine features including the covering material.)

In Clare, the number of candidate matches identified per fragment was found to be between two and six from a library of 6000 books (Table 28). In Lanhydrock, in five cases, which were all endleaves, only one candidate match in the library of 3258 volumes was identified – and in each case it was the source binding (Table 29). Therefore, for five of the fifteen endleaves examined, one third of cases, only one match was identified by the spine evidence. For two of these five, the sewing evidence on which the assessment of the band distribution depended was restricted to only one source - the sewing holes (Lanhydrock 44, 45 and 124, 125) (Table 27). In these five cases the spine evidence on the fragment proved as clear an indication of the source binding as a shelfmark.

| NO. | FRAGMENT | FRAGMENT TYPE | SOURCE BINDING IDENTIFIED | SEWING HOLES | ADHESIVE GAPS | LACE-IN EVIDENCE | INDENT FROM SUPPORT |
|---|---|---|---|---|---|---|---|
| 5. | **44, 45 Control** | Endleaves - pair | YES | YES - Clear | NO | NO | NO - stub opened out |
| 6. | **32i, ii** | Endleaves - pair | YES | YES | YES | YES | NO - stub opened out |
| 7. | **47, 49** | Endleaves - pair | Yes | YES | NO. Not visible in guardbook | YES | NO - stub opened out |
| 8. | **56,109** | Endleaves - pair | YES | YES | YES | NO | NO - stub opened out |
| 10. | **124, 125 (paper fr.)** | Endleaves - pair | YES | YES but torn | NO | NO | NO - stub opened out |

**Table 27. Sewing evidence for the five endleaves from Lanhydrock which all had only one match.**

The majority of the remaining fragments in Lanhydrock had between two and four candidate matches, with one example each for six, seven and eight candidate matches and three examples which had nine candidate matches. In five cases (three of which were guards) where there was no match found from the bindings with raised bands, the process was repeated examining smooth spines. Relying on the comparison of only height and covering material produced a larger number of candidate matches – from one up to thirty-three. With St. Canice's there were only two candidate matches for the comb spine lining out of 3200 volumes on the shelves. One was the source binding (Table 30). In the Wren library, the full comb spine lining had three candidate matches from 70,000 volumes (however, some of the upper shelves could not be accessed for this research) while the single side of the other lining had nineteen matches (Table 31). In the latter case, all the relevant shelves could be accessed.

There is a question as to whether there is a correlation between the height of the binding combined with the number of supports and the number of candidate matches found in the library (5.8.3). Should it be expected, for example, that a fragment less than 200mm in height, sewn on four sewing supports would have a large number of candidate matches because there would not have been the space on the spine to allow for much variation in how those supports are distributed?

Lanhydrock 19, 20 and 96i, ii were two pairs of endleaves that were a similar height (the former 165mm, the latter 167mm) and both were sewn on four supports. Both had an unusually large number of candidate matches (nine out a library of 3258 volumes). This might suggest that in some cases books were being sewn with the same pattern of support distribution – and in fact five of the nine identified for the endleaves 19, 20 were Oxford bindings with a blind-stamped centerpiece (though not the same centerpiece) on the sides. For both pairs, the number of candidate matches was greatly reduced in Stage Two of the process when, in both cases, seven bindings were discounted as being either too wide or too narrow. These two pairs, though, had a different pattern of sewing support distribution (see below), so while there were more candidate matches for both, it was still possible even with small bindings to have a varied support distribution pattern.

| **Distance of tail support from tail edge: mm** | **Distance of head support from head edge: mm** |
|---|---|
| 96i: 45 96ii: 42 | 96i: 30 96ii: 30 |
| 19: 36 20: 37 | 19: 25 20: 25 |

**Table 28. Clare. Number of candidate matches found in the library of 6000 volumes**

| NO. | FRAGMENT CLARE | FRAGMENT TYPE | SOURCE BINDING FOUND | No. of Candidate Source bindings based on the spine features (Stage One) / 6000 volumes on the shelves |
|---|---|---|---|---|
| 1. | 4ei & ii | Endleaves - pair | YES | 4/6000 |
| 2. | 2c, 4c | Endleaves - pair | YES | 3/6000 |
| 3. | 2di & ii | Endleaves - pair | YES | 5/6000 |
| 4. | 4di & ii | Endleaves – pair (one lacking a third) | YES | 4/6000 |
| 5. | 2ai & ii | Endleaves - pair | YES | 2/6000 |
| 6. | 3ai & ii | Endleaves - pair. | NO | 4/ 6000 (Misread evidence on fragment. Incomplete study). |
| 7. | 3b | Endleaf - single | YES | 4/6000 |
| 8. | 2ei | Endleaf - single | Possible match – textblock incomplete | 2/6000 |
| 9. | 6a | Endleaf - single | NO | 5/6000: as LEFT endleaf, 4/6000: as RIGHT endleaf. (Did not examine shelves for examples with smooth spine.) |
| 10. | 2eii | Endleaf - single | YES | Only examined volumes from the set where other endleaves from the same manuscript were found. |
| 11. | 1ai , ii | Guards - pair | NO | 4/6000 (Did not check for smooth spines) |
| 12. | 1b | Guard - single | NO | 2/6000 (Did not check for smooth spines) |
| 13. | 2b | Cover | NO | 3/6000 (Did not check for smooth spines) |
| 14. | 6b | Cover | NO | 6/6000 - without checking shelf 1 |

**Table 29. Lanhydrock. Number of candidate matches found in the library of 3258 volumes**

| NO. | FRAGMENT LANHYDROCK | FRAGMENT TYPE | SOURCE BINDING FOUND | No. of Candidate Matches based on the spine features (Stage One) /out of 3258 volumes on the shelves |
|---|---|---|---|---|
| 1. | **IIIi, ii** | Endleaves - pair | YES | 4/3258 |
| 2. | **34, 35** | Endleaves - pair | YES | 4 /3258 |
| 3. | **96i, ii** | Endleaves - pair | YES | 9 (raised bands) ; 19 (smooth spine) /3258 |
| 4.. | **19, 20** | Endleaves - pair | YES | 9 /3258 |
| 5. | **44, 45 Control** | Endleaves - pair | YES | 1 /3258 |
| 6. | **32i, ii** | Endleaves - pair | YES | 1 /3258 |
| 7. | **47, 49** | Endleaves - pair | YES also link to Fr. 126i, ii | 1 /3258 |
| 8. | **56,109** | Endleaves - pair | YES | 1 /3258 |
| 9. | **116i, ii Control** | Endleaves - pair | YES | 2 /3258 |
| 10. | **124, 125** | Endleaves - pair | YES | **1** /3258 |
| 11. | **1-4 Control** | Endleaves - pair | YES | 2 /3258 |
| 12. | **63, 64** | Endleaves - pair | YES | 2 /3258 |
| 13. | **76, 77 Control** | Endleaves - pair | NO – Library atalogue indicates this was sold | 0 /3258 |
| 14. | **7,8** | Endleaves - pair | NO | 3 /3258 |
| 15. | **27 Control** | Endleaf - single | YES | 6 /3258 |
| 16. | **141, 142** | Leaf of a laminated board | NO | 0 (with 4 raised bands) /3258<br>9 (with 5 raised bands) /3258<br>2 (smooth spine) /3258 |
| 17. | **126i, ii** | Leaf of a laminated board | Source binding dentified by link to Fr. 47, 49. | This was identified when the source binding for 47,49 was identified. 47, 49 and 126i, ii were linked by the ties on three edges. |
| 18. | **134ii, 139ii** | Guards - pair | YES | 7 /3258 |
| 19. | **29, 30** | Guards - pair | Possibly | 2 (raised bands); 10 (smooth spine) /3258 |
| 20. | **134iii** | Guard | Possible but not sure if left or right | 2 (raised bands); 10 (smooth spine- also examined for 29, 30) /3258 |
| 21. | **51** | Guard | YES (identified by chance – see 9.2 p.309 – but an error not to select) | 4 (raised bands); 33 (smooth spine) /3258 |

| NO. | FRAGMENT LANHYDROCK | FRAGMENT TYPE | SOURCE BINDING FOUND | No. of Candidate Matches based on the spine features (Stage One) /out of 3258 volumes on the shelves |
|---|---|---|---|---|
| 22. | **104, 105** | Guard – pair | NO | 8 /3258 |
| 23. | **168** **Control** | Cover - laced | Selected by the method : verified by archival evidence | 8 /3258 |
| 24. | **162** **Control** | Cover - laced | Selected by the method; verified by archival evidence | 6 /3258 |
| 25. | **167** **Control** | Cover - laced | NO. The method did not select the match. Found using archival evidence | 5 /3258 |
| 26. | **52** **Control** | Cover - stitched | Selected by the method; verified by archival evidence | 5 /3258 |

**Table 30. St. Canice's: Number of candidate matches found in the library of 3200 volumes**

| NO. | FRAGMENT ST. CANICE'S | FRAGMENT TYPE | SOURCE BINDING FOUND | No of Candidate Matches based on the spine features (Stage One) /3200 volumes on the shelves |
|---|---|---|---|---|
| 1. | CK/MS/3 and CK/MS/9 | Comb spine lining - 2 parts, one complete lining | YES | 2 /3200 |

**Table 31. The Wren Library: Number of candidate matches found in the library of 70,000 volumes**

| NO. | FRAGMENT WREN | FRAGMENT TYPE | SOURCE BINDING FOUND | No of Candidate Matches based on the spine features (Stage One) / 70,000 volumes on the shelves |
|---|---|---|---|---|
| 1. | R.11.2/58 | Comb spine lining | YES | 19 /70,000 |
| 2. | R.11.2/21a, 21b | Comb spine lining - 2 parts, one complete lining | NO | 3 /70,000 |

## 9.4. Assessing the factors that impact on the effectiveness of the method

### 9.4.1. Alteration to the source binding by repair (Tables 36-39)

While there is a significant difference in the success rate of this method across the four fragment types - though this is also due to factors relating to the library (9.4.5) - there is no significant difference in the number of candidate matches the method generates for each of those types (9.3.6). This is not surprising given that the same method, based on the sewing evidence, is applied to all. There is, however, a significant increase in the number of candidate matches when smooth spines are examined as these bindings lacked the key element of the selection process, the distribution of the sewing support on the spine. Stage One, then, worked less effectively in these cases but Stages Two and Three were unchanged. The decision to broaden the search to include candidate matches with a smooth spine is only considered when Stages One to Three have failed to identify the source binding. In such a case the process of comparing the fragment's evidence to the bindings on the shelves is repeated to include smooth spines.

The change to a smooth spine was a common type of repair in Lanhydrock for smaller volumes (5.10.1.3.1) and the difficulty working with books repaired in this way has more to do with the *type* of repair than the fact that the book had been repaired at all. Another type of repair, seen only at Merton where the covering material was altered, also impacted on the identification of candidate matches. However, once this was noted, it could be worked with and did not pose any difficulty to the process. If anything, it reinforced that the key identifying feature for this method is the position of the sewing supports rather than the type of covering material. In Clare, repairs to bindings where they had been re-covered and new boards added did not impede their identification as source bindings.

As fragments were often removed by binders, it is likely that repaired books will feature amongst the source bindings. The type of repair work carried out could be affected by factors such as

i. the size of the library.
ii. the resources of the library.
iii. whether it was an institutional library or a bibliophile's collection.
iv. when the repairs were executed.

| LIBRARY | NO. OF SOURCE BINDINGS FOUND I | NO. OF THESE BINDINGS REPAIRED |
|---|---|---|
| **Merton** | 7 | 2 |
| **Clare** | 7 (possibly 8) | 6 |
| **Lanhydrock** | 15 (possibly 17) | 13 (possibly 15) |

**Table 32. Overview of repairs**

Lanhydrock and Merton both sent work to the bookbinder Maltby's in Oxford but with a time gap of around fifty years and the type of repair found in these two libraires differed greatly. In Merton, the inside surfaces of the boards were left uncovered but they had often been cleaned of any offset from the manuscript waste endleaf - it was less successfully removed from the tanned skin turn-in. In Lanhydrock, where as a country house library repairs may have been influenced more by aesthetic considerations, the inner surface of the boards were covered by new pastedowns and there was evidence off the bleaching of the one text block (Lanhydrock A**.**4.35, Nuremberg, 1561, the source binding for Lanhydrock 111i**,** ii). A treatment of this kind would possibly remove evidence that could be used to verify a match between a fragment and a textblock. The tendency for smaller volumes in this library to be given smooth spines as part of the repair has been discussed earlier. In Clare, the boards and covers were replaced on five of the eight source bindings that had been repaired. Many of the associated textblocks had severe worm damage, visible also in the fragments, which might explain the necessity to replace the boards.

As the type of repair seen on the bindings varied between libraries it was found to be worthwhile to spend time examining examples of repaired bindings before beginning work in order to be better able to identify them on the shelves, as was done in Clare.

**9.4.2. The binding type and date**

In selecting fragments for this research project, an attempt was made to include fragments with different types of binding evidence which, it was hoped, would test whether the method was effective across a range of binding types. The majority of the fragments in the collections, however, were from inboard bindings with tanned-skin covers. Among the examples found were both wooden and paper boards - the method was found to work for both. Examples of fragments removed from bindings with not staining material were rare amongst the collections examined but one of the two Lanhydrock endleaf pairs was was successfully matched back to its source binding, a parchment-covered laced-case binding. The type of binding, then, - whether inboard or case, tanned skin or not - does not impact on the effectiveness of the method to the extent that the manuscript fragment type does. It is curious, though, as noted earlier (9.3.1.3.) that there were so few fragments removed from parchment-covered bindings. The type of library will dictate the type of bindings being examined. This research was conducted on three college libraries (Merton, Clare and the Wren), the library of an Oxford theologian (now a country house library, Lanhydrock) and two Cathedral libraries (Westminster and St. Canice's). These all could have parchment-covered bindings in their collections but their fragment collections are firmly weighted towards tanned-covered inboard bindings.

All the source bindings identified were of printed books (Tables 40-44) - none were on manuscripts. This may be explained by the libraries in question: Lanhydrock does not have early manuscripts in the library and the manuscript volumes in Merton were not included in the search as they were boxed. The Clare fragment collection seems to have been the result of repair work which could also have included manuscripts but none of the source bindings were found to be for manuscripts. However, a selection of the fragments had features associated with early bindings such as wooden boards, clasp fastenings, chains *etc*. and the method successfully identified source bindings for these fragments. There is no reason, then, to expect that the method would not work when the text within an early binding is a manuscript text as opposed to a printed one.

However, many fragment collections predominantly consist of fragments removed from printed books. The purpose of removing fragments from bindings was often, after all, in order to 'salvage' these fragments and make collections, particularly palaeographical collections, of them. This being the case, the fact that the method can be used for later bindings which are more likely to have paper boards or bindings with no boards, and with laced-case bindings, is an important consideration.

**9.4.3. The condition, conservation and housing of the fragments**

One gauge of the success of the method is whether it is applicable to fragments with a variety of challenging features. For this reason, 'troublesome' fragments, such as those that did not have a pair (for example, Merton D.3.10 (13)) or those without a stub (for example, Clare 2ai, ii) or those that had a damaged spine-fold (for example, Merton D.3.10 (12) ) were included – and source bindings were successfully identified for these fragments. It is true, however, that with a pair of fragments, as both sides of the binding can be examined, there will generally be more evidence present to be used to verify the match.

Another gauge of the success of the method is whether it can also be applied equally to fragments that have or have not been conserved and that are housed in a variety of ways - factors which could be considered due to the variation seen in the fragment collections examined (3.5.3). None of the above prevented the method from working. Source bindings for both conserved and unconserved fragments were identified - Merton E.3.9 (16), for example, had not been conserved while the rest of the sample from that library were. With regard to the housing systems, while this did not affect the success of the method, it did impact on how easy it was to implement. The use of archival-quality polyester sleeves or archival folders was found to be preferable. Guardbooks or more modern fascicules made some aspects of the work more difficult such as

i. sorting fragments into pairs.
ii. manipulating them so that they were seen as they had been orientated in the binding as opposed to how they had been orientated in the source manuscript.
iii. taking measurements accurately.
iv. verifying their position in a binding by lining them up with the binding (something which is particularly relevant when matching wormholes).

