Tied and Bound: A Comparative View on Manuscript Binding

Studies in Manuscript Cultures

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Volume 33

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DE GRUYTER

The publication of this volume was funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) under Germany's Excellence Strategy – EXC 2176 'Understanding Written Artefacts: Material, Interaction and Transmission in Manuscript Cultures' – project no. 390893796.

ISBN 978-3-11-129074-4
e-ISBN (PDF) 978-3-11-129206-9
e-ISBN (EPUB) 978-3-11-129231-1
ISSN 2365-9696
DOI https://doi.org/10.1515/9783111292069

Library of Congress Control Number: 2023939415

Bibliographic information published by the Deutsche Nationalbibliothek
The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available on the internet at http://dnb.dnb.de.

Printing and binding: CPI books GmbH, Leck

www.degruyter.com

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Alessandro Bausi

Tied and Bound: A Tight Preface

If we stay with the concept of book as a definite physical unit – and do not concede to literary metaphors or metaphysical speculations conceiving of the universe as a book – we can safely state that there is hardly any book without a device to secure its physical borders and inner consistency.[1] Assuming that 'codicological units' exist in whatever manuscript cultures and that they, in turn, are often composed of discrete elements, the issue of the cohesion of these elements and codicological units is a general and even universal one. The aim of the present volume is that of presenting a series of case studies on devices and strategies adopted by different manuscript cultures to put this cohesion in place in order to provide a comparative frame for the understanding of a phenomenon that appears to be of essential importance in the study of manuscripts.[2] The topic of 'binding', as is well-known, provides outstanding examples of refined technological devices to keep quires and covers together in codex-centred binding types, which have been the subject of comprehensive

1 The metaphor, also evoked in Dante's quotation put in exergue in the contribution by Giovanni Ciotti in this volume (*Divina Commedia*, Paradiso, XXXIII, 85–87), has a long history and fortune; see, for example, the 'Lettera alla Serenissima madama la Granduchessa Madre, Cristina di Lorena' by Galileo Galileli (1635): 'Il proibir tutta la scienza, che altro sarebbe che un reprovar cento luoghi delle Sacre Lettere, i quali ci insegnano come la gloria e la grandezza del sommo Iddio mirabilmente si scorge in tutte le sue fatture, e divinamente si legge nell'aperto libro del cielo?' (Favaro 1895, 329); English translation available at https://inters.org/Galilei-book-of-nature (accessed on 15 March 2023): 'And to prohibit the whole science would be but to censure a hundred passages of holy Scripture which teach us that the glory and greatness of Almighty God are marvelously discerned in all his works and divinely read in the open book of heaven'; the same concept already in *Il Saggiatore* (1632): 'La filosofia è scritta in questo grandissimo libro che continuamente ci sta aperto innanzi a gli occhi (io dico l'universo), ma non si può intendere se prima non s'impara a intender la lingua, e conoscer i caratteri, ne' quali è scritto' (Favaro 1896, 234); English translation (Galilei et al. 1960, 183–184): 'Philosophy is written in this grand book – I mean the universe – which stands continually open to our gaze, but it cannot be understood unless one first learns to comprehend the language and interpret the characters in which it is written'. For the motif, see the classic study by Blumenberg 2011.

2 For the definition of 'manuscript', we refer to Lorusso et al. 2015, 1: 'A MS is an artefact planned and realised to provide surfaces on which visible signs are applied by hand; it is portable, self-contained, and unique'. One might think to what extent this is also applicable to written artefacts in general, for the definition of which we stay with the proposal elaborated by the TNT research unit (for which, see below) at the Centre for the Study of Manuscript Culture: a 'written artefact is any artificial or natural object with visual signs applied by humans'.

https://doi.org/10.1515/9783111292069-001

classical contributions,[3] but the issue is obviously not limited to codices. Regardless of the way in which the cohesion is actually achieved, we opt for subsuming all strategies under the common term of 'binding'. It may serve as a general category term, although we are well aware that every manuscript culture has developed physical and technical methods of its own to keep writing surfaces, covers and other book components together.

Similar to other features of manuscript culture, the cohesion of these elements is placed along a continuum, within which various degrees of cohesion, coherence and stability are discernible – loose leaves, *codices disligati* ('unbound codices'), and 'limp' or 'soft bindings' (bindings with soft material for modest and ephemeral manuscripts or, as also happened for printed books, as a stage before a durable binding was applied), as opposed to regularly bound codices in codex cultures. Parallel cases, such as bamboo slips, palm-leaf manuscripts, rolls or peculiar arrangements of tree-bark manuscripts, confirm this observation. 'Keeping things together' – or not, that is, to be able to disarray and single out quickly and easily one or more discrete elements when needed, as is easily done by splitting one manuscript into two or more or extracting single subunits, which, in turn, will become units. This is a central concern in archiving, ordering and storing, and has actual implications in all related practices of manuscripts use, such as collecting materials, filing cards, making boxes and cases, and retrieving.

Binding deeply impacts the materiality of manuscripts. Determining borders between the issue of keeping together subunits of codicological units and that of assuring cohesion of codicological units themselves is not an easy task. Papyrus sheets, bamboo slips, palm-leaves and parchment folios, for example, are material subunits or even sub-subunits of a codicological production unit: parchment leaves as components of multi-leaf quires, papyrus sheets as components of a roll or as leaves of a quire of a codex, palm leaves as parts of a discrete section of the stack of leaves of a pothi manuscript, or single bamboo slips, are all cases in point. Yet, there are differences: a distinction between subunits and sub-subunits is not possible in bamboo slips, clay tablets and palm leaves, because the smallest material units also coincide with the possible

3 See Szirmai 1999; Maniaci 2002, 145–151; Agati 2009, 345–381; Bausi et al. 2015, see index; Boudalis 2018. Moreover, see Boudalis, Dal Sasso, Sarris, and Scheper in this volume. The project 'Ligatus' has developed an extensive reference terminology for the description of bindings: see https://www.ligatus.org.uk/ (accessed on 15 March 2023). Book conservators have also played an essential role in providing details on how codex bindings should be described. A particularly detailed protocol, still unpublished, has been developed by Karin Scheper.

minimal codicological units.[4] Therefore the function of the binding device that fixes a limit and determines a physical coherent unit, on the one hand, largely overlaps with the production of a minimal codicological unit, and, on the other hand, also implies the phenomenon of the emergence of composite manuscripts,[5] not to say that elements of a manuscript can often be reused and recycled in the bindings.[6] However, a provisional binding can also be an intermediate stage in the production of a codicological unit, as keenly investigated in the case of 'tacketing for binding' by Johan Peter Gumbert.[7]

Conversely, the physical determination of a codicological unit also has consequences regarding the perception and arrangement of texts. Extensive works and texts that require being accommodated in more than one codicological unit (thus, forming 'codicological super units', provided we want to stress their codicological character, which, in the end, is one among the possible methodological choices at our disposal) can be arranged in a set of related codicological units kept together by an additional device, for example, a box. Yet, cases of 'box binding', similar to those used in the Islamic culture,[8] may not be dictated by necessity, but aim at a more comfortable use of the Qur'an, which is, thus, physically subdivided into small codices according to its textual sections, or due to the fact, as happens in West-African manuscripts, that the leaves are unsewn.[9] They can also be arranged in multi-volume manuscripts, so frequent in the Indian and Tibetan world,[10] as also seems to have been the case for Mesopotamian clay tablets, where the number of tablets within the series or the catch line reported in the colophon facilitated the ordering of the units.[11] Most interestingly, in these cases, the same devices used *within one codicological unit* for paracontents, such as caption words for ordering quires, are used *among related codicological units*, which come to form a super unit. Similarly, physical binding devices (such as threads) can work as bookmarks and answer the same navigating needs as marginal notes, running titles and paracontents.[12]