Guardbooks, while they could be cumbersome to use because of their size, were preferred to modern fascicules where, when the fragment was turned in order to examine the verso, it often hit against the compensating guard.

**9.4.4. When there is only one part of a pair**

The benefits of having an endleaf pair are obvious - there is more information available on the source binding and one endleaf corroborates the evidence of the other.

However, the same information is not always present on both fragments – one can be more detailed than the other and with clearer impressions. In the case of Lanhydrock 96i, and ii (matched with

A.19.11, Paris, 1559), there is a notable difference in the amount of information that is on one fragment as opposed to the other, for example the turn-in stain and annotations on 96ii which are important for the verification of the source binding. The question then is whether there would have been sufficient information on 96i alone to find the match. The information on a pair of endleaves can also be confusing - one fragment may have been placed next to a re-used board with evidence of an earlier binding while its pair may have been next to a new board with evidence from only the source binding.

It was found that in some cases the identification of candidate matches can rest on the evidence provided from only one fragment (Tables 14-16, 18-19, 21-22). Clare 4di, ii were a pair of endleaves of which one (4dii) was damaged, so effectively the sewing evidence was determined from only one of the endleaves. Relying on the evidence of only one endleaf did allow for the identification of candidate matches but when it came to verifying the actual match in stage two and three of the process, there were two fragments both with evidence available for this process. However, with Clare 3b it was possible to select and identify the source binding based on that single endleaf. In this case, to further complicate the process, the sewing holes were not visible and the band distribution was derived from the indentations of the supports along the spine-fold. Based on this evidence alone, it was possible to identify the source binding (A.6.8: Hijar, 1485). A single endleaf, then, can also be matched back to its source binding using this method.

### 9.4.5. The library

The case study libraries varied in terms of type, size, and layout (Table 5) and it should be considered whether these factors also impacted on the success of the method.

With a method based on the visibility of, and access to, the bindings on the shelves, the layout of the library is an important factor and is one which should be considered in relation to time allowed for work in that library. Practical considerations which will impinge on the effectiveness of the method would include

i. the height of the shelves and whether it is possible to access them.
ii. the general tidiness of the shelves.
iii. whether books are double-stacked on the shelves leaving one row less visible.
iv. whether books are boxed.
v. whether there are multiple rooms where books may be held.

Books are usually shelved by height and a well-organized library can certainly be more easily worked in than a more chaotic one. In Merton where the majority of the octavo volumes are housed in a row of cases at one end of the library, it was relatively easy, in comparison to working with larger fragments there, to identify the candidate matches presumably because all the books of the height being sought were concentrated in one space. When books are shelved in a more haphazard manner, such as having two rows of books on the one shelf, one behind the other, the process becomes more difficult as it can be easy to pass over a candidate match if working too quickly along the shelf. It has previously been noted that not being able to access some of the higher shelves may have affected the success rate in Merton, Clare and The Wren Library. In Lanhydrock, the libray with the greatest level of success, all the shelves were easily accessible.

The time involved in carrying out this work was found to vary depending on the fragment and also on the library, in terms of its size, organization and physical structure. In some cases, the identification of the source binding was a quick process. However, as stated earlier, when an examination of bindings with raised bands did not identify the match, the process was repeated to include smooth spines (9.4.1.) – something which made for a longer process. The length of the working day in libraries varied greatly – from seven hours per visit down to two hours in one case, the shorter working day due to supervision issues. It was found that the work was more successfully carried out when access was possible for longer periods. It seemed to have helped that the work did not have to be rushed and the working day was less interrupted.

Despite the differences across the libraries, source bindings for endleaves could be found in all five libraries. The other fragment types encountered difficulties, as detailed earlier, but these were often to do with the height of the shelves, the type of the fragment or the type of repair – and in the case of guards, a combination of the latter two. However, there were higher rates of success in some libraries than others – this though may have to do with the fact that as the research moved from library to library the process was being developed, revised and, with the addition of fragment types beyond endleaves, expanded. Merton was the first library visited and this was where the method was developed. It could be expected to have a lower rate of success as the method was still a work-in-progress at this point. Clare was the middle library and it was successful with regard to endleaves but not in respect to guards and covers, which were examined there for the first time. The library in which the method was most successfully implemented, Lanhydrock, was the last library visited and the three fragment types examined (endleaves, guards and covers) had all been trialed in other libraries. The success of the method across the five libraries may also be related, then, not just to the layout of the library, the amount of time allowed to do the work, the length of the working day, the accessibility of the shelves but also due to experience - as the process was developed and refined, and more experience was gained, the work became easier to do and mistakes made in the first libraries were rectified later.

## 9.5. Assessing the process

### 9.5.1. The development of the method

Following the preparatory work in Westminster (3.2) and the development of the idea that the binding's spine features could be the key to selecting candidate matches for the fragments, the research moved to Merton (3.4.1). All the fragments selected there were endleaves and many had evidence of wooden boards, clasps and chains - all evidence that should make the matching back to source bindings quite easy. There was also a mixture of pairs and single endleaves. The intention was to develop the method by working through these samples.

The first breakthrough was the recognition of how the distribution of sewing supports identified the tail panel on the spine and how this could then be used to identify which way up the endleaf had been positioned in the binding (5.8.1). This meant that the fragment only had to be compared one way up against the spine of the books rather than both. Up until this point at Merton, the left endleaf was identified on the basis of whether or not there was a bookplate or shelfmark, which might denote that that leaf had been positioned at the 'front' of the book – and the presumption was made that there was a strong likelihood that this would be the left board. The discovery of a way to identify the left endleaf from the right independent of archival evidence led to a greater precision in the method enabling it to work more efficiently.

Initially, it was thought that some flexibility should be allowed for the fact that the parchment of the fragment may have shrunk and the position of the sewing holes on the fragment may not exactly correlate with the bands on the spine. Instead of only examining those books that matched precisely the distribution of the supports, bindings which did not exactly match the distribution were selected. This meant that some books were examined that were not true matches. It was found that, in the source bindings identified, the correlation between the sewing evidence and the bands on the spines was exact along the whole spine. While the parchment did shrink along the edges, it was restrained by the sewing and so the distances between the sewing holes had not altered. From that point on, only exact matches were examined.

While matches were found in both octavo and folio size books, at first there were more successful matches in the smaller size bindings. This may have been because in Merton the smaller books were generally shelved together, except for the upper shelves already mentioned (9.3.1.1), and so it was less likely that a candidate match would be inadvertently skipped when checking along the shelves. It is also likely that the shortness of the working day in Merton, which meant that the work was undertaken in a more hurried way, also impacted and was likely to lead to errors being made. This led to a consideration of how practical implications can affect the method. The method works - but if the environment in which the work is carried is challenging, it will have an impact.

The results of Merton - four octavo and three folio (four if including D.3.1.(1), the example with the altered covering material) source bindings were found - indicated that the endleaf could be successfully matched. In the subsequent libraries, other fragment types were examined. The next library, Clare, included fragments which were guards and covers. As there was a selection of fragments that had the source binding's shelfmarks associated with them, these were examined first to see the type of repairs being carried out (p.335). This, if it is possible, would be recommended procedure before beginning work in any library.

The test of this method was always envisaged as being the Lanhydrock library as the fragments are physically removed from this location. While in the other libraries, it was possible to check the actual fragment against the binding, in Lanhydrock, it was necessary to rely on the drawing of the fragment, though images of some of the fragments were also printed to size.

The use of the control group, comprising nine fragments for which the source binding had been documented, allowed for the success or failure of the method for these examples to be assessed. It proved particularly useful for cases where the source binding could not easily be verified – *i.e.* cover fragments. As noted earlier (3.5) the manner in which the source binding had been documented worked well for the use of these fragments as a control sample - the source bindings had a title or author identified but not a shelfmark, and the catalogue entry on Library Hub Discover (Copac) would indicate if the book was there or not but again did not give a shelfmark. It was possible then to know whether or not the source binding was in the library but not to be given an indication as to where it was in the library. Having a larger case-study control group was considered. However, this would have reduced the time available either to work in other libraries or on non-identified fragments in Lanhydrock. To have only worked in Lanhydrock would not have explored the issues that other libraries have and it was considered necessary to show the applicability of the method in various types of libraries. Also, while the aim of the research was to develop the method, the intention was also to do something practical in terms of using real examples and finding their source bindings - to reduce the unidentified sample size in Lanhydrock would have affected this.

**9.5.2. The documentation**

Drawing what is visible is a more comprehensive way of documenting evidence than simply recording what is recognised. It also focuses attention and details which may have otherwise been passed over are observed and noted. Drawing was found to be an effective way of recording even the smallest details, though in some cases it was only when these details were seen against the binding that it became clear what a mark or indentation in the fragment represented (7.2.3.4). When the fragments were in the same library as the bindings from which they had been removed, and the candidate matches can be checked against the actual fragments, the drawing of the fragment could be quite basic, recording only the size and the position of the sewing supports. However, in the case studies the drawing was still completed as it is a useful exercise for recognising and then documenting the binding evidence.

**9.5.3. The time required**

The length of time it took to identify the source binding was not recorded as the time involved would depend on where the search started and where the binding was in the library. For example, if the shelves are examined starting at Shelf A and the source binding is on Shelf Z it will take longer to find than if that binding were on Shelf B. The time involved then is not as much an indication of the success of the method as the number of candidate matches identified via that method and whether the actual match can be verified from that group. The research has shown that the method reduces the number of books that have to be examined before the source binding is identified and it is more time-effective than simply checking books randomly.

In Lanhydrock, Clare, St. Canice's and the Wren the objective, beyond identifying source bindings for the removed fragments, was to provide data to support an analysis of the method.[401] For this reason,

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[401] This accounted for much of the time required to carry out the work. In Clare, the work of identifying source bindings was conducted over 6 days for *c.*6 hours per day. Access to the upper shelves was possible on one afternoon only. Return visits allowed for some details to be checked. In Lanhydrock, one short introductory visit was followed by two week-long visits, the second visit was again arranged to check details. The work in St. Canice's was completed in one morning, with a return visit to check details. The Wren library was visited on four occasions. In Merton, where this method was developed, the assessment of the fragment collection, selection of the fragments for the case study, their photography, drawing and note taking was conducted over four full days of five hours each and one half-day. Identifying books on the library shelves

in each case, all the candidate matches were identified first (Stage One) and then Stage Two and Stage Three were followed. This provided data on the number of candidate matches that were present in the library (9.3.5, Tables 28-31) and on how candidate matches were eliminated until ony the actual match remained. (All data is available on the accompanying USB.) The number of books that had to be examined before the match was identified was necessary information to provide supporting evidence for the effectiveness of the method. The requirement to collect this data increased the length of time required to find the source binding. However, in a real-world exercise, each candidate match identified by Stage One would be examined for Stage Two and Three as soon as it is selected as the aim would be simply to find the source binding.

## 9.6. The accessibility of the method

While the techniques used to record this method are basic information-recording techniques – drawing and measuring, for example – these were found to be sufficient. However, for Stage Three when working with repaired books with heavy paper endleaves which have been pasted down, the use of imaging techniques to see what lay beneath these pastedowns may have assisted with the verification process but were not actually required – and, in any case, were not available. This is a method which relies on observation rather than technology and the recording techniques make this a method which is available to all.

## 9.7. The applicability of the method

### 9.7.1. For different types of fragment collections

There was a great difference in the number of fragments present in the Merton collection and the number of fragments in the Clare collection. The question when working with large collections, is whether taking each fragment one by one and looking for its source bindings is an effective method. The method will work but, if there has been a large-scale programme of removing fragments from bindings, as there was in Merton, many of the bindings in the library are likely to be lacking these fragments. It may be helpful to group fragments together by height and number of sewing supports and examine these together as a binding eliminated for one fragment may be the candidate match for another.

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began in May 2016 and continued to July. Fifty-three hours were spent in the library, in effect seven and a half days, and further shorter visits were arranged in November. Return visits involved checking details.

Merton's collection is a product of a librarian's work of extracting fragments from bindings while Clare's is the product of a binder's work. It is worth considering whether the method is appropriate for both types of collections, while bearing in mind that many collections will be made up of fragments which were removed in both circumstances. With a collection which is the result of a binder's work the source bindings are likely to have been rebacked, re-covered or rebound. The method has worked with the first two (rebacked: in all the libraries; re-covered: in Clare) and rebound to some extent in Lanhydrock (with the cover fragments) though archival evidence was necessary to verify the match. The fact, then, that the source binding has been altered by repair need not necessarily impact on the method (Tables 36-40). The question is whether, in cases like this, it might be worth considering focusing on repaired volumes. The identification of the matches would still be based on the three-stage process of the method, with the first stage, that of identifying the spine features, being key to reducing the number of candidate matches, but only repaired or re-covered bindings would be considered. There is, of course, the difficulty as to how repaired bindings can be identified on the shelves (2.4.1). In none of the Clare examples was the old spine adhered on top of the new spine or the cover removed for the repair to be carried out and then returned to its original position. All the rebacked or rebound bindings were easily identifiable from the new tanned skin on the spine – but that would not be the case in all libraries. If the search in Clare had been restricted to repaired bindings the number of candidate matches would certainly have been reduced – though it was already small at between two and six out of a library of 6000 volumes on the shelves. However, the match for the endleaves 2ai, ii would not have been found, as this book had not been repaired. These fragments had been an inside hook endleaf (either text or guard) and only 2ai had a small part of the stub remaining. This damage might have been the result of the endleaves being cut out from the sewing of the bookblock, work which could have been undertaken by someone other than a binder.

**9.7.2. For different types of libraries**

The size of the libraries examined varied from 3,258 to 70,000 books. The question is whether this is a method which could be used in a larger library. The method has been shown to work and so there is no reason why it should not work in a larger library though logically the work would take longer. It should also be noted that larger libraries such as national libraries, are often a conglomeration of smaller collections, such as the Mondsee collection in Austrian National Library, Vienna (2.3.2). When it is known from which collection within a larger library a group of fragments was removed, one is immediately working with a smaller number of books.

It should also be noted that such larger libraries may not always have these fragment collections. National libraries are likely to have had their own binderies and the type of repairs executed will have been influenced by the volume of work that the bindery was undertaking. Fragments may not have been retained.

Libraries may also have fragment collections not associated with their own books but bought in from other libraries, such as the Lanhydrock fragments in the Bodleian Library. The case study in this research project has shown that fragment collections removed from their library can, if that library is known, still be matched back to their source bindings.

### 9.8. Summary

It has been shown before that fragments removed from bindings retain evidence of their source binding (2.5) and that, in cases where the source bindings is already known through archival evidence, this can be verified by comparing the offsetting and staining evidence on both (2.3.3). The issue tackled by this method is how to *select* which bindings should be examined when there is no available archival evidence.

The process presented here has shown that the starting point should be the sewing evidence on the fragment. A manuscript fragment that was sewn into the structure of a binding (such as an endleaf or guard) will have evidence of the sewing structure as will a manuscript fragment that was used as a comb spine lining or one that was used as a cover. The sewing structure of a binding is visible on the spine of that binding as raised bands on the spine, or as lace-in slips visible on the joints of a lace-attached case binding. The method works with fragments tht have various types of sewing evidence (Table 33 – 35).

The method presented here is based on a study of a range of fragments – but all with sewing evidence - from different types of libraries. The method has been shown to work particularly well for endleaves across all the libraries – though, as noted, there were more to practice on, which may have contributed to the greater success rate (9.3.1.2). The method also worked for comb spine linings and guards, though the latter was more difficult due to the type of repair carried out in the library examined. Covers are only suitable for this method when the sewing has been undisturbed and there is some evidence in the textblock that can verify the association.

The method worked for bindings that had been repaired and had not been repaired (Tables 36 – 40). It also worked across a range of bindings and a range of dates (Tables 41-45).

**Table 33. Merton: Sewing Evidence as a factor in whether a source binding is identified or not.**

| NO. | FRAGMENT MERTON | Fragment Type | Source binding identified | Sewing holes | Adhesive Gaps | Lace-in stains or impression | Indent from support |
|---|---|---|---|---|---|---|---|
| 1. | D.3.5 (32, 33) | Endleaves - pair | YES | YES | YES | YES | No - stub opened out |
| 2. | D.3.5 (35, 36) | Endleaves - pair | NO | YES | NO | NO | No - stub opened out |
| 3. | D.3.5 (10, 11) | Endleaves - pair | YES | YES | NO | YES | No - stub opened out |
| 4. | E.3.9 (16, 17) | Endleaves - pair | YES | NO – not possible to see as stub not opened | NO | YES | YES |
| 5. | D.3.7 (2,3) | Endleaves - pair | YES | NO - no stub and therefore no holes | NO - no stub | YES | No stub |
| 6. | E.3.35 (3-5) | Endleaves - pair | NO | YES- on one fragment | NO | NO | NO - stub opened out |
| 7. | D.3.5 (25, 26) | Endleaves - pair (only one with stub) | YES | YES | NO | NO | NO stub opened out |
| 8. | D.3.2 (9) | Endleaf - single | NO | YES | YES | YES | NO - stub opened out |
| 9. | D.3.1 (1) | Endleaf single | FOUND - archival evidence. But method works (p.311) | NO -not possible to see as stub not opened | NO | YES – from lacing in channels | NO |
| 10. | D.3.10 (13) | Endleaf single | YES | NO - damaged | YES | NO | No - stub opened out |
| 11. | D.3.10 (12) | Endleaf single | YES | NO | NO | YES | NO - stub opened out |
| 12. | D.3.7 (1) | Endleaf single | NO | YES | YES | NO | No - stub opened out |

**Table 34. Clare: Sewing Evidence as a factor in whether a source binding is identified or not.**

| NO. | FRAGMENT CLARE | Fragment Type | Source binding identified | Sewing holes | Adhesive Gaps | Lace-in stains or impressions | Indent from support |
|---|---|---|---|---|---|---|---|
| 1. | 4ei & ii | Endleaves - pair | YES | YES | NO | NO | NO. Stub folded out |
| 2. | 2c, 4c | Endleaves - pair | YES | 2c: YES 4c: NO stub | 2c - YES 4c: NO stub | YES | NO. Stub on 2c folded out. 4c has no stub |
| 3. | 2di & ii | Endleaves - pair | YES | YES | 2dIii: YES | YES | NO. Stub folded out |
| 4. | 4di & ii | Endleaves – pair (4dii incomplete) | YES | Difficult to see | NO | NO | NO. Stub folded out |
| 5. | 2ai & ii | Endleaves - pair | YES | NO | NO | Evidence of lace-ins only | N0 |
| 6. | 3ai & ii | Endleaves - pair | NO | 3ai- YES | 3ai - YES 3aii – NO stub and so no adhesive gaps | 3ai and 3aii- YES | NO. 3ai stub opened out. 3aii has no stub |
| 7. | 3b | Endleaf - single | YES | YES | No | YES | YES - stub not opened out |
| 8. | 2ei | Endleaf - single | Possible match | YES | YES | YES - incomplete | NO. Stub folded out |
| 9. | 6a | Endleaf - single | NO | YES | NO | NO | NO |
| 10. | 2eii | Endleaf - single | YES | YES | NO | NO | NO |
| 11. | 1ai, ii | Guard – pair | NO | YES | NO | NO | NO |
| 12. | 1b | Guard - single | NO | YES | NO | YES – one visible | NO |
| 13. | 2b | Cover | NO | Lace-in holes | Not applicable | Not applicable | Not applicable |
| 14. | 6b | Cover | NO | Stitching holes | Not applicable | Not applicable | Not applicable |

**Table 35. Lanhydrock: Sewing Evidence as a factor in whether a source binding is identified or not.**

| NO. | FRAGMENT LANHYDROCK | Fragment Type | Source binding identified | Sewing holes | Adhesive Gaps | Lace-in stains or impression | Indent from support |
|---|---|---|---|---|---|---|---|
| 1. | **IIIi, ii** | Endleaves - pair | YES | YES | YES | YES | NO - stub opened out |
| 2. | **34, 35** | Endleaves - pair | YES | YES: 2 holes per support | Adhesive difficult to identify | NO | NO - stub opened out |
| 3. | **96i, ii** | Endleaves - pair | YES | YES | Adhesive present but gaps not clear | NO | NO - stub opened out |
| 4. | **19, 20** | Endleaves - pair | YES | YES | NO | NO | NO - stub opened out |
| 5. | **44, 45 Control** | Endleaves - pair | YES | YES -clear holes | NO | NO | NO - stub opened out |
| 6. | **32i, ii** | Endleaves - pair | YES | YES | YES | YES | NO - stub opened out |
| 7. | **47, 49** | Endleaves - pair | YES (link to Fr. 126i, ii) | YES | NO. Not visible in guardbook | YES | NO - stub opened out |
| 8. | **56,109** | Endleaves - pair | YES | YES | YES | NO | NO - stub opened out |
| 9. | **116i, ii Control** | Endleaves - pair | YES | YES | YES | YES | NO - stub opened out |
| 10. | **124, 125** | Endleaves - pair | YES | YES - but with some tearback | NO | NO | NO - stub opened out |
| 11. | **1-4 Control** | Endleaves - pair | YES | YES | YES | YES | NO - stub opened out |
| 12. | **63, 64** | Endleaves - pair | YES | YES | YES | YES | NO - stub opened out |
| 13. | **76, 77 Control** | Endleaves - pair | Library catalogue indicates sold | YES Clear - on fragment 77 | NO | YES | NO - stub opened out |
| 14. | **7,8** | Endleaves - pair | NO | YES | NO | YES | NO - stub opened out |

| NO. | FRAGMENT LANHYDROCK | Fragment Type | Source binding identified | Sewing holes | Adhesive Gaps | Lace-in stains or impression | Indent from support |
|---|---|---|---|---|---|---|---|
| 15. | **27** **Control** | Endleaf | YES | YES Clear, Very wide | Difficult to identify | NO | NO - stub opened out |
| 16. | **141, 142** | Lining | NO | Not on this fragment type | Not on this fragment type | Lacing in holes | Not on this fragment type |
| 17. | **126i, ii** | Lining or Leaf of a laminated board | Source binding dentified by link to Fr. 47, 49. | Not on this fragment type | Not on this fragment type | Lacing in holes | Not on this fragment type |
| 18. | **134ii, 139ii** | Guards - pair | YES | YES | NO | YES | NO - stub opened out |
| 19. | **29, 30** | Guards - pair | Possibly | YES | NO | YES | NO - stub opened out |
| 20. | **134iii** | Guard - single | Possible but not sure if left or right | YES | YES | NO | NO - stub opened out |
| 21. | **51** | Guard - single | YES (identifie d by chance – see 9.2 p.309 – but an error not to select) | YES | YES | YES | NO - stub opened out |
| 22. | **104, 105** | Guard - single | NO | YES - sewing holes also from fragment'ss ource ms | YES - 105 | NO | NO - stub opened out |
| 23. | **168** **Control** | Cover - laced | Selected by method: verified by archival evidence | Not on this fragment type | Not on this fragment type | Yes | Not on this fragment type |

| NO. | FRAGMENT LANHYDROCK | Fragment Type | Source binding identified | Sewing hole | Adhesive Gaps | Lace-in stains or impression | Indent from support |
|---|---|---|---|---|---|---|---|
| 24. | **162** **Control** | Cover - laced | Selected by the method; verified by archival evidence | Not on this fragment type | Not on this fragment type | YES | Not on this fragment type |
| 25. | **167** **Control** | Cover - laced | NO. The method did not select the match. Found using archival evidence | Not on this fragment type | Not on this fragment type | Lace-in holes | Not on this fragment type |
| 26. | **52** **Control** | Cover - stitched | Selected by method: verified by archival evidence | YES | Not on this fragment type | Not on this fragment type | Not on this fragment type |

**The comb spine linings from the Wren Library and St. Canice's had the gap between the teeth as the band distribution as evidence.**

**Table 36. Merton: Binding repair as a factor in whether a source binding is identified or not**

| NO. | FRAGMENT MERTON | FRAGMENT TYPE | SOURCE BINDING IDENTIFIED | BINDING REPAIRED? |
|---|---|---|---|---|
| 1. | D.3.5 (32, 33) | Endleaves - pair | YES – 75.b.11 | NO |
| 2. | D.3.5 (35, 36) | Endleaves -pair | NO | NOT KNOWN |
| 3. | D.3.5 (10, 11) | Endleaves - pair | YES - 112.c.13 | YES Reback and corners repaired |
| 4 | E.3.9 (16, 17) | Endleaves - pair | YES – 75.c.19 | NO |
| 5. | D.3.7 (2,3) | Endleaves - pair | YES – 78.i.29 | YES. New & different covering material on spine (parchment). Boards retained. |
| 6. | E.3.35 (3-5) | Endleaves - pair | NO | NOT KNOWN |
| 7. | D.3.5 (25, 26) | Endleaves - pair (only one with stub) | YES – 64.f.7 | NO |
| 8. | D.3.2 (9) | Endleaf - single | NO | NOT KNOWN |
| 9. | D.3.1 (1) | Endleaf - single | FOUND - archival evidence. But method works (p.311)- 95.jj.8 vol. II | YES. New & different covering material on spine (parchment). Boards retained. |
| 10. | D.3.10 (13) | Endleaf - single | YES – 73.a.11 | NO |
| 11. | D.3.10 (12) | Endleaf - single | YES – 75.d.10 | YES. Reback. Old spine laid down on new. Boards retained. |
| 12. | D.3.7 (1) | Endleaf - single | NO | NOT KNOWN |

**Table 37. Clare: Binding repair as a factor in whether a source binding is identified or not**

| NO. | FRAGMENT CLARE | FRAGMENT TYPE | SOURCE BINDING IDENTIFIED | BINDING REPARIED? |
|---|---|---|---|---|
| 1. | 4ei & ii | Endleaves - pair | YES – U.I.6 vol. V | YES. Re-covered with new boards |
| 2. | 2c, 4c | Endleaves - pair | YES – K.5.5 | YES. Rebacked |
| 3. | 2di & ii | Endleaves - pair | YES – A.2.2 Index vol. | YES. Re-covered with new boards |
| 4. | 4di & ii | Endleaves – pair (one incomplete) | YES – A.2.3 | YES. Re-covered with new boards and later rebacked |
| 5. | 2ai & ii | Endleaves - pair | YES – 0.5½.6 | NO. Hook cut off to remove them? |
| 6. | 3ai & ii | Endleaves - pair | NO | NOT KNOWN |
| 7. | 3b | Endleaf - single | YES – A.6.8 | YES. Rebacked |
| 8. | 2ei | Endleaf - single | Possible match - A.2.2 vol. III | YES. Re-covered with new boards. volume incomplete |

| NO. | FRAGMENT CLARE | FRAGMENT TYPE | SOURCE BINDING IDENTIFIED | BINDING REPARIED? |
|---|---|---|---|---|
| 9. | 6a | Endleaf - single | NO | NOT KNOWN |
| 10. | 2eii | Endleaf - single | YES – A.2.2 vol. II | YES. Re-covered with new boards |
| 11. | 1ai, aii | Guard - pair | NO | NOT KNOWN |
| 12. | 1b | Guard - single | NO | NOT KNOWN |
| 13. | 2b | Cover - laced | NO | NOT KNOWN |
| 14. | 6b | Cover - stitched | NO | NOT KNOWN |

**Table 38. Lanhydrock: Binding repair as a factor in whether a source binding is identified or not**

| NO. | FRAGMENT LANHYDROCK | FRAGMENT TYPE | SOURCE BINDING IDENTIFIED | BINDING REPAIRED? |
|---|---|---|---|---|
| **1.** | **IIIi, ii** | Endleaves – pair | YES | YES. Reback. And possibly textblock also bleached |
| **2.** | **34, 35** | Endleaves – pair | YES | YES. Spine retained but new board attachment |
| **3.** | **96i, ii** | Endleaves – pair | YES | YES. Rebacked to a smooth spine |
| **4.** | **19, 20** | Endleaves – pair | YES | NO - but modern endleaves added |
| **5.** | **44, 45 Control** | Endleaves – pair | YES | Resewn on new supports - or new spports added to alow for lacing in to cover -but cover not repaired |
| **6.** | **32i, ii** | Endleaves – pair | YES | Yes. Reback. But not resewn – edges even. |
| **7.** | **47, 49** | Endleaves – pair | YES (link to Fragments 126i, ii) | YES – boards replaced, repaired at caps, new endleaves, resewn |
| **8.** | **56,109** | Endleaves – pair | YES | YES – reback, contemporary endleaves now pasted down |
| **9.** | **116i, ii Control** | Endleaves – pair | YES | YES – reback, resewn |
| **10.** | **124, 125** | Endleaves – pair | YES | YES – reback |
| **11.** | **1-4 Control** | Endleaves – pair | YES - | YES - Spine repaired at head, new endleaves |
| **12.** | **63, 64** | Endleaves – pair | YES | YES – reback |
| **13.** | **76, 77 Control** | Endleaves - pair | Library catalogue indicates sold | NOT KNOWN |
| **14.** | **7,8** | Endleaves - pair | NO | NOT KNOWN |
| **15.** | **27 Control** | Endleaf - single | YES | YES. Reback. New boards |
| **16.** | **141, 142** | Lining | NO | NOT KNOWN |

| NO. | FRAGMENT LANHYDROCK | FRAGMENT TYPE | SOURCE BINDING IDENTIFIED | BINDING REPAIRED? |
|---|---|---|---|---|
| **17.** | **126i, ii** | Lining | Source binding dentified by link to Fr. 47, 49. | YES – boards replaced, repaired at caps, new endleaves, resewn |
| **18.** | **134ii, 139ii** | Guards | YES | Cover retained but new endleaved pasted down to cover, |
| **19.** | **29, 30** | Guards | Possibly | Yes. Rebacked. Resewn. New boards. Smooth spine. |
| **20.** | **134iii** | Guard | Possible but not sure if left or right | Yes. Rebacked. Smooth spine. New endleaves but also retained old endleaves |
| **21.** | **51** | Guard | YES (identified by chance – see 9.2 p.309 – but an error not to select) | Rebacked .Resewn. Smooth Spine |
| **22.** | **104, 105** | Guard | NO | NOT KNOWN |
| **23.** | **168 - Control** | Cover | Selected by method : verified by archival evidence | New binding – fragment was a cover |
| **24.** | **162 - Control** | Cover | Selected by the method; verified by archival evidence | New binding – fragment was a cover |
| **25.** | **167 - Control** | Cover | NO. The method did not select the match. Found using archival evidence | New binding – fragment was a cover |
| **26.** | **52 - Control** | Cover | Selected by the method; verified by archival evidence | New binding – fragment was a cover |

**Table 39. St. Canice's: Binding repair as a factor in whether a source binding is identified or not**

| NO. | FRAGMENT ST. CANICE'S | FRAGMENT TYPE | SOURCE BINDING IDENTIFIED | BINDING REPAIRED? |
|---|---|---|---|---|
| 1. | CK/MS/3 and CK/MS/9 | Comb spine lining | YES | NO. Damaged, not repaired |

**Table 40. Wren: Binding repair as a factor in whether a source binding is identified or not**

| NO. | FRAGMENT WREN | FRAGMENT TYPE | SOURCE BINDING IDENTIFIED | BINDING REPAIRED? |
|---|---|---|---|---|
| 1. | R.11.2/58 | Comb spine lining - one part | YES | YES. Rebacked |
| 2. | R.11.2/21a, 21b | Comb spine lining - two parts | NO | NOT KNOWN |