4 See Maltomini and Staack in this volume.

5 On this topic, see, at least, Gumbert 2004; Friedrich and Schwarke 2016; Bausi, Friedrich and Maniaci 2019.

6 See Ammirati and Galambos in this volume.

7 See Gumbert 2011; see also Boudalis in this volume.

8 See Di Bella 2011.

9 See Bondarev and Scheper in this volume.

10 See Ciotti in this volume.

11 See Michel in this volume.

12 See Ciotti et al. 2018; Andrist 2022.

Along this continuum, we border on the issue of shelving and, generally, on archiving,[13] which is not the topic of the present volume, yet, a related one, to the extent that we can also look at each single volume binding as an archiving device. Aside from what is physically connected to the codicological units, the picture is further enriched by the use of other devices, which might be completely separable from it: not only boxes, as remarked above, but also satchels[14] or separating wooden tablets, as well as clothes and textiles are all possible cases in point.[15] Other devices which are not specifically focused on in this volume at large, but belong to the same phenomenon and have the same function as threads, are, for example, clasps and buckles, which are used to add cohesion and tighten the manuscript.[16]

We are well aware that this – to the best of our knowledge, first – attempt at an overview of binding across several manuscript cultures does not yet draw any firm conclusion, poses more doubts than it solves, suggests the necessity of a comparative reflection, and only opens up further questions that shall be addressed on another occasion. Among these, let us mention at least the fundamental one of the relationship between the material cohesion and its limits in capacity, and the consequences of the definitions of 'text' and 'work'. These, ultimately, textual, literary and philological consequences are rooted in the materiality of the manuscripts and the syntactic function that – in addition to the purely codicological level – the segmentation carried out by binding devices in the broader sense – similar to other purely textual segmentations and markings – determines. Whether it makes sense to understand a written artefact planned and devised to be composed of several 'books' (either in a roll, codex, pothi or whatever book form), each one provided with its own binding, and all of them contained, for example, in a dedicated box, or even provided with shelf marks and ordering devices, on shelves, as a single 'manuscript' is a question that has to be posed. It is also apparent that we have to deal with quite different degrees of cohesion.

The twelve contributions in this volume are distributed in sections as follows. Section 1, 'Overviews of traditions', hosts surveys and overviews, in some cases the first systematic analysis ever attempted, of binding in the relevant

13 See Bausi et al. 2018.

14 See Hanscom 2016 for a thorough analysis of the mechanics of Ethiopian leather satchels.

15 See Ciotti in this volume. See also Fee et al. 2022 for the use of textiles in and around Ethiopian manuscripts.

16 For clasps and buckles in Ethiopian manuscripts, see Di Bella and Sarris 2014; Nosnitsin 2016. See also Scheper in this volume.

manuscript culture. Cécile Michel elaborates on binding devices in clay tablets, establishing a parallelism with connecting and ordering devices used in the codex book form, with a special focus on tablets containing letters. Thies Staack provides a thorough and full-fledged analysis of the Chinese slips scrolls and the modes of their making, including statistical and advanced codicological notions that substantially upgrade the research on slips scroll book form, one of the classical book forms of antiquity, putting it on the same level as other much more studied book forms. The structural interrelations of material units, binding and layout (margins and overlapping of bindings) make this book form one of the most interesting analysed in recent years. Georgios Boudalis gives an updated state of the art, with new terminological proposals, of the technicalities of the sewing used in the unsupported bookbinding traditions of the Eastern Mediterranean, which are directly related to the earliest codex structures. Karin Scheper offers, from the vantage point of the conservator's perspective, a description of the most important varieties of the different techniques used in the Islamic world 'to keep things together', beyond binding in the narrow sense, focusing on structures and practices that are less common, thus including a wide typology of manuscript enclosures. Giovanni Ciotti offers a rich and so-far unattempted overview of binding in the pothi book form, in palm leaf and other manuscript cultures across Central, South and Southeast Asia, not without considering the philological and codicological implications of the 'loose' nature of pothi binding. Amélie Couvrat explores the *guṭakās* pocket manuscripts from North-Western India, providing an introduction to the characteristics of their binding as well as their materials and decorative elements.

Section 2, 'Features of binding', provides specific, fresh perspectives on particular binding issues. Francesca Maltomini deals with the special filing practice used in Graeco-Roman Egypt, where composite papyrus rolls composed of successively pasted documents written on single sheets served the function of 'keeping things together'. Eliana Dal Sasso assesses the terminological problem of the Ethiopian sewing technique, currently, but wrongly, styled as 'Coptic', and analyses its origins in the history of research, and the causes of this misuse and misunderstanding. Dmitry Bondarev discusses the possible origins of loose-leaf manuscripts in West Africa, considering the opposite hypotheses of retention of past practices or innovations dictated by West African socio-cultural uses.

Section 3, 'Legacy of binding', explores phenomena of changes dynamically taking place in some book forms' bindings. Serena Ammirati provides examples of a new research direction that investigates the reuse of Latin papyrus and parchment manuscripts in codex bindings between Late Antiquity and the Early

Middle Ages in the broader Mediterranean area. Imre Galambos shows in his study on a manuscript from the Dunhuang library cave how codicological features are an essential element to single out joins and how disbound manuscripts may have an independent life, use and function in the course of time. Nikolas Sarris gives an overview of the binding and rebinding activity in the library of St Catherine's monastery based on a conservator's perspective and discusses the relationship between manuscript production, bookbinding, and the renovation of manuscripts by binders.

Acknowledgements

The research for this note was funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) under Germany's Excellence Strategy, EXC 2176 'Understanding Written Artefacts: Material, Interaction and Transmission in Manuscript Cultures', project no. 390893796, at Universität Hamburg (UHH) (2019–2025). The research was conducted within the scope of the Centre for the Study of Manuscript Cultures (CSMC), at UHH. The topic[17] was first discussed in the research unit TNT (Theory & Terminology), where Alessandro Bausi, Antonella Brita and Michael Friedrich developed the idea of a workshop. The latter, '"Tied and bound": How to keep things together (or not?)', took place online at the CSMC after a one-year delay (the event had been planned for May 2020) on 20–22 May 2021.[18] The peer reviewers of the articles that appear in the volume

17 Suggested by an intuition initially developed in William G. Boltz's contributions (see, for example, Boltz 2005).

18 On that occasion, sixteen speakers presented fifteen papers, namely: Nicholas Pickwoad ('Ligatus' project), 'Concepts of permanence and ephemerality in bookbinding'; Thies Staack (UHH), 'Viewing the whole from its parts: bindings of early Chinese bamboo and wood manuscripts'; Francesca Maltomini (Università degli Studi di Firenze), 'Papyrus rolls as archives: the *tomoi sunkollesimoi*'; Georgios Boudalis (Thessaloniki, Museum of Byzantine Culture), 'The origin and evolution of the multi-gathering codex sewing in Late Antiquity'; Serena Ammirati (Università degli Studi Roma Tre), 'Bound to be bound: the fate of Latin manuscripts in Late Antiquity'; Imre Galambos (Cambridge University), 'Concertina booklets from ninth-tenth century Dunhuang'; Karin Scheper (Universiteit Leiden); 'Binding arguments – sewn and unsewn manuscript formats in the Islamic world'; Giovanni Ciotti (UHH), 'Some Observations on binding pothi manuscripts in South Asia'; Patrick Andrist (LMU München/Université de Fribourg) and Marilena Maniaci (Università degli Studi di Cassino e del Lazio Meridionale/Rome, ANVUR), 'Methodological questions about the analysis of the bindings in a "syntactical" perspective'; Cécile Michel (Paris, CNRS), 'Binding cuneiform tablets in one unit'; Dmitry Bondarev (UHH), 'Loose-leaf Islamic manuscripts of West Africa: retention, adaptation or invention?'; Jasdip Singh Dhillon (Oxford University), 'The Codex in South Asia: A brief

are warmly thanked for their generous and constructive contributions: Giovanni Ciotti, Marco Di Bella, Felix Heinzer, Agnieszka Helman-Ważny, José Maksimczuk, Scott Reese, Tilman Seidensticker and Szilvia Jáka-Sövegjártó. Warm thanks also go to the two English copy-editors, Philip Saunders and Kristen de Joseph, for their patient and competent effort of putting the thoughts of the authors into correct English. The same thanks go to Francesca Panini for conscientiously taking care of the typesetting and laying out this quite complex and demanding volume, and indexing it. Last, but certainly not least, many thanks go to Caroline Macé, for accompanying the genesis of this volume with her usual merciless care, and having made the editorial work a breathless and thrilling time trial (*contre-la-montre*) race, in the best Belgian tradition. Finally, many thanks go to all authors for their trust and dedication, and having, at times, embarked on the effort of digging completely new ground.