**Table 41. Merton: Date of Source Binding**

| NO. | FRAGMENT MERTON | SOURCE BINDING IDENTIFIED | FRAGMENT TYPE | TYPE OF ENDLEAF | SOURCE BINDNG | DATE OF TEXT IN BINDING | PLACE OF PRINTING |
|---|---|---|---|---|---|---|---|
| 1. | D.3.5 (32, 33) | YES | Endleaves – pair | **Inside hook** | 75.b.11 | **1548** | Lyon |
| 2. | D.3.5 (35, 36) | NO | Endleaves – pair | **Outside hook** | NOT FOUND | NOT KNOWN | NOT KNOWN |
| 3. | D.3.5 (10, 11) | YES | Endleaves – pair | **Outside hook** | 112.c.13 | **1526** | Venice |
| 4. | E.3.9 (16, 17) | YES | Endleaves – pair | **Outside hook with cut stub.** | 75.c.19 | **1553** | Lyon |
| 5. | D.3.7 (2,3) | YES - now with a parchment spine | Endleaves – pair | **Inside hook. No stub remaining.** | 78.i.29 | **1537** | Augsburg |
| 6. | E.3.35 (3-5) | NO | Endleaves - pair | **Outside hook** | NOT FOUND | NOT KNOWN | NOT KNOWN |
| 7. | D.3.5 (25, 26) | YES | Endleaves pair – but only one with hook | **Outside hook** | 64.f.7 | **1541** | Lyon |
| 8. | D.3.2 (9) | NO | Endleaf - single | **Outside hook with another component as no staining on either side of stub** | NOT FOUND | NOT KNOWN | NOT KNOWN |
| 9. | D.3.1 (1) | FOUND - archival evidence. But method works (p.311) | Endleaf - single | **Inside hook** | 95.jj.8 vol. II | **1571** | Basel |
| 10. | D.3.10 (13) | YES | Endleaf - single | **Outside hook** | 73.a 11 | **1582, 1583, 1588, 1560** | 4 texts: London, Antwerp |
| 11. | D.3.10 (12) | YES | Endleaf - single | **Outside hook** | 75.d.10 | **1542** | Paris |
| 12 | D.3.7 (1) | NO | Endleaf - single | **Inside hook** | NOT FOUND | NOT KNOWN | NOT KNOWN |

**Table 42. Clare: Date of Source binding**

| NO. | FRAGMENT CLARE | SOURCE BINDING IDENTIFIED | FRAGMENT TYPE | TYPE OF ENDLEAF | SOURCE BINDNG | DATE OF TEXT IN BINDING | PLACE OF PRINTING |
|---|---|---|---|---|---|---|---|
| 1. | 4ei & ii | YES | Endleaves – pair | **Inside hook** | U.1.6, vol. V | **1520** | Lyon |
| 2. | 2c, 4c | YES | Endleaves – pair | **Inside hook** | K.5.5 | **1529** | Strasbourg |
| 3. | 2di & ii | YES | Endleaves – pair | **Inside hook** | A.2.2, Index vol. | **1529** | Basel |
| 4. | 4di & ii | YES | Endleaves – pair (one lacking a third) | **Outside hook** | A.2.3 | **1552** | Basel |
| 5. | 2ai & ii | YES | Endleaves – pair | **Inside hook** | O.5½.6 | **1534** | Hagenau |
| 6. | 3ai & ii | NO | Endleaves – pair | **Inside hook?** | NOT FOUND | NOT KNOWN | NOT KNOWN |
| 7. | 3b | YES | Endleaves – pair | **Inside hook** | A.6.8 | **1485** (date from ms note in book) | Hijar |
| 8. | 2ei | Possible match | Endleaves – pair | **Inside hook** | A.2.2, vol.III | **1528** | Basel |
| 9. | 6a | NO | Endleaf - single | **Inside hook.** | NOT FOUND | NOT KNOWN | NOT KNOWN |
| 10. | 2eii | YES | Endleaf - single | **Inside hook.** | A.2.2., vol. II | **1528** | Basel |
| 11. | 1ai , ii | NO | Guards - pair | | NOT FOUND | NOT KNOWN | NOT KNOWN |
| 12. | 1b | NO | Guard | | NOT FOUND | NOT KNOWN | NOT KNOWN |
| 13. | 2b | NO | Cover | **Laced-case cover with turn-ins** | NOT FOUND | NOT KNOWN | NOT KNOWN |
| 14. | 6b | NO - but did not check shelf 1 | Cover | **Stitched cover. No turn-ins** | NOT FOUND | NOT KNOWN | NOT KNOWN |

**Table 43. Lanhydrock: Date of Source binding**

| NO. | FRAGMENT LANHYDROCK | SOURCE BINDING IDENTIFIED | FRAGMENT TYPE | TYPE OF ENDLEAF | SOURCE BINDNG | DATE OF TEXT IN BINDING | PLACE OF PRINTING |
|---|---|---|---|---|---|---|---|
| **1.** | **IIIi, ii** | YES | Endleaves – pair | **Inside hook** | A.4.35 | **1561** | Nuremberg |
| **2.** | **34, 35** | YES | Endleaves – pair | **Stub wuith cut that went on to outside of board?** | A.2.39 | **1540** | Cologne |
| **3.** | **96i, ii** | YES | Endleaves – pair | **Outside hook with cut stub** | A.19.11 | **1559** | Paris |
| **4.** | **19, 20** | YES | Endleaves – pair | **Outside hook** | D.8.33 | **1566 -** | Antwerp |
| **5.** | **44, 45 Control** | YES | Endleaves – pair | **Outside hook.** | A.22.2 | **1585** | Oxford |
| **6.** | **32i, ii** | YES | Endleaves – pair | **Inside hook** | A.21.4 | **1517 -** | Lyon |
| **7.** | **47, 49** | YES (link to. 126i, ii) | Endleaves – pair | **Inside hook** | A.21.5 | **1518** | Paris |
| **8.** | **56,109** | YES | Endleaves – pair | **Outside hook,** | F.5.8 | **1640** | Oppenheim |
| **9.** | **116i, ii Control** | YES | Endleaves – pair | **Inside hook** | C.3.19 | **1518** | Paris |
| **10.** | **124, 125** | YES | Endleaves – pair | **Outside hook** | F.5.10 | **1582** | Antwerp |
| **11.** | **1-4 Control** | YES | Endleaves – pair | **Inside hook** | D.11.18 | **1548** | Cologne |
| **12.** | **63, 64** | YES | Endleaves – pair | **Inside hook** | D.11.11 | **1515** | Paris |
| **13.** | **76, 77 - Control** | Library catalogue indicates this was sold | Endleaves – pair | **Inside hook** | "F.4.17" [from library catalogue] | **[1528** - in catalogue] | [Paris - in catalogue] |
| **14.** | **7,8** | No | Endleaves – pair | **Outside hook** | NOT FOUND | NOT KNOWN | NOT KNOWN |
| **15.** | **27 Control** | YES | Endleaf - single | **Inside hook?** | C.1.23 | **1511-1513** | Paris |

| NO. | FRAGMENT LANHYDROCK | SOURCE BINDING IDENTIFIED | FRAGMENT TYPE | TYPE OF ENDLEAF | SOURCE BINDNG | DATE OF TEXT IN BINDING | PLACE OF PRINTING |
|---|---|---|---|---|---|---|---|
| **16.** | **141, 142** | NO | Board lining /Leaf of a laminated board | | NOT FOUND | NOT KNOWN | NOT KNOWN |
| **17.** | **126i, ii** | Source binding dentified by link to Fr. 47, 49. | Board lining / Leaf of a laminated board | | A.21.5 | **1518** | Paris |
| **18.** | **134ii, 139ii** | YES | Guards - pair | | C.3.29 | **1509 & 1512** | Milan & Paris |
| **19.** | **29, 30** | Possibly | Guards – pair | | (Possibly) B.9.8 | **1611** | Tübingen |
| **20.** | **134iii** | Possible -not sure if left or right | Guard | | (Possibly) B.1.10 | **1532** | Cologne |
| **21.** | **51** | YES Matched by chance but an error not to select | Guard | | C.1.18 | **1512** | Paris |
| **22.** | **104, 105** | NO MATCH FOUND | Guard | | NOT FOUND | NOT KNOWN | NOT KNOWN |
| **23.** | **168 Control** | Selected by method : verified by archival evidence | Cover - laced | | A.24.23 | **1577** | London |
| **24.** | **162 Control** | Selected by the method; verified by archival evidence | Cover - laced | | C.15.26 | **1610** | London |
| **25.** | **167 Control** | NO. The method did not select the match. Found using archival evidence | Cover - laced | | D.7.38 | **1580** | London |
| **26.** | **52 Control** | Selected by the method; verified by archival evidence | Cover - stitched | | F.16.1 | **1623** | London |

**Table 44. St. Canice's: Date of Source binding**

| NO. | FRAGMENT ST. CANICE'S | SOURCE BINDING IDENTIFIED | FRAGMENT TYPE | SOURCE BINDNG | DATE OF TEXT IN BINDING | PLACE OF PRINTING |
|---|---|---|---|---|---|---|
| 1 | CK/MS/3 and CK/MS/9 | YES | Comb spine lining | CK2577 | **1620 vol. II** | Paris |

**Table 45. Wren: Date of Source binding**

| NO. | FRAGMENT WREN | SOURCE BINDING IDENTIFIED | FRAGMENT TYPE | SOURCE BINDNG | DATE OF TEXT IN BIIDING | PLACE OF PRINTING |
|---|---|---|---|---|---|---|
| 1 | R.11.2/58 | YES | Comb spine lining - one part | E.10.69 | **1634** | Paris |
| 2 | R.11.2/21a, 21b | NO | Comb spine lining - two parts | NOT FOUND | NOT KNOWN | NOT KNOWN |

# Chapter 10
## Conclusion

## 10.1. An assessment of the original contribution to knowledge

The aim of this research was to develop a way to identify the source bindings for a removed manuscript-waste fragment when archival evidence is not available, that is, by using the binding evidence on the fragment (2.7). The objective was to firstly trial the theory that the binding evidence can indicate the features on the spine (2.9) and then proceed to developing a method using fragments drawn from a number of case studies(3.3). This method was based on the following observations (2.8)

i. that a manuscript-waste fragment which was part of a binding will be the shape of that binding component and will retain evidence of that binding including the sewing structure.
ii. that the sewing structure is visible externally on the spine of the binding in the form of raised bands or lacing-in points on the joints (3.2.5).
iii. that bookbindings vary in terms of their structure and materials and this variety can be used to differentiate bindings (2.8).

The method developed, described in Chapters 5-7, involved

i. identifying the binding evidence on the fragment.
ii. selecting candidate source bindings by comparing the evidence for spine features visible on the fragment with the spines of bindings in the library.
iii. refining that initial selection by comparing features on the sides of the bindings.
iv. verifying the identification of the source binding by comparing other binding features visible on the inner surface of the cover and on the bookblock.

The flowcharts in Chapters 5 to 7 map the process of selecting and then identifying the source binding.

**Working on a selection of fragments, which varied according to type and condition, from a selection of case-study libraries, which varied according to size and condition, this research has shown that it is possible to identify the source binding for a manuscript waste fragment based solely on the binding evidence visible on that fragment. This new method enables fragments to be re-associated with their source binding, and those bindings to be seen in a more complete state by that re-association. Identifying the source bindings for removed fragments, which is now possible even when those fragments do not have archival evidence which identifies the binding, enables a more complete study of both fragments and bindings. In addition to the development of this method, its practical application identified thirty-one source bindings for manuscript-waste fragments across the five case-study libraries (Table 11, Appendix 4).**

## 10.2. Conclusions drawn from this research.

### 10.2.1. The key to identifying candidate matches is the sewing evidence visible on manuscript- waste fragments.

The key feature which enables the selection of candidate matches is the distribution of the sewing supports (5.9). This sewing evidence is visible on manuscript waste fragments used as endleaves, guards, comb spine linings and covers for laced-case bindings. It is not applicable to covers which were stitched to the textbock. Sewing evidence is visible on the spine of a binding in the form of raised bands and at the joints in the form of lacing-in holes.

### 10.2.2. The diversity in bindings enables the source binding to be identified.

For each fragment there was only a small number of bindings in the library which matched the spine features visible on that fragment. In Clare, this was found to be between two and six bindings from a total of 6000 volumes while in Lanhydrock it was between one and nine bindings (excluding smooth spines) from a total of 3258 volumes. The fact that so few bindings have the same spine features emphasises the point that bindings are not all the same and can be differentiated from each other

Searching for the source binding of a removed manuscript waste fragment, then, is not a case of 'looking for a needle in a haystack'. Bindings can be distinguished from each other and the diversity that there is between bindings means that, in a given library, there will be a restricted number of the bindings with the same height, covering material and distribution of sewing supports. As a result, the number of candidate matches per fragment will be a workably small number (Tables 28-31).

When all the features of a binding (the spine, the sides and the inner surface of the boards or cover) are combined it is easy to see that each binding is unique - as each binding is handmade, no two are the same.

> **This research has shown that the features of the spine are sufficiently particular to allow bindings to be differentiated on the basis of these features *alone*.**

It was noted earlier that the greater the number of properties being considered when selecting a candidate match, the more effiective the search to find that match (2.8). This research found that one feature could select candidates but the verification of that candidate as an actual match was more easily done when there were numerous features to compare.

**10.2.3. The method was most successfully used with fragments which were endleaves (9.3.1).**

Source bindings were more successfully identified for endleaves than any other fragment. The number of candidate matches generated by the spine evidence does not vary greatly between endleaves and guards or indeed comb spine linings. The latter's additonal evidence for the width of the spine, as it is not always exact, did not significantly alter the number of candidate matches in the cases examined. However, the verification of the match was found to be easier with endleaves. This is because

i. they have substantially more evidence of the sides of the bindings than guards or comb spinelinings.
ii. the area of the binding for which guards and comb spine linings do have evidence, that closest to the joint, is often affected by repairs which can make verifying a match more complicated though not impossible.

Endleaves were also the most commonly-found fragment in the collections examined. It may be the case that the fact that there was more opportunity to practice the method with endleaves than with other fragments may have affected the success rate. However, the method for identifying the candidate source bindings (Stage One) was the same for *all* fragment types. The difference in the success rate may also be explained by the difficulties arising from

i. access to the shelves – a cause for concern with covers and guards in Clare and for the linings in the Wren library
ii. type of repair - the tendency in Lanhydrock for the smaller repaired bindings to have smooth spines (and the guard fragments were from smaller volumes) negatively impacted on the process.

It is possible that with further practice, and in other libraries, the success rate for guards and comb spine linings would increase.

However, in the case-study libraries examined, the method was problematic for covers. While source bindings could be identified as candidate matches, this was based only on the height and width of the spine. There was no correlation between the position of the sewing supports on the fragment and those on the spine - the textblocks had been resewn after the cover was removed and false bands were also being used. There was also no evidence in the textblock that could verify the association between the fragment and the textblock. In other libraries, though, depending on the style of rebinding carried out there, the original supports may have been retained and in these cases the method would enable the match to be selected. Verifying the match, however, will still depend on their being corresponding evidence in the textblock and on the fragment. Ironically, while it is diffcult to identify candidate matches for stitched covers as only the height and width of the spine is relevant, the match would be easier to verify once it had been selected as there will be stitching holes in the inner margin of the textblock. While many of the books in Lanhydrock were rebound so tightly that they did not open properly to allow the inner margin to be examined, in the cases of F.16.1, the associated textblock for the stitched cover Lanhydrock 52, it was possible to see these sewing holes. In summary, more work is needed to develop this method for covers.

It should be remembered, though, that as covers are more likely to have archival evidence on them than the other fragments, such as a title written on the spine, there is possibly less necessity for this method for this fragment type.

**10.2.4. Source bindings can be identified for fragments which are made of parchment or paper.**

The process was also used to identify the source binding for a fragment from a paper manuscript, Lanhydrock 124, 125. The material of the fragment, then, does not negatively impact on the method.

**10.2.5. Source bindings can be identified regardless of whether they are inboard or laced-case.**

The majority of fragments in all the collections examined had been removed from inboard bindings which had been covered in tanned skin. The source binding for Lanhydrock 44, 45, however, was identified as being a parchment-covered laced-case binding (9.3.1.3). While the case studies had fewer examples of fragments removed from laced-case bindings, the method is also applicable to them. No inboard source bindings examined had a smooth spine apart from those that were repaired in this way.

**10.2.6. Source bindings can be identified even if they have been repaired.**

Repairs to source bindings may have made their identification more difficult but it did not prohibit that identification.

All the manuscript-waste fragments examined had evidence for three main features which are visible on the spine of the binding. These are

i. the height of the binding.
ii. the covering material.
iii. the distribution of the sewing supports.

(The width of the spine is not included as this applied only to comb spine linings and covers.)

In cases where the source binding had been repaired the first two features may have been changed.

i. The height of the spine of the binding may have been altered if the book had been given new boards with very large squares (for example, Clare A.2.2.) .
ii. The covering material may have been replaced with a different type of material than was originally there and for which there is evidence on the fragment (for example, Merton D.3.1 (1), 5.9 and 9.3.1.1).

**However, it was found in this research, that in the majority of cases where a book had been repaired, *the position of the sewing supports was retained*. As the key to identifying candidate matches is the sewing evidence (10.2.1), the fact that this is still visible on a binding which has been repaired enables this method to function for repaired bindings.**

In one of the case-study libraries (Lanhydrock), when smaller-format books were repaired they were often given a smooth spine. With a smooth spine the distribution of the sewing supports is less visible and when included in the search a greater number of candidate source bindings are identified as the selection process is based on the height of the spine alone. In four such cases in Lanhydrock the number of candidate matches was between ten and thirty-three. In two of these cases, the source binding could still be identified (Lanhydrock 96i, ii and Lanhydrock 51) and in the remaining two (Lanhydrock 29,30 and Lanhydrock 134iii) the match was possibly identifed.

Binding repairs might also include

i. the addition of heavy modern paper endleaves which were pasted down to the inner surface of the boards and obscure evidence on the board that might verify a match.
ii. new boards which have no relevant lacing-in evidence that might have verified a match.

However, neither prohibited matches being selected and then verified.

An awareness of the styles of repair which were carried out on the books in a collection will assist with implementing the process. It is recommended then that some examples of repaired books are examined prior to beginning work using the method.

**10.2.7. Source bindings can be identified for manuscript-waste fragments which have been conserved.**

In Merton, the source bindings for both fragments that were and were not conserved were identified. While treatments may remove creases, none of the examples seen were so radically altered that the measurements for the source binding could not be calculated from them.

**10.2.8. Source bindings can be identified for manuscript waste fragments which are housed in guardbooks or fascicules.**

The housing of fragments in guardbooks or fascicules can complicate, but does not prevent, the method working. These housing-systems can be problematic when

i. sorting fragments into pairs.
**ii.** manipulating them so that they can be seen as they were orientated in the binding as opposed to the source manuscript.
**iii.** taking measurements accurately.
iv. verifying the source binding by matching features such as the position of wormholes as it is most easily done by lining up the fragment against the adjacent page or board. However, an image of the fragment can be printed out for this purpose.

Despite the difficulties, it was still possible to identify source bindings for fragments that were housed in this way. Working with fragments that were loose and not bound, however, was easier.

**10.2.9. Binding evidence is more reliable than archival evidence.**

During this research a source binding was identified that conflicted with the archival evidence on the associated fragment. The endleaves Lanhydrock 1-4 were, according to a note written on them, removed '*From cover of J.A. Comenii opera didactica omnia. 1657*'. The evidence on the fragment showed that the source binding was sewn on four supports, had wooden boards and fore-edge clasp fastenings. Using the method, this binding was identified as D.11.18. However, this volume did not correspond with the archival evidence and was in fact the works of St Jerome (Cologne, 1548). The title written on the fragment was searched for on Library Hub Discover (Copac) and only one book with this title and date was listed as being in Lanhydrock. This was then identified in Collins' printed catalogue as B.10.10 (Amsterdam, 1657).[402] This volume was sewn on six supports and had paper boards and no clasps and could not have produced the sewing evidence, impressions and staining visible on the fragments. The archival evidence, then, was incorrect while the evidence on the fragment accurately identified the source binding.

[402] Library Hub Discover (Copac) did not provide a shelfmark for the volume.

A process which relies on the presence of accurate shelfmarks or titles on fragments will have a limited application – shelfmarks may be changed and are also open to errors (2.3.10. Binding evidence, on the other hand, is on the fragment because that fragment was in contact with that binding. It is irrefutable evidence of the binding as it was when the fragment was *in situ*, though some elements of the binding may have been altered since then by repair.

**10.2.10. Manuscript waste fragments can be classified as binding components.**

This thesis has provided a guide to identifying these fragments as binding components (Chapter 4).

**10.2.11. Manuscript waste fragments are a valuable resource for binding historians.**

Studying manuscript waste can provide an opportunity to examine parts of a deconstructed binding and identify new techniques that might lie hidden in a binding or may have been obscured by later repair. Sheppard proposed that

> 'It is … theoretically possible (though this would require especially careful observation and a measure of luck) that a hitherto unremarked technique or a rare variation of binding practice might be discovered for the first time in an impression or mark on a fragment. This in turn might redirect the eye of the binding historian to look for such detail in a surviving binding'[403]

This research has found that what Sheppard had proposed as 'theoretically possible' has in fact proven to be actually possible. A 'hitherto unremarked technique' which was a 'rare variation of a binding practice' was found in a mark on a fragment, namely the staining pattern on the stub of an endleaf. It is a hook-style endleaf, but the staining pattern from the turn-in does not conform to the usual pattern. Instead the stub is stained along its full height and to almost its full width. This might indicate that the stub was pasted to the outer surface of the board and sat under the covering material.

Two pairs of endleaves of this previously unrecorded type were found in two of the libraries examined here, one in Lanhydrock (Lanhydrock 34, 35; Source binding: A.2.39, Cologne, 1540; identified using the method) and one in Westminster (MS36 17, 18; Source binding: E.2.52, Paris, 1535; part of the control sample identified by shelfmark, see 3.1). The Westminster binding is decorated with an Oxford tool (roll V)[404] while the cover of the other source binding has an unidentified roll. Both are octavo-sized. It is not entirely clear how these endleaves were positioned in the binding but it is hoped that an example might be found still *in situ* in a binding to clarify the structure further.

403 Sheppard, 2000, p.169.
404 Identified by Westminster Abbey library.

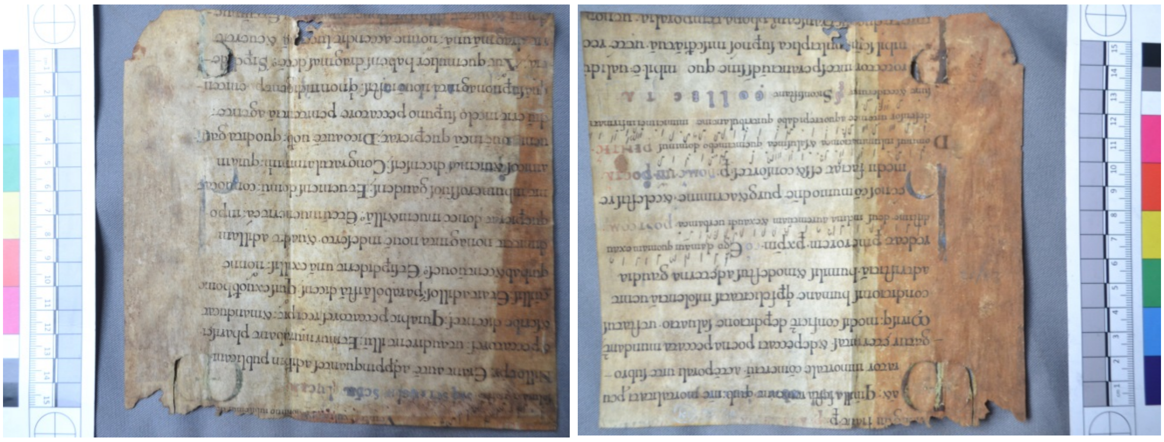

**Fig. 251. Westminster MS36, 17**.
(Left) MS36 17, outer face of fragment with the turn-in staining and the stub without staining which might be explained by it being pasted on to the outer surface of the board.
(Right) MS36 17, inner face of the fragment with no turn-in staning and the stub with staining which might indicate that it was pasted to the outside of the board and this side of the stub was in contact with the covering material.

### 10.2.12. Re-associating manuscript-waste fragments with their source binding alters our understanding of that binding.

An analysis of the source bindings successfully identified for thirty-one fragments has been beyond the scope of this research. However, as an example of some of the information that can come to light when fragments and bindings are re-associated the following examples are presented.

i. Comb spine linings, a continental feature, were matched back to source bindings in St. Canice's and The Wren Library, both with textblocks printed in Paris. This would suggest that these undecorated bindings may be French. It is also notable that the fragment from St. Canice's, which is a fragment of a document dated 1605 may have been quite quickly re-used as waste material. The textblock it was associated with was dated to 1620, though this is obviously not necessarily the date of the binding.
ii. Two Oxford bindings were identified[405] as the source binding for Westminster fragments, MS36 1 & 2 and MS 36 13a & b, endleaves with an outside hook with a cut stub, an endleaf type associated with Flemish bindings (3.2.2; 3.2.3). The re-association of the fragments with their source binding challenges the assumption that these bindings are in their entirety the work of an Oxford binder, even though the covers are decorated with tools associated with Oxford. Further study of endleaf formats in association with the binding, and its decoration, may indicate that more reliable links between bindings can be found by combining a comparison of structure and decoration.

[405] By Westminster Abbey Library, not by using the method.

Manuscript waste can also retain evidence of binding features that are no longer present or visible on a binding due to later repair. The endleaves Lanhydrock 116i, ii (C.3.18, Paris, 1518) for example have evidence of a laced-in endband slip which cannot be seen on its rebacked source binding. The only evidence for this binding feature is on the fragments.

**10.2.13. The 'notional binding'[406] based on the binding evidence on the fragment can provide a limited, but useful, context for the fragment.**

Even in cases where the source binding has not been identified, an analysis of the structure of the fragment and the binding evidence visible on it can provide some context for the fragment. The source binding for Lanhydrock 76, 77, for example, which is no longer in the library, was quarto-sized and had wooden boards with trimmed turn-ins and tongued corners. It also had clasp fastenings visible on the right endleaf, which suggests that the catchplate was on the right board and so the binding closed from left to right.[407]

**10.2.14. The success of this method is based on appropriate access.**

Central to this method is the ability to access books on the library shelves. This work requires the library to give the researcher a particular degree of access to the collections. In cases where that is not possible, the work could be conducted by a member of the library staff.

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406 Sheppard, 2000, p.169. Sheppard proposed 'that a lost binding can be notionally reconstructed' from surviving marks.

407 http://w3id.org/lob/concept/3158. As indicated earlier, though, this alone cannot be used to suggest where the binding was made as some binders would reverse their normal direction of fastening when binding books printed or written in languages that read from right to left

## 10.3. Proposed further work

This method could be extended by working with different materials and in different environments.

### 10.3.1. Further practice with guards and covers

As shelf height and the types of repairs are likely to have impacted on the success rate of guards and covers, it would be instructive to work with other collections where there are more examples of these fragments (10.2.3).

### 10.3.2. Extending the method for material other than waste from parchment manuscripts.

The method is not dependent on the material of the fragments being parchment (10.2.4). However, the paper endleaves (Lanhydrock 124, 125) for which the source binding was found (F.5.10, Antwerp, 1582) were of a heavy paper. They retained the traces of the binding well and had clear sewing hole evidence. A further development of the process would be to trial it with removed printed-waste fragments. Its success in this case, it is presumed, would be dependent on whether a thinner paper such as that used for printing is more likely to have torn around the sewing holes making the identification of the support distribution less precise. The use of printed waste as endleaves was for a time concurrent with the use of manuscript waste but it also extended beyond the period when the latter was in use. If it proves possible to work with removed printed-waste fragments, this would extend the application of the method to later bindings.

One possible collection to work on would be the printed waste fragments removed from the bindings in Lanhydrock, now in the Houghton Library, Harvard (3.4.1). To identify the source bindings for these printed waste fragments would give an even fuller picture of the bindings in Lanhydrock, particularly as it is possible that in some cases printed and manuscript-waste fragments were used in conjunction with each other.

### 10.3.3. Working with the method in other libraries.

The method was developed through working with collections in the UK and Ireland. It would be both interesting and productive to implement this method in libraries in other countries as a way of examining other binding structures. For example, no source bindings with smooth spines were identified beyond those which were a product of a later repair. It would be interesting to see if the distribution of the sewing supports can be discerned on a smooth spine as it is for example in a laced—case binding. Tacketed binding were also not found in this research and it would be useful to see if the method is suitable for them.

### 10.3.4. Automating the process

This thesis has mapped the decision-making process of the method in a series of flowcharts found in chapters 5-7. These flowcharts could be used as a basis for automating the process. This would involve comparing relevant data from fragments (measurements for the spine's height, distribution of the sewing supports, *etc*.,) and corresponding data from all the spines of bindings in a library. It could be examined whether it is possible to extract this data from images. This would involve taking photographs of all the library shelves, extracting measurements for each individual binding from those images and comparing this to the corresponding evidence extracted from images of the fragments. While this might be possible, the question is whether it would be practicable. There may be difficulties involved in photographing all the shelves in a library – for example, the need to use scaffolding to access higher shelves, issues with space when working in library bays – which may prove too disruptive for a working library. There is also the question of whether given the amount of preparatory work required to both take and process the images this automated version of the method would prove to be any quicker than the manual version explained in this thesis.

### 10.3.5 Vertical spacing and the taller lower panel

The taller lower panel usually associated with vertical spacing is important for this new method. The tendency for many early bindings to have this feature is peculiar given that it is frequently associated with the vertical storage of books (5.8.1). Exploring this feature in more depth might provide more insight into whether it really is connected with how the books were stored or whether it is as a result of how the bookblock was trimmed.

## 10.4. Recommendations arising from this research.

### 10.4.1. Proposals for the cataloguing of these manuscript waste fragments

It is proposed that in the cataloguing of these fragments

i. binding terms should be applied. Describing these fragments in accordance with the controlled terminology which is provided by Language of Bindings eradicates the confusion which arises when terms, such as 'strip' for example, are used for a range of different binding components (4.7). It will also allow readers to understand the shape of the fragment from a text description.
ii. measurements for the fragment should be given for the actual fragment rather than the text area of the fragment. With regard to endleaves, the measurement for the width of the leaf-element, that is, minus the stub-element, should also be included. This will mean that there would be a record of both the height and width of the fragment as it relates to the textbock.

From these measurements, it will be possible to estimate the measurements of the source binding.[408]

iii. the number of sewing supports should be noted. This, in conjunction with point ii above, would lay the groundwork for anyone trying to identify the source binding.

**10.4.2. Proposals for the conservation and housing of these fragments**

The conservation and housing of these fragments should not impede their study as binding components. Based on this research it is recommended that conservators working with these fragments consider using housing solutions other than fascicules. In addition, given the importance of retaining staining, creases, accretions *etc*., for the purpose of verifying the source binding, it is preferable to avoid, as Clarkson termed it, 'tidy-mindedness'.[409] but instead to respect the dual history of the fragment and not remove evidence ('evidential dirt'[410]) that indicates that the fragment was once a binding component. Manuscript waste fragments will never look as they did when they were part of complete manuscript and attempting to 'clean them up' for purely aesthetic purposes risks removing evidence which could be used to identify the source binding.

Physically restoring the fragments to the binding was not the object of the exercise and is not deemed necessary and, in cases where bindings have been repaired, it may not be possible to re-insert the fragments without causing damage to the binding. Westminster Abbey Library's practice of noting in pencil on the new endleaf of the source binding which fragment had been removed from there is effective and sufficient. Nineteenth-century guardbooks are in themselves important evidence of the development of interest in fragments and should be retained.