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study of materials and structures'; Alexandra Gillespie (Toronto University), 'Book knots'; Agnieszka Helman-Ważny (UHH), 'Stab-stitched binding in Lao and Thai manuscripts: history, technique and function'; and Nikolas Sarris (National Library of Athens), 'Binding or rebinding at the St Catherine's Monastery of Sinai'. Sessions were chaired by Alessandro Bausi, Eliana Dal Sasso, Ondřej Škrabal, Michael Kohs, Michael Friedrich and Antonella Brita (all UHH); Konrad Hirschler (at the time Freie Universität Berlin) co-ordinated the final discussion.

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Overviews of Traditions

Cécile Michel

Binding Cuneiform Tablets in One Unit

Abstract: Cuneiform texts have survived in great majority in the Near East, written in 3D in negative on all sides of sun-dried clay tablets. This type of medium is not suitable *a priori* for binding. Nevertheless, there were several solutions to 'bind' together cuneiform clay tablets into one unit. Small quadrangular tablets were pierced to allow a string to pass through to attach them to an object, often a basket with tablets. Also, some texts, whether literary, mathematical or epistolary in nature, were not limited to the surface of a single tablet, however large it may be. These literary and mathematical tablets were not physically linked. However, in most cases, they were virtually bound through a colophon indicating their incipit and their number within a series. Letters, on the other hand, sometimes written on more than one tablet, had to reach their addressee in a single unit represented generally by an envelope. Several examples from the second and first millennia BCE have been identified as 'second page' of letters, this contribution envisages how these letters have reached their recipients in one unit.

1 Introduction

Cuneiform writing is a three dimensional script which was used for more than three millennia in a vast area from the Mediterranean to Iran, from the Persian Gulf to the Black Sea. Texts were written over a great variety of media: clay, wood and wax, stone, metal, shell, bone, etc. Most of those which survived and were excavated in Near Eastern sites used sun-dried clay tablets as a medium. Archaeologists also recovered quantities of cuneiform texts written on stone and on metal. The ancient texts refer to wooden tablets coated with wax as a common writing medium from the late third millennium BCE on; this organic material has not survived time. Only a few luxury samples made of ivory were unearthed in the ruins of the city of Kalhu.[1]

Clay tablets were usually covered with cuneiform signs on all sides (obverse, reverse, bottom and side edges), and such a medium does not seem, *a priori*, suitable for binding. Nevertheless, visible and non-visible elements on

1 Michalowski 2021 and Michel 2021.

https://doi.org/10.1515/9783111292069-002

the clay tablets suggest that they could be linked to other written artefacts. Some tablets show, for example, holes for strings and were meant to be attached to something. Also, many texts from the ancient Near East, whether literary, scholarly or epistolary in nature, were not limited to the surface of a single tablet, however large it may be. Sometimes, a specific mention in the text itself helped to replace a specific tablet in its series. Two tablets could also form a single unit being bound together in an envelope.

Letters and contracts were wrapped in a clay envelope protecting the former during their transportation and giving some legal validity to the latter. When a letter or a legal text was written over two clay tablets, these were wrapped together in a clay envelope or in another flexible material, in order to keep them together.

This chapter considers the different ways in which the ancient Mesopotamians linked or bound together cuneiform tablets, whether made of clay or wood, and the extent to which they formed a codicological unit. Material elements, such as holes prepared or carved in clay tablets or hinges on wooden tablets, were used to pass a string and to tie them to other written artefacts in the first instance, or to bind together tablets in the second instance. In the absence of such visible material elements, the link between cuneiform clay tablets could be made with a special mention within the text itself or the binding was done with another artefact such as an envelope. This is particularly the case for letters whose envelope served to keep the elements of a codicological unit together during their transport.

2 Written artefact tied to another or to a container of written artefacts

Some clay cuneiform artefacts presenting various shapes show holes through which a string could be passed to hang it on persons,[2] animals[3] and objects,[4] including other written artefacts. This is the case, for example, of small square

2 Barton 1918, 10 suggests that texts nos 78 and 79 would correspond to small sealed (un)loading dockets that the boatmen carried around their necks.

3 André-Leicknam and Ziegler 1982, 214, show an Old Babylonian small cuneiform tablet or tag which was originally attached to the neck of a dead sheep. Dockets for sheep and goats are well attested for this period, see for example Rositani 2015.

4 Durand 1979.

tablets used as tags for baskets of tablets and dating to the twenty-first century BCE. Some of these tablets could have a double hole on one of their side, often the left one, through which a string was passed and used to attached the tablet to a basket (Fig. 1a).[5] On other tablets, the hole through which the string was passed ran the full width of the tablet, entering on one side and coming out on the opposite side (Fig. 1b).[6]

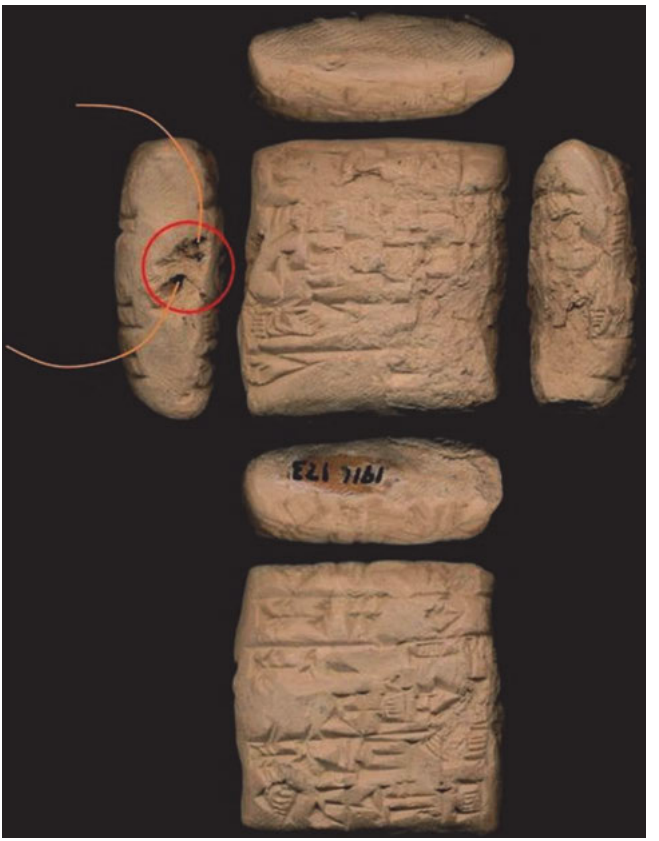


Fig. 1a: Tablet used as a tag for a basket of tablets with accounts. Umma, Ur III, twenty-first century BCE, Oxford, Ashmolean Museum, Ashm 1911-0173; photo: CDLI, https://cdli.ucla.edu/dl/photo/P142686.jpg.

5 Tablet published by Grégoire 1996, pl. 21, no. 1911-173. Labels and *bullae* from the late third millennium have been studied in detail by Tsouparopoulou 2017.