## 10.5. Summary

When confronted with manuscript waste a manuscript specialist might first ask 'when and where the parent manuscript was destroyed and what this destruction represents.'[411] A binding historian, on the other hand, asks what binding the fragment was removed from and what additional information does it give us about the binding. Each regards the fragment from his own point of view. In a clear case of one seeing what one knows, the binding specialist sees the evidence from a binding on the fragment while the manuscript specialist sees the manuscript.

408 This is already being implemented by Fragmentarium project led by Dobocheva and Mackert (2018).
409 Clarkson, 1999 p.89-90.
410 Ibid.
411 Watson, 2000, p.21.

It is by recognising and utilising the evidence of the binding on a fragment that it has proved possible, in the absence of archival evidence, to identify the source binding from which a fragment was removed. In order to do this, it is necessary to look beyond what is most immediately visible - the manuscript - and recognise the other, less expected, evidence.

> ‘We can only record what we observe; we can only observe what we personally recognise. But if our attention is focused only what we expect to see, we miss the unexpected’[412]

[412] Clarkson, 1992, p.6.

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# Appendix 1
# Lists of Books

## Merton College Library, Oxford

40.j.16
Euclid. *Geometricorum eleme[n]torum libri XV*.
(Paris, in officina Henri Stephani e regione scholae decretorum, 1516).

45.b.23
Castro, Paul de. *In primam [-secundam] Digesti Veteris partem Patauinae praelectiones*.
(Lyon, [s.n.], 1545).

46.a.2
Basil, Saint, *En amice lector, Thesavrvm damvs inaestimabilem D. Basilivm vere Magnvm sva lingva disertissime loqventem*.
(Basel, Ex officina Frobeniana, 1532).

46.c.2
Galen, *Aliquot opera*.
(Paris, Apud Arnoldum BircKman [sic], & Iacobum Dupuy, 1554).
Huggelin, De semeiotice medicinae parte tractatus.
(Basel, Per Nicolaum Brylingerum, 1560).

46.c.10
Alexander of Tralles, *De singularum corporis partium, ab hominis coronide ad imum usque calcaneum, vitiis, aegritudinibus, et iniuriis.*
(Basel, excudebat Henricus Petrus, 1533).

46.c.14
Ibn Serapion, Yúhānnā. *Therapeutic[a]e methodi, : hoc est, curandi artis libri VII.*
(Basel, Per Henrichum Petrum, 1543).

54.b.12
Riva di San Nazarro,
*Repertorium Ioannis Francisci de Ripa Papienis.*
(Lyon, Excudebat Lugduni Mathias Bonhomme, 1542).

64.f.7 – Source binding for Merton D.3.5. (25, 26).
Igneus, *Commentarii Ioannis Ignei viri clariss. i.v. doctoris Aureliani in aliquot constitutiones principum*.
(Lyon, Apud Vincentium de Portonariis. ; Apud Franciscum Gueyardum, 1541).

73.a.11 – Source binding for Merton D.3.10 (13).
Bright. *Hygieina*.
(London, Excudebat H. Middletonus, 1582)
Lommius, *Medicinalium obseruationum libri tres*.
(Antwerp, Ex officina Christophori Plantini, 1560).
Etheridge, *Obseruationes medicamentorum*.
(London, Apud Tomam East, 1588)
Bright, *Medicinae therapevticae pars*.

(London, Excudebat Henricus Middletonus, 1583).

73.g.6
Monte. *In Artem paruam Galeni explanationes*.
(Venice, Apud Balthassarem Constantinum, 1554).

75.b.11 – Source binding for Merton D.3.5 (32,33).
Kling. In quatuor Institutionum iuris Principis Iustiniani libros enarrationes.
(Lyon, Apud Gulielmum Rouillium, 1548).

75.d.10 – Source binding for Merton D.3.10 (12)
*Novellae constitutions*.
(Paris, Ex officina Carolae Guillard, 1542).

75.c.19 – Source binding for Merton E.3.9 (16, 17).
*Institutiones iuris*.
(Lyon, Apud Antonium Vincentium, 1553).

78.i.29 – Source binding for Merton D.3.7 (2, 3).
Augustine. *Ominum operum*.
(Augsburg, Heinricus Steyner, 1537).

95.jj.8 vol. II – Source binding for Merton D.3.1 (1).
Zwinger, *Theatrum vitae humanæ*.
(Lyon, Ex officina Frobeniana, 1571).

112.c.13 – Source binding for Merton D.3.5 (10, 11).
Hippocrates. *Omnia opera*.
(Venice, In ædibus Aldi, & Andreæ Asulani soceri, 1526).

Stack 120 d.3
Tudeschi de, Niccolò. *Tabula primi [-secundi] voluminis Consiliorum Abbatis.*
([Lyon, 1507]).

**Clare: The Fellows' Library, Clare College Cambridge**

A.2.2, vol. II – Source binding for Clare 2eii.
Augustine. *Omnium operum*.
(Basel, apud Io. Frobenium, 1528).

A.2.2, vol. III – Source binding for Clare 2ei.
Augustine. *Omnium operum*.
(Basel, apud Io. Frobenium, 1528).

A.2.2, Index vol. – Source binding for Clare 2di, ii.
Augustine. *Omnium Operum.*
(Basel, apud Io. Frobenium, 1528).

A.2.3 – Source binding for Clare 4di, ii.
Bernard of Clarivaux, *Opera*.
(Basel, per Ioannem Heruagium, 1552).

A.4.12
Ambrose. *Opera*.
(Basel, [Froben] 1538).

A.5.10
Reuchlin. *Lexicon Hebraicum et in Hebraeorum grammaticen commentarii*.
(Basel, 1537).

A.6.8 – Source binding for Clare 3b.
Jacob ben Asher ben Jechiel. "The first part of the Arba Turim".
Hijar, [1485?]{from note in volume).

C.5.7
Kimchi. [Sepher Tehillim Commentary on the Psalms].
(1542, Isny im Allgäu).

F.1.2
Tudeschis. *Tertia pars domini Abbbatis super secondo decretalium*.
(Lyon,   1512).

I.3.6
Perottus *Cornucopiae sive Linguae Latinae commentarii*.
(Basel, 1521).

K.5.5 – Source binding for Clare 2c, 4c.
Dioscorides. *Pharmacorum simplicium, reiq[ue] medicae libri VIII*.
(Strasbourg : Apud Io. Schottum. 1529).

M.3.11
Calvin. *Institutio Christianae religionis*.
(Geneva, Franciscus Perrinus, 1558).

0.1.9
Merula. *Cosmographiae generalis libri tres*.
(Leiden, Ex officina Plantiniana Raphelengij 1605).

0.5½.2
Macrobius. *In somnium Scipionis*.
(Paris, cum priuilegio caesaris, et Gallorum regis, in decennium [for H. Estienne II], 1585).

O.5½.6 – Source binding for Clare 2ai, ii.
Sophocles. *Σοφοκλεους Τραγωδιαι ἑπτα. Sophoclis Tragœdiæ septem cum commentariis*.
(Hagenau, ex Officina Seceriana, 1534).

Q.2.5
Plato. *Omnia...opera*.
(Basel, In officina Frobeniana, 1532).

Q.3.9
Aristotle. *Opera omnia*.
(Basel, per Io. Beb. [Johann Bebel] et Mich. Ising. [Michael Isengrin], 1539).

U.1.6, vol. V – Source binding for Clare 4ei, ii.
Bible. *Quinta pars huius operis in se continens glossam ordinariam.*
([Lyon, 1520]).

## Lanhydrock House, Cornwall

A.2.39 – Source binding for Lanhydrock 34, 35.
Denis the Carthusian, *Opus hactenus desideratum & nuper in Carthusia Ruremundensi inventum*,
(Cologne, Ioannes Ruremundanus, 1540).

A.4.35 – Source binding for Lanhydrock IIIi, ii.
Althamer, *Conciliationes locorum scripturæ*.
(Nuremberg, [in officina Ioannis Montani & Ulrici Neuberi], 1561).

A.5.27
Rainolds, John. *The summe of the conferences between John Rainoldes and John Hart*.
(London: George Bishop, 1598).

A.19.11 – Source binding for Lanhydrock 96i, ii.
Macarius, *Homiliae quinquaginta*
(Paris, Apud Guil. Moreliu[m], 1559).

A.21.4 – Source binding for Lanhydrock 32i, ii.
Porta, Santius de. *Sermones hyemales*.
(Lyon, Johannis Cleyn, 1517).

A.21.5 – Source binding for Lanhydrock 47, 49 and 126i, ii.
Richard, *Sermonum opus*.
(Paris, ab Joanne Paruo, 1518).

A.22.2 – Source binding for Lanhydrock 44, 45.
Bilson, *The true difference betweene Christian subiection and unchristian rebellion*.
(Oxford, Ioseph Barnes, 1585).

A.24.23 – Source binding for Lanhydrock 168.
Luther, *A commentarie upon the fiftene psalms.*
(London, Thomas Vautroullier 1577).

B.1.10 – Possible source binding for Lanhydrock 134iii.
Marulić, Marko. *Evangelistarium*.
(Cologne, Apud Petrum Quentell, 1532).

B.1.13
Hyperius, *De theologo : seu de ratione studii theologici* libri IIII.
Basel, Per Ioannem Oporinum, 1559);
Theodorus *Quomodo legere oporteat Sacras Scriptura*.
Basel, Ex officina Ioannis Oporini, 1550).

B.9.8 – Possible source binding for Lanhydrock 29, 30.
Bidenbach. *Promptuarium conubiale*.
(Tübingen, typis Gruppenbachianis, 1611).

C.1.18 – Source binding for Lanhydrock 51.
*Sermones super apocalipsim*.
([Paris], Venundantur in vico sancti Jacobi a Johanne Paruo, 1512.)
Amelius, *Instructio virorum ecclesiasticorum*.
([Paris, Jean Du Pré for Regnault Chaudière, 1520]).

C.1.23 – Source binding for Lanhydrock 27.
Antoninus St., *Confessionale Anthonini*.
([Paris], Iehan Petit, 1513).
Bound with:
Chaimis, *Speclum [sic] confessorum*.
(Paris, Johanne Petit, 1511).
*Regimen sanitatis Salerni*.
([Paris], Impressu[s] p[er] Thoma[s] kees co[m]moran[te]. in domo rubea i[n] vico Carmelita[rum] p[er] mag[ist]ro Petro baquelier, 1513).
Scot, *Phisionomia*.
([Paris], Iehan Petit, [1515?]).

C.2.4
*Biblia sacra veteris et novi testamenti*
(Geneva, apud Petrum Santandreanum, 1574).

C.3.19 – Source binding for Lanhydrock 116i, ii.
Holkot, *Opus reuera insignissimum. in librum Sapientie Salomonis editum*.
(Paris, in domo Bernardi Aubri, 1518).

C.3.29 – Source binding for Lanhydrock 134ii, 139ii.
Varagius, *Flores totius, sacre teologie*.
(Milan, per Io. Iacobum De Ferrariis [1509]).
Olympiodorus, *Vetus editio Ecclesiastae*.
(Paris, in officina Henrici Stephani, 1512).

C.15.3
Napier. *Plaine discovery of the whole Revelation of Saint John*.
Edinburgh, Robert Walde-graue, 1593.

C.15.5
Bownd. *The doctrine of the Sabbath*.
London, printed by the Widdow Orwin, for Iohn Porter, and Thomas Man, 1595.

C.15.26 – Source binding for Lanhydrock 162.
Stoughton, *The dignitie of Gods children*.
(London, Printed by Thomas Haueland, for Thomas Man, 1610).

D.1.31
Hoeckelshoven, *Practicorum, sive Philosophiae practicæ Libri III*.
(Frankfurt, typis Sigismundi Latomi, impensis Ionnis Thymius, 1604).

D.7.38 – Source binding for Lanhydrock 167.
Temple, *Francisci Mildapetti Nauerreni ad Euerardum Digbeium Anglum* admonitio *de unica P. Rami methodo reiectis Caeteris retinenda*.
(London, Excudebat Henricus Middletonus, 1580).

D.8.33 – Source binding for Lanhydrock 19, 20.
Diogenes Laertius, *De vita et moribvs philosophorvm libri X*.
(Antwerp, Ex officina Christophori Plantini, 1566).

D.8.36
Wildenbergius. *Totius philosophiae humanae : in tres partes*.
(Basel, ex officina Oporiniana, 1571).

D.11.10
John Chrysostom, St., *Index super quinque tomos operum Ioannis Chrysotomi*.boxed
(Basle, apud Io. Frobenium, 1527).

D.11.11 – Source binding for Lanhydrock 63, 64.
Pseudo-Dionysius, *Dionysij clestis hierarchia : Ecclesiastica hierarchia ; Diuina nomina ; Mystica theologia ; Vndecim epistolæ*.
(Paris, per Henricu[m] Stephanu[m], 1515).

D.11.18 – Source binding for Lanhydrock 1-4.
Jerome St, *Vitae sanctorum patrum veteris catholicæ atq[ue] apostolicæ ecclesiæ*.
(Cologne, excudebat Iaspar Gennepæus, 1548).

D.15.1
Glagett. *The abuse of God's grace.*
Oxford, printed by A. Lichfield, for Thomas Robinson, and Samuel Pocock, 1659.

E.4.32
Reinhold. Prutenicæ tabulae coelestium motuum
(Tübingen, apud Osuualdum & Georgium Gruppenbachios, 1571).

E.12.2
Bucholtzer, *Isagoge chronologica*.
([Heidelberg]: In officina Santandreana, 1596).

F.1.13
Ascham. *Disertissimi viri Rogeri Aschami familiarum epistolarum libri tres*.
(London, pro Francisco Coldocko, 1581).

F.5.8 – Source binding for Lanhydrock 56, 109.
Rainolds, *Censura librorum Apocryphorum Veteris Testamenti*.
(Oppenheim, e Collegio Musarum Hieronymi Galleri, 1640).

F.5.10 – Source binding for Lanhydrock 124, 125.
Pinto, *In Ezechielem prophetam commentaria*.
(Antwerp, in aedibus Petri Belleri, 1582).

F.9.21
Ravisius Textor, *Epitheta Ioannis Ravisii Textoris Nivernensis opus absolutissimum*.
(Lyon, apud Ioannem Pillehotte, 1602).

F.10.1
Marcus Aurelius. *Meditations*.
London, printed by M. Flesher, for Richard Mynne in Little Britaine, 1635.

F.16.1 – Source binding for Lanhydrock 52.
Brerewood, *Enquiries touching the diuersity of languages*.
(London, Iohn Bill, 1614).

F.16.12
*Clenardus. Institutiones linguae Graecae*.
Leiden, ex officina Ioannis Maire, 1642).

## St Canice's Cathedral Library (Maynooth University Library)

CK2332
Cicero, *Opera*.
(Paris, apud C. Stephanum, 1554).

CK2577 – Source binding for St Canice's CK/MS/3. CK/MS/9
Stapleton, *Opera quae extant omnia*. vol. I.
(Paris, [Sumptibus Roberti Foüet, Nicolai Bouon, Sebastiani Cramoisy], 1520.

CKM44
Stapleton, *Opera quae extant omnia*. vol. II.
(Paris, [Sumptibus Roberti Foüet, Nicolai Bouon, Sebastiani Cramoisy], 1554.

CK655
Thomas Aquinas, St. *Summa theologica*.
(Paris, apud societatem, 1645).

## Wren Library, Trinity College Cambridge

E.10.69 - – Source binding for Wren R.11.2/58
Bonacina. *Opera omnia*.
(Paris, Sumptibus Petri Billaine, 1634).

## Westminster Abbey Library

Q.1.8 3/7 (7 volumes) – Source binding for Westminster MS36 6, 7.
Denis the Carthusian. *Insigne commentariorum opus, in Psalmos omnes Dauidicos*.
(Paris, apud Guilhelmum Richardum, 1542).