6 Tablet published by Grégoire 1970, 208, and Nelson 1976, no. 272.

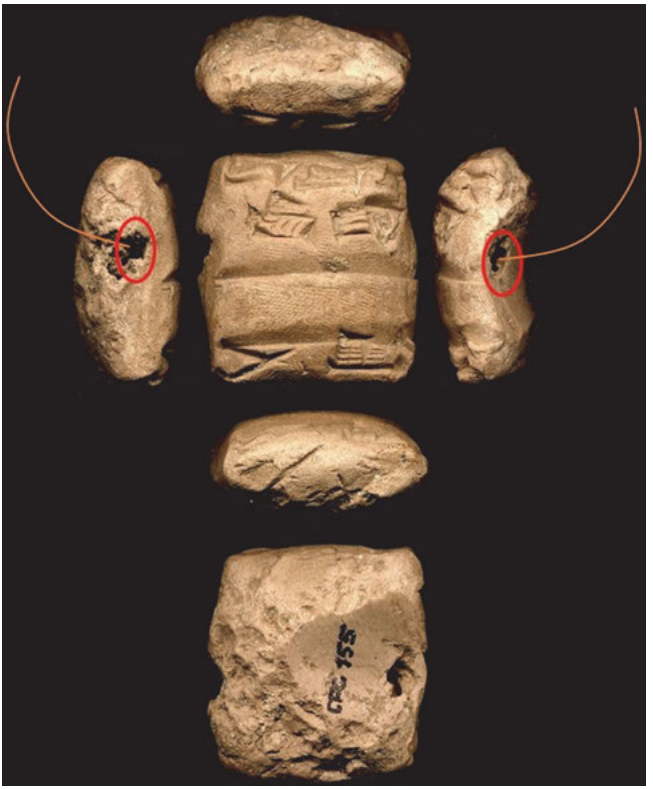


Fig. 1b: Tablet used as a tag for a basket of tablets belonging to Ur-eškuga, twenty-first century BCE, Paris, Collège de France, CFC 155; photo: CDLI, https://cdli.ucla.edu/dl/photo/P100186.jpg.

Such dockets, which may take different shapes, are attested all through the history of cuneiform writing. Other examples from the early second millennium BCE could be a little more explicit concerning the tablets preserved in the container. For example, an Assyrian triangular docket (or *bulla*) from the nineteenth century BCE found at Kültepe (Central Anatolia) was attached to a container in which 'the memoranda with witnesses concerning the proceeds of Ušinalam's wool' were kept.[7] Another *bulla*, from this site and bearing a seal imprint, has a short text identifying the tablet container as belonging to Aššur-

7 KT 6a, 89, *ta-ah-sí-sà-tum*, *ša ší-be*, *ša ší-im*, sig^{hi-a}, *ša Ú-ší-na-/lam*. This *bulla* has three string holes and the text is written on the broad side. For a photo see Kulakoğlu and Kangal 2010, 350, no. 463.

damiq.[8] Dockets with a Babylonian text dating to the eighteenth century BCE were also found in the royal palace of Mari (Middle Euphrates, Syria). Among these, one was for example fixed on a 'basket of the tablets concerning the census of the district of Saggarātum'.[9]

In some instances, it is possible to identify the material of the tablet container, thanks to the imprint it left on the inner surface of the docket when the latter was applied directly on its surface and then secured with a string going through its hole attached with a string. For example, an Early Dynastic IIIb clay tag with a hole for a string was fixed on a woven reed basket of tablets dealing with wool.[10] An Old Assyrian *bulla* from Kültepe dating to the nineteenth century BCE shows a clear imprint of the textile bag on which it was fixed. The text indicates that it contained: 'Letter(s) from Anina, son of Aššur-bēl-awātim, that he sent to Puzur-Ištar, son of Imdī-ilum, and me concerning lapis lazuli'.[11]

In all these examples, the text of the clay tag – which may take the form of a small quadrangular tablet – identifies the tablets gathered in a container to which it is attached, these tablets being linked together by a common point. These tablets were filed according to their genre, date, content or owner. They however do not form a codicological unit as they were not written in the same conditions of place and time.

There are a few cases where the normal size tablets themselves may show holes on one of its edges. Four tablets excavated in 1950 at Kültepe and belonging to the same archive have two holes on the left or the right edge. Either these tablets were stored suspended from a rope as suggested by their editor,[12] or some of them could also have been attached together. Three tablets contain claims related to caravans (Kt c/k 248, 260, 264), two of which being almost duplicates. The fourth tablet, with two holes on its right edge, is a house sale

8 Özgüç and Tunca 2001, 344, pl. 122, Kt 93/k 807, *ṭup-pu-ú, ša A-šùr*-sig$_5$.

9 Round tag in which the string ran the full width of the tablet, see Charpin 2008, 113. For an online photo of this Mari docket, see https://books.openedition.org/cdf/docannexe/image/4176/img-8.jpg (accessed on 12 May 2022).

10 Paris, Musée du Louvre, AO 13233, *c.* 2500–2340 BCE; for a photo, see https://cdli.ucla.edu/dl/photo/P220681.jpg (accessed on 6 May 2022). The text is published by Allotte de la Fuÿe 1912, no. 25. For an imprint of another type of basket, see Michel 2016, 180, Fig. 3.

11 Ankara, Museum of Anatolian Civilisations, Kt 87/k 329, *na-âš-pár-tum, ša A-ni-na*, dumu *A-šùr-be-el-a-w*[*a-tim*], *ša a-na ṣé-er, Puzur*$_2$*-iš*$_4$*-tár* dumu *Im-di*-dingir, *ù i-a-tí*, ^{na}$_4$za-gìn, *iš-pur-a-ni*. See Özgüç and Tunca 2001, 333, pl. 92 (no seal imprint), and the opening image of the video: https://vimeo.com/558945596 (accessed on 10 May 2022).

12 Dercksen 2015. This author notes that the '*hamuštum*-almanac' Kt g/k 118, giving the names of the 'weeks' over one specific year, has also the remains of two holes visible on the left edge. For this text see Balkan 1965, 166–167, and Dercksen 2011.

contract (Kt c/k 361). There are no real clues as to how these holes were used for, but the presence of this pair of holes suggests that a string could pass through and that these tablets could be attached to something, or even between them like the two pages of a book. However, we do not know when these tablets were written and if one could have form the continuation of the other one.

A group of accounting tablets found in Mari also show holes in the corners through which a string could be passed. These texts would have been threaded on a single string in the chronological order of their writing, a system that facilitated the work of the scribe in charge of writing the monthly summaries of operations.[13]

3 Polyptychs of writing boards

The binding of two or more cuneiform tablets is attested for wax wooden tablets referred to in the texts as ^{giš}le-um or ^{giš}da in Sumerian, *lē'um* in Akkadian, meaning 'wooden board', but also *ṭuppum ša iskurim* 'wax tablet', in the Old Assyrian dialect.[14] Wooden boards filled with wax were a very common medium for writing in ancient Mesopotamia at least from the third millennium on.[15] These tablets made of wood were filled with a mixture of wax and an additive component which gave the wax plasticity and a yellow colour. These boards could be single, double or multiple, and then connected together with hinges. Diptychs are visible in the hand of a scribe on some Neo-Assyrian reliefs that were decorating rooms of the royal palaces (Fig. 2).[16]

At least one-third of Aššurbanipal's library likely consisted of such board-books. Wooden tablets were also used in the daily administration for running accounts and registers. A clay cuneiform tablet gives the inventory of more than twenty different types of administrative writing boards that were stored in reed boxes in the archive of the Eanna temple at Uruk under the reign of Nebuchadnezzar (604–562).[17] According to its editors, ten of the categorizations included

13 Charpin 2021, 6–11.

14 KT 5, 11:21–22, KT 6b, 468:12–13.

15 Cammarosano et al. 2019, 129–136, Michalowski 2021, 77–82.

16 See for example the panel from Tiglath-pileser III palace at Kalhu, dated to 728 BCE and preserved in the British Museum (BM 118882), https://www.britishmuseum.org/collection/image/354504001 (accessed on 15 February 2022).

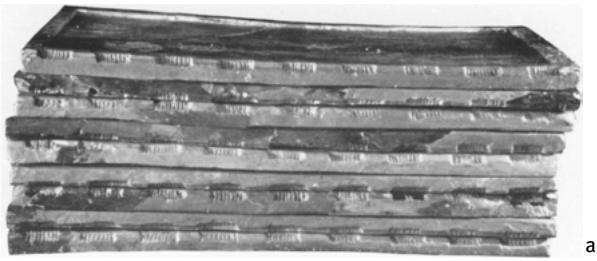
17 Nielsen and Kozuh 2021.

multiple boards, but we do not know how many wooden tablets were physically attached together in each case, whether two or more.[18]

Fig. 2: Two scribes at work, the one in the front holds a diptych made of two wooden boards and is writing in cuneiform and in Assyrian, the scribe on the back is writing on a flexible medium with ink using the Aramaic alphabet. These scribes count the booty during the campaign of Sennacherib against the Chaldeans in 700–699 BCE. South-West Palace at Nineveh. London, British Museum. Photo: https://commons.wikimedia.org/wiki/File:Detail._Assyrian_military_campaign_in_southern_Iraq,_slabs_made_640-620_BCE._British_Museum,_London.jpg.

18 Nielsen and Kozuh 2021, 143.

Unfortunately, wood is an organic material which rarely survive time. The most important samples that were found are luxury items made of ivory. Sixteen such ivory boards were found in 1953 by Max Mallowan in the North-West Palace of Kalhu, modern Nimrud, in Iraq.[19] They were forming a polyptych of boards coated with wax on both sides and hinged together as a concertina book (Fig. 3a–b).


a


b

Fig. 3a–b: The reconstructed ivory boards from the North-West Palace of Kalhu, photos published by Wiseman 1955, pl. II.

19 These were found in a well together with remains of the same number of wooden boards, see Wiseman 1955. For a photo of two of these ivory panels, see https://www.britishmuseum.org/collection/object/W_1954-1115-1 (accessed on 11 March 2022).

Each tablet measured 33.8 × 15.6 cm, and their surface, inside the margins, were hatched with criss-cross lines in order to obtain a gripping surface for the wax.[20] The outer cover had a text of four lines incised directly on the ivory surface and giving the title of the astrological series *Enūma Anu Enlil*.[21] It also stipulates that this written artefact was ordered by King Sargon II (721–705 BCE) to be set up in his new palace at Khorsabad. This set of wax coated ivory writing boards, formerly bound together in the form of a polyptych, constitutes a codicological unit: they pertain to the same text written by one person using the same technique (except for the cover).

4 Texts written over several tablets

If writing boards were quite light and had straight edges easy to be joined one to another, this was certainly not the case of clay tablets. The size of the latter was shaped according to the length of the text they were to contain.[22] However, beyond a certain size the tablets became difficult to handle and also more fragile. Consequently, in some instances, the text was distributed over several tablets forming what we could call one codicological unit. Such a phenomenon is mainly attested for scholarly and literary texts. When this happened, the tablets were not physically linked, but indications could be given in a colophon specifying the place of a given tablet in a series.[23]

Many scholarly works were written over several tablets forming complete series. This concerns mathematical, medical, lexical, divinatory, astrological or astronomical texts. For example, the divinatory series gathering over ten thousand omens linked to daily life and starting as follows 'If a city is situated on a height' (*šumma ālu ina mēlê šakin*) counts more than 107 tablets.[24] The series of astrological omens 'When (the gods) Anu and Enlil' (*Enūma Anu Enlil*), includes

20 Howard 1955.

21 For a photo of the cover, see https://commons.wikimedia.org/wiki/File:Ivory_writing-board_from_Nimrud,_Iraq,_with_cuneiform_inscriptions._Iraq_Museum.jpg (accessed on 2 July 2022).

22 For two tablets from the same period of very different sizes, see Michel 2021, 92, Fig. 1.

23 Hunger 1968.

24 Neo-Assyrian exemplars of tablets nos 5 and 6 were found at Nineveh and are preserved in the British Museum respectively as nos K 196 and K 45+198+12600. Hand copies were published as CT 38, pl. 10–13, no. 5 and CT 40, pl. 1–4, no. 6, and are edited by Freedman 1998, 87–108 (tablet 5) and 109–121 (tablet 6); photos: https://cdli.ucla.edu/dl/photo/P237798.jpg and https://cdli.ucla.edu/dl/photo/P237769.jpg (accessed both on 12 April 2022).

7,000 omens distributed over 70 tablets and derived from observations of the moon, the sun, Venus and atmospheric phenomena;[25] some mathematical tables, series and catalogues of problems are also written over a variable number of tablets.[26]

Such a phenomenon is also true for some literary compositions. The famous *Gilgamesh Epic*, in its canonical form, is written over twelve tablets,[27] and the *Babylonian Epic of Creation* (*Enūma eliš*), which tells of the creation of the gods, the world and mankind as well as the exploits of Marduk, the god of Babylon, comprises 1,100 verses spread over seven tablets.[28]

The tablets of such compositions and scholarly series were regularly copied by scribes. When canonised during the late second millennium, they formed codicological units, written at the same time and place by the same hand.

All these series of tablets were not physically bound, but linked to one another by their numbering within a series indicated in their colophon. These colophons, attested since the third millennium but especially well-known for the first millennium BCE texts, are kind of postscripts, written at the end of the text, or on an edge of the tablet. They give various data as for example the title of the work, the number of the tablet within the series and eventually the total number of tablets of the series, the name of the scribe who wrote the text, the one of the owner of the tablet, the place where the text was composed, the date, eventually the original manuscript copied, etc.[29] The number of tablet within the series,[30] or for some colophons the catch line, i.e. the incipit of the next tablet, facilitated the ordering of the tablets forming a series even though they were not physically bound. We can say that clay tablets could be arranged in series as pages would be in a book but not physically bound.

25 Reiner and Pingree 1975; Reiner and Pingree 1981; Reiner and Pingree 1998; Reiner and Pingree 2005; van Soldt 1995; Verderame 2003. For catalogues giving the incipits of many tablets of this series, see Rochberg 2018. This is the series which was written on the ivory writing boards of Nineveh, see Section 3 (Fig. 3a–b) above.

26 Proust 2012.

27 George 2003.

28 Talon 2005; Lambert 2013, 3–144.

29 Hunger 1968; Glassner 2009; Proust 2012.

30 For example ki+n, the n^{th} tablet, see Glassner 2009, 24–29.

5 Tablets and envelopes

Clay tablets could be encased in a clay envelope. This was the case, for instance, of some legal texts and letters. The envelope was protecting the confidentiality of the letter and the integrity of the tablet during its transport.[31] The writer of the letter had first to prepare his tablet, which size depended on the length of the text he wanted to write down. As they were meant to be transported, letters usually do not exceed the hand, more often they have the size of the palm of the hand or may be smaller containing only four or five lines.[32]

Once the tablet was written, it was covered with a thin layer of clay forming the envelope. The name of the letter recipient(s), as well as the indication 'sealed by (the sender)' were written on the envelope and the sender rolled his cylinder seal over the envelope several times. When the letter arrived at destination, the recipient had to break the envelope to read the letter.

5.1 Complement of the letter written on the envelope

However, it was often difficult to plan in advance the length of the text of a letter. For example, it was not unusual that, once the letter written on both sides and all edges, the sender had still something to add. This addendum – an oversight or information known after the envelope was closed –, consisting often of a sentence or two, could then be written on the surface of the envelope, after the names of the recipient and the sender. This can be observed for example on early second-millennium letters, either written in Assyrian or in Babylonian dialect.

For example, a half envelope excavated at Kültepe in a house of the lower town belonged to an Old Assyrian letter sent by Lamassātum and her daughter Šāt-Adad to their brother and uncle Iddin-Suen, son of Aššur-nimrī (Fig. 4). After the names of the addressee and senders (first four lines) together with an imprint of a cylinder seal, the continuation of the letter is written on this envelope as follows: 'Aššur-imittī, son of Amur-Aššur, is bringing you a belt sealed by Lamassātum. Šu-Ištar, son of Mannum-balum-Aššur, is bringing a belt sealed

31 Béranger 2018; Michel 2020a. For samples of envelopes from different sites, see for example the following P numbers in the CDLI database (https://cdli.ucla.edu/), P499198 (late third-millennium Sumerian letter found at Girsu), P347974 (Old Babylonian text from Alalah), or P297451 (Old Assyrian letter from Kültepe).

32 Michel 2008.

by her to Aššur-nimrī'.[33] The two belts have been presumably entrusted to two different travellers immediately after the letter was enclosed in its envelope.