M.6.80 – Source binding for Westminster MS36 3a, b.
Calvin. *In librum psalmorum*.
(Geneva, Excudebat Nicolaus Barbirius & Thomas Courteau, 1564).

CD.82 – Source binding for Westminster MS36 1,2.
Argenterius. *De somno et vigilia libri duo*.
(Florence, [Excudebat Laurentius Torrentinus], 1556).

F.2.17 – Source binding for Westminster MS36 13a, b.
Vigilius Bishop of Thapsus. *Opera*.
(Cologne, Apud hæredes Arnoldi Birckmanni, 1555).

F.1.24 3/ 4 (4 volumes) – Source binding for Westminster 'From F.1.24'.
Cicero. *Operum*.
(Venice, apud Aldum, 1583).

Q.3.50 – Source binding for Westminster MS36 11, 12.
Aristotle. *De historia animalium libri IX. De partibus animalium & earum causis libri IIII. De generatione animalium libri V. Theodoro Gaza interprete*.
(Paris, 1524).

E.2.52 – Source binding for Westminster MS36 17, 18.
Ambrosius Catharinus. *Annotationes in excerpta quaedam de commentariis Cardinalis Caietani*.
(Paris, apud Simonem Colinaeum, 1535).

**Derry & Raphoe Diocesan Library, University of Ulster, Northern Ireland.**

HII. a25
*De veritate Corporis et Sangvinis Domini Nostri Iesv Christi in Evcharistiae sacramento*.
Louvain, apud Martinum Rotarium, 1551.

CI. k19
Boquin.
*Assertio veteris ac veri Christianismi adversus novum & fictum Iesuitisium seu Societatum Iesu*.
([Heidelberg?], Apud Ioannem Mareschallum lugdenensem [1576]).

HII. b2
Dalmada, Emanuel, Bishop of Angra
*Epistola Reverendi Patris Domini Emanuelis Dalmada Episcopi Angrensis a consiliis Serenissimi Domini, Sebastiani Portugalliæ & Algerbiorum Regis*.
(Antwerp, Ex officinal Gulielmi Silvii, [1566]).

C1. d26
Gregory of Nyssa, St. *Mystica Mosaicae uitae enarratio*.
(Basel: [in aedibus Andreae Cratandri] [1521].

HI. b18
Aulus Gellius. *Noctium Atticarum*.
Lyon, apud haeredes Simonis Vincentii, 1539.

# Appendix 2

**Westminster Abbey Library control sample: Fragments and their Source bindings.**

| NO. | FRAGMENT WESTMINSTER | DATE | TEXT | FRAGMENT TYPE | SOURCE BINDING | DATE OF TEXT IN BINDING | PLACE OF PRINTING | Condition | Ker** Ref. |
|---|---|---|---|---|---|---|---|---|---|
| 1. | MS 36 1, 2 | 12th c. | Homily on St. Mary Magdalene | Outside hook endleaves (Pair) with cut stub | CD.82 (formerly Gal.G.1.27) | 1556 | Florence | Rebacked | 825 |
| 2. | MS 36 3a, 3b | 15th c. | Augustinus in Johannem | Outside hook endleaves (Pair) | M.6.80 (formerly Gal.E.6.39) | 1564 | [Geneva] | Not Repaired | 1835b |
| 3. | MS 36 6,7 | 14th c. | Aquinas | 6: Outside hook endleaf<br>7: Inside hook endleaf | Q.1.8 3/7 | 1542 | Paris | New Binding – old sides retained | 735a |
| 4. | MS 36 11,12 | | Treatise on Canon Law | Inside hook endleaves (Pair), shaped near joint | Q.3.50 | 1524 | Paris | New Binding – old sides retained | 132a |
| 5. | MS 36 13a, b | 12th c. | Theology | Outside hook endleaves (Pair) with cut stub | F.2.17 | 1555 | Cologne | Rebacked | 518 |
| 6. | MS 36 17, 18 | (mid)11th c. | Missale cum notis | Endleaves (Pair) with stub pasted to outer face of the board ? | E.2.52 | 1535 | Paris | Rebacked | 285a |
| 7. | Box IV 'From F.1.24' | *c. 1300* | French, possibly English* | Comb spine lining | F.1.24 3/4 | 1582 | Venice | New Binding | Not in Ker |

*I am grateful to Prof. Michelle Brown for this information.

** Ker (2004).

# Appendix 3

**The distance of the head and tail sewing supports from the edge of the spine.**

**(Examples with  little/no difference in the distance of the tail support to the tail edge and the head support to the head edge are in pink.)**

| NO. | FRAGMENT MERTON | FRAGMENT TYPE | FRAGMENT HEIGHT mm | NO. of SUPPORTS | DISTANCE OF SUPPORT FROM TAIL MM | DISTANCE OF SUPPORT FROM HEAD MM | SOURCE BINDING | DATE OF TEXT IN BINDING | PLACE OF PRINTING |
|---|---|---|---|---|---|---|---|---|---|
| **1.** | **D.3.5 (32, 33)** | Endleaves pair | 156 | 4 | 30 | 31 | 75.b.11 | 1548 | Lyon |
| **2.** | **D.3.5 (35, 36)** | Endleaves pair | 156 | 4 | 43 | 30 | NOT FOUND | NOT KNOWN | NOT KNOWN |
| **3.** | **D.3.5 (10, 11)** | Endleaves pair | 307 | 4 | 65 | 45 | 112.c.13 | 1526 | Venice |
| **4.** | **E.3.9 (16, 17)** | Endleaves pair | 165 | 4 | 41 | 25 | 75.c.19 | 1553 | Lyon |
| **5.** | **D.3.7 (2,3)** | Endleaves pair | 297 | 4 | 57/59 | 45/43 | 78.i.29 | 1537 | Augsburg |
| **6.** | **E.3.35 (3-5)** | Endleaves pair | 151 | 4 | 35 / 34 | 23/ 27 | NOT FOUND | NOT KNOWN | NOT KNOWN |
| **7.** | **D.3.5 (25, 26)** | Endleaves pair – only one with hook | 338 | 5 | 70 | 64 | 64.f.7 | 1541 | Lyon |
| **8.** | **D.3.2 (9)** | Endleaf single | 303 | 4 | 70 | 50 | NOT FOUND | NOT KNOWN | NOT KNOWN |
| **9.** | **D.3.1 (1)** | Endleaf single | 378 | 5 | 70 | 57 | 95.jj.8 vol. II – FOUND - archival evidence. But method works (p.311) | 1571 | Basel |
| **10.** | **D.3.10 (13)** | Endleaf single | 145 | 4 | 35 | 37 | 73.a 11 | 1560-82) | (4 texts: London, Antwerp) |
| **11.** | **D.3.10 (12)** | Endleaf single | 166 | 3 | 38 | 25 | 75.d.10 | 1542 | Paris |
| **12.** | **D.3.7 (1)** | Endleaf single | 412 | 5 | 55 | 45 | NOT FOUND | NOT KNOWN | NOT KNOWN |

| NO. | FRAGMENT CLARE | FRAGMENT TYPE | FRAGMENT HEIGHT mm | NO. of SUPPORTS | DISTANCE OF SUPPORT FROM TAIL MM | DISTANCE OF SUPPORT FROM HEAD MM | SOURCE BINDING | DATE OF TEXT IN BINDING | PLACE OF PRINTTING |
|---|---|---|---|---|---|---|---|---|---|
| **1.** | **4ei & ii** | Endleaves - pair | 349 | 4 | 4ei: 60 4eii: 55 | 4ei: 45 4eii: 45 | U.1.6, vol. V | 1520 | Lyon |
| **2.** | **2c, 4c** | Endleaves - pair | 299 | 4 | 2c: 60<br>4c: 59 | 2c:50<br>4c: 50 | K.5.5 | 1529 | Strasbourg |
| **3.** | **2di & ii** | Endleaves - pair | 362 | 4 | 2di: 57<br>2dii: 56 | 2di: 55<br>2dii: 55 | A.2.2, Index vol. | 1529 | Basel |
| **4.** | **4di & ii** | Endleaves – pair (one lacking a third) | 367 | 5 | 4di: 85<br>4dii: incomplete | 4di: 62<br>4dii: incomplete | A.2.3 | 1552 | Basel |
| **5.** | **2ai & ii** | Endleaves - pair | 159 | 5 | 2ai: 30<br>2aii: 29 | 2ai: 32<br>2aii: 31 | O.5½.6 | 1534 | Hagenau |
| **6.** | **3ai & ii** | Endleaves - pair. | 357 | 5 | 3ai: 56<br>3aii: not clear | 3ai: 45<br>3aii: not clear | NOT FOUND | NOT KNOWN | NOT KNOWN |
| **7.** | **3b** | Endleaf - single | 257 | 4 | 55 | 42 | A.6.8 | 1485 | Hijar |
| **8.** | **2ei** | Endleaf - single | 348 | 5 | 43 | 42 | A.2.2, vol. III | 1528 | Basel |
| **9.** | **6a** | Endleaf - single | 205 | 4 | 43 | 30 (but damaged?) | NOT FOUND | NOT KNOWN | NOT KNOWN |
| **10.** | **2eii** | Endleaf - single | 370 | 4 | 70? | 52 | A.2.2., vol. II | 1528 | Basel |
| **11.** | **1ai , ii** | Guards - pair | 204 | 4 | 1ai: 36<br>1aii: 36 | 1ai: 25<br>1aii: 25 | NOT FOUND | NOT KNOWN | NOT KNOWN |
| **12.** | **1b** | Guard - single | 320 | 4 | 65 | 53 | NOT FOUND | NOT KNOWN | NOT KNOWN |
| **13.** | **2b** | Cover | 200 | 4 | 23 | 17 | NOT FOUND | NOT KNOWN | NOT KNOWN |
| **14.** | **6b** | Cover | 165 | Stitched | 19 | 15 | NOT FOUND | NOT KNOWN | NOT KNOWN |

| NO. | FRAGMENT LANHYDROCK | FRAGMENT TYPE | FRAGMENT HEIGHT mm | NO. of SUPPORTS | DISTANCE OF SUPPORT FROM TAIL MM | DISTANCE OF SUPPORT FROM HEAD MM | SOURCE BINDING | DATE OF TEXT IN BINDING | PLACE OF PRINTTING |
|---|---|---|---|---|---|---|---|---|---|
| 1. | **IIIi, ii** | Endleaves - pair | 145 | 3 | 111i: 25<br>111ii:25 | 111i: 20<br>111ii:20 | A.4.35 | 1561 | Nuremberg |
| 2. | **34, 35** | Endleaves - pair | 142 | 4 | 40 | 25 | A.2.39 | 1540 | Cologne |
| 3. | **96i, ii** | Endleaves - pair | 167 | 4 | 96i: 45<br>96ii: 42 | 96i: 30<br>96ii: 30 | A.19.11 | 1559 | Paris |
| 4. | **19, 20** | Endleaves - pair | 165 | 4 | 19: 36<br>20: 37 | 19: 25<br>20: 25 | D.8.33 | 1566 | Antwerp |
| 5. | **44, 45**<br>**Control** | Endleaves - pair | 215 | 4 | 44: 43<br>45: 45 | 44: 38<br>45: 38 | A.22.2 | 1585 | Oxford |
| 6. | **32i, ii** | Endleaves - pair | 197 | 3 | 32i: 35<br>32ii: 35 | 32i: 32<br>32ii: 27 | A.21.4 | 1517 | Lyon |
| 7. | **47, 49** | Endleaves - pair | 203 | 3 | 47: 38<br>49: 35 | 47: 26<br>49: 22 | A.21.5 | 1518 | Paris |
| 8. | **56,109** | Endleaves - pair | 238 | 4 | 56: 56<br>109: 50 | 56: 46<br>109: 45 | F.5.8 | 1640 | Oppenheim |
| 9. | **116i, ii**<br>**Control** | Endleaves - pair | 198 | 3 | 116i: 45<br>116ii: 45 | 116i: 25<br>116ii: 33 | C.3.19 | 1518 | Paris, |
| 10. | **24, 125** | Endleaves - pair | 240 | 4 | 124: 53<br>125: 52-67 (a lot of tearback) | 124: 40<br>125: 38 | F.5.10 | 1582 | Antwerp |
| 11. | **1-4**<br>**Control** | Endleaves - pair | 305 | 4 | 1&2: 65<br>3&4: 60 | 1&2: 40<br>3&4: 45 | D.11.18 | 1548 | Cologne |

| NO. | FRAGMENT LANHYDROCK | FRAGMENT TYPE | FRAGMENT HEIGHT mm | NO. of SUPPORTS | DISTANCE OF SUPPORT FROM TAIL MM | DISTANCE OF SUPPORT FROM HEAD MM | SOURCE BINDING | DATE OF TEXT IN BINDING | PLACE OF PRINTTING |
|---|---|---|---|---|---|---|---|---|---|
| 12. | **63, 64** | Endleaves - pair | 290 | 4 | 63: 40<br>64: 45 | 63: 35<br>64: 40 | D.11.11 | 1515 | Paris |
| 13. | **76, 77**<br>**Control** | Endleaves - pair | 228 | 4 | 76: 38<br>77: 40 | 76: 25<br>77: 25 | "F.4.17" NOT IN LIBRARY | [1528 - NOT IN LIBRARY | [Paris - details from catalogue] |
| 14. | **7,8** | Endleaves - pair | 193 | 4 | 7: 53<br>8: 50 | 7: 33<br>8: 35 | NOT FOUND | NOT KNOWN | NOT KNOWN |
| 15. | **27**<br>**Control** | Endleaf | 133 | 3 | 25 | 26 | C.1.23 | 1511- 1513 | Paris |
| 16. | **141, 142** | Board lining or layer of a laminated board (with staining from cover turn- in) | 285 | 4 laced in but possibly 5 on spine as gap in supports | 62- tail | 58 - head | NOT FOUND | NOT KNOWN | NOT KNOWN |
| 17. | **126i, ii** | Board lining or leaf of a laminated board | 215 | 3 | 42 | 25 | A.21.5 | 1518 | Paris |
| 18. | **134ii, 139ii** | Guards - pair | 134ii: 195<br>139ii: 192 | 4 | 134:33<br>139:37 | 134: 28<br>139: 27 | C.3.29 | 1509 & 1512 | Milan & Paris |
| 19. | **29, 30** | Guards - pair | 145 | 3 | 25 | 25 | (Possibly) B.9.8 | 1611 | Tübingen |
| 20. | **134iii** | Guard - single | 146 | 3 | 25 | 28 | (Possibly) B.1.10 | 1532 | Cologne |

| NO. | FRAGMENT LANHYDROCK | FRAGMENT TYPE | FRAGMENT HEIGHT mm | NO. of SUPPORTS | DISTANCE OF SUPPORT FROM TAIL MM | DISTANCE OF SUPPORT FROM HEAD MM | SOURCE BINDING | DATE OF TEXT IN BINDING | PLACE OF PRINTTING |
|---|---|---|---|---|---|---|---|---|---|
| 21. | **51** | Guard - single | 138 | 4 | 35 | 25 | C.1.18 | 1512, 1520 | Paris |
| 22. | **104, 105** | Guard -single | 294 | 4 | 104: 42 105: 45 | 104: 32<br>105:35 | NOT FOUND | NOT KNOWN | NOT KNOWN |
| 23. | **168**<br>**Control** | Cover - laced | 188 | 3 | 27 | 20 | A.24.23 | 1577 | London |
| 24. | **162**<br>**Control** | Cover - laced | 187 | 3 | 46 | 25 | C.15.26 | 1610 | London |
| 25. | **167**<br>**Control** | Cover - laced | 135 | 3 | 20 (cut?) | 25 | D.7.38 | 1580 | London |
| 26. | **52**<br>**Control** | Cover - stitched | 202 | n/a | 45? | 35? | F.16.1 | 1614 | London |

| NO. | FRAGMENT ST. CANICE'S | FRAGMENT TYPE | FRAGMENT HEIGHT mm | NO. of SUPPORTS | DISTANCE OF SUPPORT FROM TAIL MM | DISTANCE OF SUPPORT FROM HEAD MM | SOURCE BINDING | DATE OF TEXT IN BINDING | PLACE OF PRINTTING |
|---|---|---|---|---|---|---|---|---|---|
| **1.** | **CK/MS/3**<br>**CK/MS/9** | Comb spine lining - two sides | 360 | 6 | 3: 55<br>9: 57 | 3: 60<br>9: 51 | CK2577 | 1620 | Paris |

| NO. | FRAGMENT WREN | FRAGMENT TYPE | FRAGMENT HEIGHT mm | NO. of SUPPORTS | DISTANCE OF SUPPORT FROM TAIL MM | DISTANCE OF SUPPORT FROM HEAD MM | SOURCE BINDING | DATE OF TEXT IN BINDING | PLACE OF PRINTTING |
|---|---|---|---|---|---|---|---|---|---|
| **1.** | **R.11.2/58** | Comb spine lining - one side | 356 | 6 | 60 | 45 | E.10.69 | 1634 | Paris |
| **2.** | **R.11.2/21a, 21b** | Comb spine lining - two sides | 21a: 289<br>21b: 296 | 5 | 56 | 38 | NOT FOUND | NOT KNOWN | NOT KNOWN |