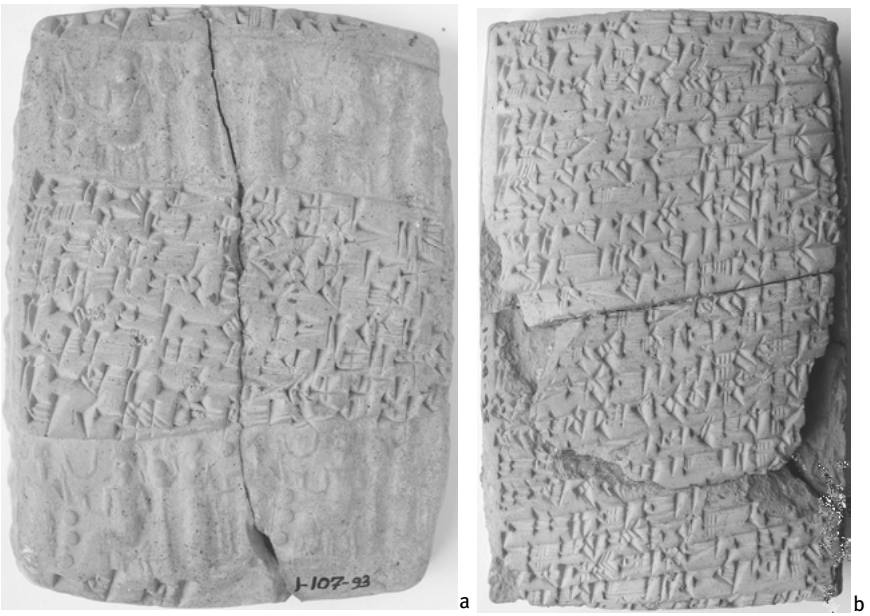


Fig. 4a–b: On the left, the letter envelope (a). The top line and the three first lines below the seal impression are the heading of the letter. The next five lines are the continuation of the text of the letter. On the right, the reverse of the letter (b). Kt 93/k 142 a–b, Kültepe, nineteen century BCE. Ankara, Museum of Anatolian Civilisations; photos: Cécile Michel.

When the scribe was unable to complete a sentence on the tablet by lack of space, he could repeat on the envelope the first word of the sentence already written on the tablet and complete the sentence. For example, the last line of the tablet left edge ends with 'their answer' (*na-pá-al-ta-áš-nu*), and the word is

33 Kt 93/k 142:6–12, *iš-ra-am ku-nu-ki ša Lá-ma-sà-t*[*im*], *A-šur-i-mì-tí* dumu *A-mur-A-šur*, *na-áš-a-ku-um iš-ra-am ku-nu-k*[*i-ša*], *a-na A-šùr-ni-im-ri*, *Šu-Ištar* dumu *Ma-num-ba-lúm-a-/šur*, (seal imprint A), *na-ší*. Another such example from the same site can be found on BIN 6, 10, on the envelope, the two first lines of text mention the correspondents of the letter: 'to Šu-Bēlim and Kuzu; sealed by Suli', then four lines are added: 'Say to Kuzu: Here my mother gave birth to a boy', *a-na Šu-Be-lim*, *ú Ku-zu* kišib *Sú-li*, *a-na Ku-zu qí-bí*^{a}*-ma*, *a-na-kam um-mì-i* [x], *za-ak-ra-am*, *ta-ar-ší-i*. Other mentions on the envelope ask the addressee to take careful note of the contents of the letter, as on ICK 1, 33a envelope, 6–9: *a-hu-ú-a* : *a-tù-nu*, *a-na a-wa-at*, (seal imprint), *ṭup-pì-im* : *ih-da*.

repeated on the envelope in the following complete sentence: 'Return to me their answer, all they will answer you, whether or not (it is positive)'.[34]

Such a phenomenon is also observed in some Old Babylonian letters for which their envelope is partly preserved. For example, the envelope fragment of a letter sent to Ilī-imguranni by the woman Nīši-īnīšu contains only the name of the recipient: 'To Ili-imguranni, my father'. This short heading of two lines is followed by a request covering the next four lines: 'Send me a bone for the (ancestors) funerary ritual of your father'.[35] In the letter, Nīši-īnīšu complains that she is starving and urges her correspondent to send her silver or wool (Figs 5a–b).

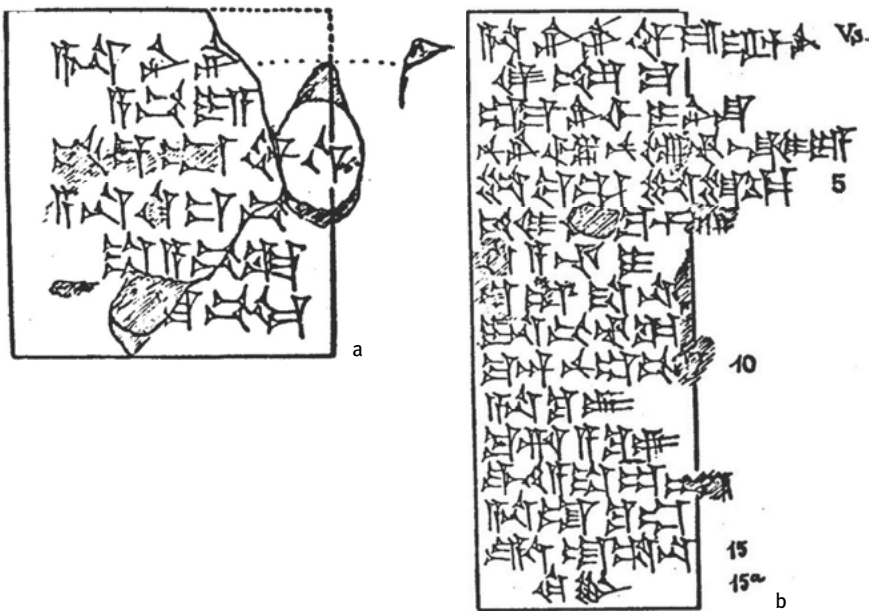


Fig. 5a–b: On the left, the copy of the letter envelope fragment (a), the two first lines correspond to the heading; on the right, the copy of the obverse and reverse of the letter (b); Schroeder 1917, no. 5.

34 TPAK 1, 46 (tablet):39–40, *a-na ša ki-ma i-a-tí*, *qí-bi*$_4$*-ma na-pá-al-ta-áš-nu*, and text no. 75 (envelope):1'–5', *na-pá-al-ta-šu-nu*, *ma-lá e-pu-lu-ku-nu-ni*, *a-ni-tám*, *lá a-ni*^{i}(DÍ)*-tám*, *ta-e-ra-nim*.

35 Copy by Schroeder 1917, no. 5 and edited as AbB 6, 5, envelope: *a-na I-1i-*[*im-gur-ra-an-n*]*i*, *a-bi-ia*, ^{uzu}*e-se-em-tam*, *a-na ki-is-pi*, *ša a-bi-ka*, *šu-bi-lam*, see Béranger 2018 for other examples.

In both examples, the envelope which protects the letter is also used as a medium to receive the end of the text of the letter. The text of the letter is written on two surfaces that are tied together.

5.2 Tablets bound together in a clay envelope: The case of the Old Assyrian texts

More often, the additional text of a letter was written on a second tablet. In the Old Assyrian archives dating to the nineteenth century BCE, the supplement was regularly small, of oval shape, with one side flat and the other convex, and written only on one side. It usually measures between 2.5 to 3.5 cm in height and 3 to 5 cm in width, and its thickness is smaller than a centimetre. Such supplements contain between three and fifteen lines, with an average of seven lines (Fig. 6).[36]

The text on these supplement either starts a new sentence,[37] sometimes addressed in particular to one of the letter addressees,[38] or simply continue the sentence that was started on the left edge of the main tablet. In the following letter, the last sentence runs over the main tablet and its supplement: '(envelope:) I left to Abu-salim in Durhumit (tablet) your tablet concerning 7 minas minus 10 shekels under your seal (envelope:) and it is with him'.[39]

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36 For more photos of such supplements, see a supplement preserved in Oxford, Ashmolean Museum, Ashm 1933-1057e1, https://cdli.ucla.edu/dl/photo/P368454.jpg (accessed on 25 June 2022); a supplement preserved in the Edinburgh collection, https://cdli.ucla.edu/dl/photo/P361616.jpg (accessed on 25 June 2022), a supplement preserved in the British Museum, CCT 6, 27, https://cdli.ucla.edu/dl/photo/P358947.jpg (accessed on 12 June 2022); one of the supplements preserved in New Haven, CT, Yale Babylonian Collection, BIN 6, 45, https://images.collections.yale.edu/iiif/2/ypm:1d6901af-50c6-4e1f-acd4-40ba3248509f/full/full/0/default.jpg (accessed on 12 July 2022). The supplement ICK 1, 39c has three lines while KT 6e, 877 contains fifteen lines. Such supplements have to be distinguished from small but thicker tablets written on both sides.