# Appendix 4

## A List of Fragments and their Source Bindings

| NO. | FRAGMENT MERTON | ORIGIN | DATE | TEXT | FRAGMENT TYPE | SOURCE BINDING | DATE OF TEXT IN BINDING | PLACE OF PRINTING | MS REF |
|---|---|---|---|---|---|---|---|---|---|
| 1. | D.3.5. (32)<br>D.3.5.(33) | English<br>French | $14^{th}$ c.<br>$14^{th}$ c | Theological Commentary on the Minor Prophets | Inside hook endleaves (Pair) | 75.b.11 | 1548 | Lyon | Thomson 2009 p.253 |
| 2. | D.3.5 (35)<br>D.3.5 (36) | Continental | $15^{th}$ c | Theological | Outside hook endleaves (Pair) | NOT FOUND | NOT KNOWN | NOT KNOWN | p.253 |
| 3. | D.3.5 (10)<br>D.3.5 (11) | English | $12^{th}$ c | Theological | Outside hook endleaves (Pair) | 112. c.13 | 1526 | Venice | p.252 |
| 4. | E.3.9 16)<br>E.3.9 (17) | France | $15^{th}$ c. | Theological | Outside hook with cut stub endleaves (Pair) | 75.c.19 | 1553 | Lyon | p.258 |
| 5. | D.3.7 (2)<br>D.3.7 (3) | England | $14^{th}$ c. | Commentary on a Canon Law text | Inside hook endleaves (Pair) - no stub | 78.i.29 | 1537 | Augsburg | p.254 |
| 6. | E.3.35 (3 – 5) | England | $15^{th}$ c. | Bracciolini *De avaritia* | Outside hook endleaves (Pair) - with canted corners | NOT FOUND | NOT KNOWN | NOT KNOWN | p.260 |
| 7. | D.3.5 (25)<br>D.3.5 (26) | English | $15^{th}$ c | Theological | Outside hook endleaves (Pair) | 64.f.7 | 1541 | Lyon | p.253 |
| 8. | D.3.2 (9) | England | $13^{th}$ c. | Lectionary | Outside hook endealf | NOT FOUND | NOT KNOWN | NOT KNOWN | p.251 |
| 9. | D.3.1 (1) | England | $15^{th}$ c. | Missal | Inside hook endleaf | 95.jj.8 vol. II | 1571 | Basel | p.251 |
| 10. | D.3.10 (13) | English | $14^{th}$ c. | Law | Outside hook endleaf | 73.a.11 | 1582, 1583, 1588, 1560 | London & Antwerp | p.255 |
| 11. | D.3.10 (12) | English | $13^{th}$ c. | Commentary on the *Decretum* | Outside hook endleaf | 75.d.10 | 1542 | Paris | p.255 |
| 12. | D.3.7.(1) | French | $13^{th}$ c. | Glossed Decretals | Inside hook endleaf | NOT FOUND | NOT KNOWN | | p.254 |

| NO. | FRAGMENT CLARE | ORIGIN | DATE | TEXT | FRAGMENT TYPE | SOURCE BINDING | DATE OF TEXT IN BINDING | PLACE OF PRINTING | MS REF |
|---|---|---|---|---|---|---|---|---|---|
| 1. | 4ei, ii | French Annotations French secretary hand | Mid 13th c. , 2nd half. Annotations: 15th c. | Glossed Biblical commentary | Inside hook endleaves (Pair). Turn-in shaped for laced-in endband. | U.1.6 vol. V | 1520 | Lyon | Identification by Prof. Michelle Brown |
| 2. | 2c<br>4c | Bologna or S.France, Annotations English hand | Late 13th c. Annotations English humanist hand (15th c.) | | Inside hook endleaves (Pair). Shaped for laced-in endbands | K.5.5 | 1529 | Strasbourg | As Above |
| 3. | 2di, ii | Italian (Bolognese) Annotations in English | 13th; Annotations 15th c. | Canon or civil law, glossed. Same source ms as 2ei and ii | Inside hook endleaves (Pair) | A.2.2 INDEX VOL (A.1 in gilt on spine) | 1529 | Basel | As Above |
| 4. | 4di, ii | French | First half $13^{th}$ c. | Glossed biblical commentary. | Outside hook endleaves (Pair) | A.2.3 | 1552 | Basel | As Above |
| 5. | 2ai, ii | English | Mid $13^{th}$ c. | | Inside hook endleaves with part of stub. | O.5½. 6 | 1534 | Hagenau | As Above |
| 6. | 3ai, ii | N. France | c.1400 | Book of Amos? | Inside hook endleaves (Pair) | NOT FOUND | NOT KNOWN | NOT KNOWN | As Above |
| 7. | 3b | English | Early $13^{th}$ c. | Biblical commentary | Inside hook endleaf | A.6.8 | 1485 (? Date from note in book) | Hijar | As Above |
| 8. | 2ei | Italian (Bolognese) Annotations in English hand. | 13th; Annotations 15th c. | Canon or civil law, glossed. Same source ms as 2di, ii and 2eii | Inside hook endleaf | A.2.2. vol. III ("3" in gilt on spine) | 1528 | Basel | As Above |

| NO. | FRAGMENT CLARE | ORIGIN | DATE | TEXT | FRAGMENT TYPE | SOURCE BINDING | DATE OF TEXT IN BINDING | PLACE OF BINDING | MS REF |
|---|---|---|---|---|---|---|---|---|---|
| 9. | 6a | S.France or North Italy. Annotations by English hand | around 1200/ early 13th c. 14th c.Annotations | Galen medical text | Inside hook endleaf. Turn-in shaped for laced-in endband at one end. | NOT FOUND | NOT KNOWN | NOT KNOWN | Identification by Prof. Michelle Brown |
| 10. | 2eii | Italian (Bolognese - Litera bononiensis) Annotations in English | 13th; Annotations 15th c. | Canon or civil law, glossed text. A.2.2 in pencil Same source ms as 2di, ii | Inside hook endleaf. Turn-in shaped for laced-in endband | A.2.2. vol. II | 1528 | Basel | As Above |
| 11. | 1ai, ii | French | Early 13th c. | Biblical | Guards (Pair) | NOT FOUND | NOT KNOWN | NOT KNOWN | As Above |
| 12. | 1b | English | c.1200/ very late 12th c. | Topographical/ Natural History | Guard | NOT FOUND | NOT KNOWN | NOT KNOWN | As Above |
| 13. | 2b | English in North French style. English ownership inscription 16th c, Joan/ John Cole | English ownership inscription 16th c, | Psalter | Cover - laced on | NOT FOUND | NOT KNOWN | NOT KNOWN | Presentation note on cover? Was it ever from a book in the library? |
| 14. | 6b | French | Early 13th century , 1st quarter | | Cover – stitched | NOT FOUND | NOT KNOWN | NOT KNOWN | As Above |

| NO. | FRAGMENT LANHYDROCK | ORIGIN | DATE | TEXT | FRAGMENT TYPE | SOURCE BINDING | DATE OF TEXT IN BINDING | PLACE OF PRINTING | MS REF |
|---|---|---|---|---|---|---|---|---|---|
| **1.** | **IIIi, ii** | | 15th c. | "Two leaves of a curious treateise on the Eucharist, arranged in several series of twelve statement. | Inside hook endleaves (Pair). Straight edges | A.4.35 | 1561 | Nuremberg | Guardbook ref. |
| **2.** | **34, 35** | | 13th c. | "Two fragments. Natural Philosophy." | Outside hook cut stub endleaves (Pair) | A.2.39 | 1540 | Cologne | As Above |
| **3.** | **96i, ii** | | 14th c. | “Two fragments of a (Gradual) Missal partly for the 8th Sunday after Pentecost” | Outside hook with cut stub endleaves (Pair) | A.19.11 | 1559 | Paris | As Above |
| **4.** | **19, 20** | | 13th c. | "Two fragments from, apparently, a commentary upon Psalm CXIX" | Outside hook endleaves (Pair) | D.8.33 | 1566 | Antwerp | As Above |
| **5.** | **44, 45** **Control** | | 13th c. | "Two fragments of a breviary" | Outside hook endleaves (Pair) | A.22.2 | 1585 | Oxford | As Above |
| **6.** | **32i, ii** | | 13th c. | Two leaves of an Expositio Hymnorum | Inside hook endleaves (Pair) | A.21.4 | 1517 | Lyon | As Above |
| **7.** | **47, 49** | | 13th c | 'Percursor', 'Praedicatio', with references to the Distinctiones in Canon Law | Inside hook endleaves (Pair) | A.21.5 | 1518 | Paris | As Above |
| **8.** | **56, 109** | | 56: 14th c. 109: 15th c. | 56: "One leaf of a commentary on Gratian, distinctio 46, Quaestio 1" 109: "Temptations of the rich and noble, and judgements of God. A fragment." | Outside hook endleaves (Pair) | F.5.8 | 1640 | Oppenheim | As Above |
| **9.** | **116i, ii** **Control** | | 15th c. | "Two leaves of a treatise on Logic or metaphysics" | Inside hook endleaves (Pair) | C.3.19 | 1518 | Paris, | As Above |
| **10.** | **124, 125** | | 15th c. | "Two leaves (paper) cut. Responsa to Questions in Canon Law" | Outside hook endleaves (Pair) | F.5.10 | 1582 | Antwerp | As Above |
| **11.** | **1-4** **Control** | | End 11th c. / beg. 12th c. | "Lifes of St. Owen (Audeonus) and of St Wandrgisil, Epistola Jeronimi ad Paulam etc de assumptione sante Virginis Marie. 4 leaves" | Inside hook endleaves (Pair) | D.11.18 | 1548 | Cologne | As Above |

| NO. | FRAGMENT LANHYDROCK | ORIGIN | DATE | TEXT | FRAGMENT TYPE | SOURCE BINDING | DATE OF TEXT IN BINDING | PLACE OF PRINTING | MS REF |
|---|---|---|---|---|---|---|---|---|---|
| **12.** | **63, 64** | | $14^{th}$ c. | "Four leaves. Exempla: a collection of moral and religious stories and fables". One bifolia makes one endleaf | Inside hook endleaves (Pair) | D.11.11 | 1515 | Paris | As Above |
| **13.** | **76, 77** **Control** | | $14^{th}$ c. | "One leaf. Rules for ascertaining latitude and measuring altitude, and for construction of quadrants.' | Inside hook endleaves (Pair) | "F.4.17" s from library catalogue | [1528 - NOT IN LIBRARY | [Paris – information from library catalogue] | As Above |
| **14.** | **7,8** | | $12^{th}$ c. | "Two fragments from a fine copy of the Gospel of St Luke with commentary, part of Chapter XII" | Endleaves – outside hook | NOT FOUND | NOT KNOWN | NOT KNOWN | As Above |
| **15.** | **27** **Control** | | $13^{th}$ c. | "A small fragment - Exodus XIX cum commento" | Endleaf – inside hook | C.1.23 | 1511- 1513 | Paris | As Above |
| **16.** | **141, 142** | | $15^{th}$ c. | "Treatise in French on the Gates of the Senses and the signs of virginity" | Board lining or layer of a laminated board (with staining from cover turn- in) | NOT FOUND | NOT FOUND | NOT FOUND | As Above |
| **17.** | **126i, ii** | | $15^{th}$ c. | "Two fragments, paper. From the Andriae of Terence" | Board lining or leaf of a laminated board | A.21.5 | 1518 | Paris | As Above |
| **18.** | **134ii, 139ii** | | Early $15^{th}$ c. | 134ii: "Fifteenth century vellum. Part of a document in French, relative to a payment of 5000 livres to the King of France; 3 Feb"<br>139ii: "Latin deed on vellum of Hardonymus … Bp. Of Angers, notifying that Jean Bouchier. Benedict Pidalet, Guillaume Guerin. Gervase Gysembart and Jean Morell, are his counsellors, keepers of his wardrobe, and his proctors. At Ghent, date cut off." | Guards - pair | C.3.29 | 1509 & 1512 | Milan & Paris | As Above |

| NO. | FRAGMENT LANHYDROCK | ORIGIN | DATE | TEXT | FRAGMENT TYPE | SOURCE BINDING | DATE OF TEXT IN BINDING | PLACE OF PRINTING | MS REF |
|---|---|---|---|---|---|---|---|---|---|
| **19.** | **29, 30** | | Mid 12th c. | “Exod. Xix, parts of v.2-6” | Guards - pair | (Possibly) B.9.8 | 1611 | Tübingen | As Above |
| **20.** | **134iii** | | No details | No details on guardbook page | Guard - single | (Possibly) B.1.10 | 1532 | Cologne | As Above |
| **21.** | **51** | | End 13th c./ early 14th c. | “"A small fragment - De Prudentia" | Guard - single | C.1.18 | 1512, 1520 | Paris | As Above |
| **22.** | **104, 105** | | Late 14th c. | No details on guardbook page | Guard -single | NOT FOUND | NOT KNOWN | NOT KNOWN | As Above |
| **23.** | **168 Control** | | "temp Eliz" | Document - Cornwall association | Cover - laced | A.24.23 | 1577 | London | As Above |
| **24.** | **162 Control** | | c.1525 | Document - Devon origin? | Cover - laced | C.15.26 | 1610 | London | As Above |
| **25.** | **167 Control** | | “temp Eliz” | Document text. "Essex” association | Cover - laced | D.7.38 | 1580 | London | As Above |
| **26.** | **52 Control** | | Early 14th c. | Music manuscript | Cover - stitched | F.16.1 | 1614 | London | As Above |

| NO. | FRAGMENT ST. CANICE’S | ORIGIN | DATE | TEXT | FRAGMENT TYPE | SOURCE BINDING | DATE OF TEXT IN BINDING | PLACE OF PRINTING | MS REF |
|---|---|---|---|---|---|---|---|---|---|
| **1.** | **CK/MS/3 CK/MS/9** | France | 1590 1603 | From the Law Courts of Henry of Navarre | Comb spine lining - two sides | CK2577 | 1620 | Paris | Library catalogue |

| NO. | FRAGMENT WREN | ORIGIN | DATE | TEXT | FRAGMENT TYPE | SOURCE BINDING | DATE OF TEXT IN BINDING | PLACE OF PRINTING | MS REF |
|---|---|---|---|---|---|---|---|---|---|
| **1.** | **R.11.2/58** | | Late 12th-c. | Glossed Gospels | Comb spine lining - one side | E.10.69 | 1634 | Paris | Thompson, Wren Library list |
| **2.** | **R.11.2/21a, 21b** | | 15th c | Large service-book | Comb spine lining - two sides | NOT FOUND | NOT KNOWN | NOT KNOWN | Thompson, Wren Library list |