37 ICK 1, 17 (Michel 2020b, no. 235), the tablet ends by 'there is nobody to buy wood or barley for me'. And the supplement goes as follows: 'Barley is scarce, and there is no profit (to be made), and bread is snatched away from (our) hands! Send me the price of the textiles. Cheer me up!' See also for other examples, CCT 4, 45b or KT 6c, 648.

38 ICK 1, 31a–c (nine lines), Dalley 1979, no. 14 (nine lines, CDLI P361616), KT 5, 33 (six lines), KT 8, 259 (nine lines).

39 Kt 93/k 211:32–33, *ṭup-pá-kà ša* 7 *ma-na* lá 10 gín *ša*, *ku-nu-ki-kà*, suppl.:1–4, *a-na A-bu-ša-/lim*, *i-Dur*$_4$*-hu-mì-it*, *e-zi-ib-ma*, *iš-tí-šu i-ba-ší*. See also CTMMA 1, 78: 'Buy a sheep', the verb is on the supplement and the direct object on the main tablet. A photo of this tablet, its supplement and its envelope is accessible online at https://www.metmuseum.org/art/collection/search/326712 (accessed on 12 May 2022). See for other example Kt 93/k 240+55, Kt 93/k 56, Kt 93/k 211, KT 6b, 341, KT 6b, 363, KT 6e, 873, KT 6e, 875, BIN 6, 42–45 and 47.


a


b

c

Fig. 6a–c: Kt 93/k 55, Kt 93/k 56 and Kt 93/k 927, supplements of letters, Kültepe, nineteenth century BCE; Ankara, Museum of Anatolian Civilisation; photos: Cécile Michel.

Most of these supplements concern letters, however, they also exist for legal texts. A contract with witnesses was written on a main tablet of twenty-one lines plus a supplement of three lines which only bear a complementary dating: 'from the week of Kurub-Ištar'.[40]

The small additional tablet was placed on the main tablet before being covered by the envelope; it was often placed on the reverse of the main tablet, and in the same reading direction. The envelope, made around the two tablets, followed the shape of this additional tablet, and the existence of the latter is sometimes marked in negative as a depression on the inside of some envelope fragments. There is usually no clue to match together the main tablet and the small supplement as the text was just continued on the second tablet. Once the envelope was open, the two tablets were separated and it is often difficult to reconstitute the two-pieces puzzle. The existence of envelope fragments may help such reconstitution (Fig. 7a).

In some instances, it is possible to read part of the content of the main tablet, its signs appearing as mirror impression on both the inner side of the supplement and the envelope (Fig. 7b). The main tablet and the additional tablet could be wrapped in a thin textile, such as gauze before being encased in their clay envelope in order to avoid both from sticking together or to the envelope: the surface of the tablet and of its supplement may show imprints of this textile (Fig. 7a).[41]

The envelopes of Old Assyrian letters or contracts enclosing a tablet and its supplement function in these instances as a physical device which kept bound together two tablets forming a codicological unit.

The supplementary small tablets bearing the end of the text are referred to as *ṣibat ṭuppim*, 'additional tablet'.[42] However, there are very few references to these supplements in the texts. A letter, for which two copies have been found, includes instructions to the addressee. He is asked to enter the house of a merchant and open his archive in order to find a loan contract representing almost 25 kg of silver: 'On the additional tablet, these men are recorded'.[43] The writer of a letter addressed to a group of individuals explains: 'Everything you have to ask her, I

40 ICK 1, 39c:1–3, *iš-tù*, *ha-mu-uš-tim*, *ša Kurub-Ištar*. Note that this dating element is also present on the envelope. The contract Kt c/k 1642, published by Albayrak 2007, has also a supplement. A photo of the tablet with its supplement is published in Kulakoğlu and Kangal 2010, nos 426–427.

41 Andersson Strand et al. 2017, 97–98; Michel 2020a, 190.

42 Note that the reference given in Veenhof 2010, 91–92 as ICK 1, 31a:13–16 relies on wrong restitutions, the text was to be read presumably [*a-hu-ú-a*] *a-tù-nu*, [*a-na a-wa*]*-at ṭup-pì-im*, (seal imprint), [*ih-da*], a sentence often found on envelopes, as on ICK 1, 33a:6–9, Michel 2008.

43 See the duplicates AKT 1, 25 and KTS 2, 9:9–11, *i-na*, *ṣí-ba-at ṭup-pí-im a-wi-lu a-ni-ú-tum*, *wa-du-ú*, a letter commented by Michel 1995, 25–26, n. 47.

have written down for you in the additional tablet'.[44] This sentence suggests that the supplement was big enough to record all the questions to be asked to the woman. A long memoranda ends with the mention: 'there is an additional tablet', in order to remember that the text does not end with this tablet.[45]


a

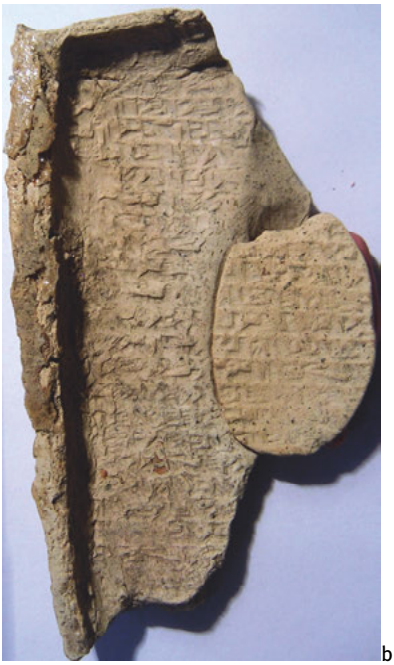
b

Fig. 7a–b: Kt 93/k 55+120+240+831, letter written over a main tablet and its supplement, both tablets could be joined thanks to the two pieces of envelopes (a); Kt 93/k 823+927, fragment of a letter envelope which could be linked to the tablet supplement (b); the main tablet has not yet been identified, Kültepe, nineteenth century BCE; photos: Cécile Michel.

A reference to a *ṣibat našpertim*, 'additional memorandum', indicates that this expression could apply to any text genre written on clay tablets. Moreover, in this instance, it refers to a full size second tablet. Indeed, a memorandum listing different debts is written over two tablets, both covered with cuneiform signs on all sides. The first tablet, Kt 88/k 117, has twenty-three lines and concerns a debt of 9 minas of silver (4,5 kg). The two last words of this first tablet belong to a

44 CCT 5, 2b:19–20, *a-ma-lá* : *ta-ša-a-la-ší-ni* : *i-ṣí-ba-at*, *ṭup-pì-im* : *la-áp-ta-ku-nu-tí*.
45 Larsen 2002, no. 156:43, *ṣí-ba-at* dub *i-ba-ší*.

sentence which continues on the second tablet, Kt 88/k 172, which has sixteen lines. On the latter, it is specified: 'This memorandum, which is an additional (tablet to the) memorandum concerning 9 minas of silver, is a copy of the encased tablet concerning the debt of Abum-ilī and Idī-Aššur'.[46] The 'encased tablet' refers to the corresponding legal text which was preserved in a sealed envelope.

5.3 Two-page letters without clay envelopes

Letters written on two full size tablets are widely attested during the second and the first millennia BCE. The Old Assyrian archives excavated at Kültepe include many letters which either end abruptly in the middle of a sentence,[47] or for which a heading is lacking, but clearly are part of a letter because of their syntax.[48] These are often full-size tablets, and have regularly been considered second pages of letters. It is worth mentioning that no clay envelope or envelope fragments have been associated to such full size letter 'second page', which suggests that they were sent, bound together with their corresponding letter 'first page' in another material.[49]

The existence of letters written over two full size tablets is attested in several other cuneiform collections of the second and first millennia BCE. Let us just mention here two examples. The first one dates to the fourteenth century BCE and was found in the archives of the Egyptian pharaoh Akhenaten in the site of El Amarna, ancient Akhetaten. At that time, cuneiform script and Akkadian language where the scripta and lingua franca of the Near East, and even the pharaoh had to use clay cuneiform tablets to exchange with the rulers of the other kingdoms. Several tablets found in his archives were identified as the 'second page' of a letter. These are for example the continuation of a letter sent

46 KT 7a, 39:8–16, *ṣí-ba-at, ta-ah-sí-is-tim*, *ša* 9 *ma-na* kù-babbar, *ta-ah-sí-is-tum*, *a-ni-tum me-eh-ra-at*, *ṭup-pì-im ha-ar<-mì>-im*, *ša hu-bu-ul*, *A-bu-um*-dingir, *ú I-dí-A-šur*. The size of the second tablet could indeed vary.

47 See among many examples Larsen 2002, no. 69, Veenhof 2015, 274, no. 3, Michel 2020b, texts nos 70, 156 and 304. These were presumably continued on a small supplement or a full size tablet that had the status of a second page.

48 See among many examples CCT 5, 22c, CCT 5, 27b, ICK 1, 183, KT 6e, 874, KT 8, 181, etc. Veenhof 2003, 91, Larsen 2021, 1–2.

49 Klaas R. Veenhof (2003, 91 and 2010, 91–92) has suggested that the 'second page' was probably sent in a separate envelope. However, sending separately the two pages of a letter in two different envelopes would have not been the most secure way to deliver both tablets to the recipient at the same time.

by Rib-Hadda, king of Byblos,[50] or the second page of a letter from Biridiya, the ruler of Megiddo.[51] No clay envelope has been found in the archives of the pharaoh and one must suppose that the two tablets were sent together to Egypt, physically bound in a way or the other.

The second example concerns a letter which was sent to the Assyrian king Esarhaddon (680–669) from a scholar of his court, the exorcist Adad-šum-uṣur; it dates to the seventh century and was discovered at Nineveh. As it is often the case, there is no indication, on the first tablet, that the letter continues on a second tablet. However, the second tablet starts with a sentences which specifies: 'This is a continuation of the words of the previous letter'.[52] Both tablets are 8 to 10 cm long and 3 to 4 cm wide, and they are relatively thick (Figs 8a–b). Clay envelopes are exceptional for the Neo-Assyrian period, which implies that the two-page letters were otherwise bound together and protected during their transport.[53]

For these both examples, as well as for letters written over two full size tablets from the other corpora, it seems very unlikely that such two-page letters were transported in clay envelopes. In fact, it would have required the making of particularly large and fragile envelopes. The shrinkage of the clay during drying would have posed a problem on the empty space between the two tablets all through the edges.[54] Since, because of technical reasons, this is very unlikely, we have to imagine that such letters have been transported wrapped in another material – i.e. leather, textile or reed mat – which did not survive time.

50 Letter EA 101, thirty-eight lines.

51 Letter EA 245, forty-seven lines. There are several letters of this ruler but the exact first page of the letter has not been identified. See also the second page of a letter EA 251 for which both sender and addressee are unknown.

52 SAA 10, 198:1–3, *an-ni-ú re-eh-ti*, *da-ba-a-bi šá e-gír-ti*, *pa-ni-it-ti*. The first page of this letter is SAA 10, 197.

53 For a rare example of a clay envelope, see SAA 15, 289, which is the envelope of the letter SAA 15, 288.

54 It might have been possible with exceptionally thin and flat tablets written on both sides, such as KT 6a, 215, which is the continuation of a letter (photos nos 32–36).

Fig. 8a: Tablet SAA 10, 197, Nineveh; London, British Museum, from https://cdli.ucla.edu/dl/photo/P333959.jpg (accessed on 10 July 2022).

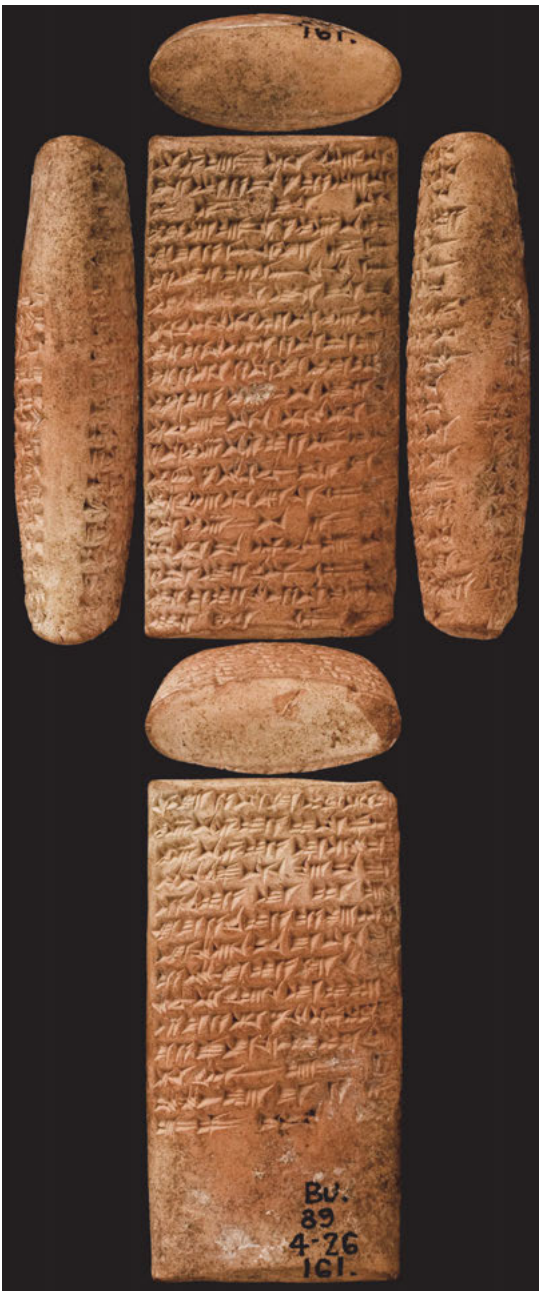

Fig. 8b: Tablet SAA 10, 198, Nineveh; London, British Museum, from https://cdli.ucla.edu/dl/photo/P334300.jpg (accessed on 10 July 2022).

The use of these different perishable materials for the transport of clay tablets is attested by the Old Assyrian sources. Whether they had an envelope or not, the tablets could be wrapped in textiles. A merchant asks his representatives and wife, 'All these tablets and their copies, on the day Laliya arrives, wrap them, pack them solidly in a *maškūnum*-textile of good quality and entrust them to a trustful recognised trader'; these tablets were to be brought to Aššur.[55] Two letters from the same archive indicate that encased tablets to be transported could also be wrapped in leather: 'Take out the tablet with the seals of Aššur-ṭāb and Enna-Suen, wrap it solidly in leather, seal it and entrust it to Hašta'ili or to Šamaš-rē'i to bring it to me'.[56] A letter found in another archive concerns the will of a merchant which is kept in the town of Hurrama; the sender asks his correspondents to wrap this tablet 'in reeds' with great care and entrust it to a trustworthy merchant so that he brings it to him in Aššur.[57] The wrapping, in this case, was presumably a reed mat.

The binding of the two clay tablets forming a letter was not always made of clay, it could be done by a wrapping made in a flexible material which protected the tablets during their transport and kept them together. When the letter reached its addressee(s), it was unwrapped in order to be read, and the two tablets were separated. The wrapping itself was either thrown away or recycled.

6 Conclusion

Only a tiny percentage of the cuneiform texts produced in antiquity have survived time and have been unearthed. The inhabitants of the ancient Near East

55 In AKT 3, 82:21–27, *mì-ma ṭup-pé-e a-ni-ú-tim*, *ú me-eh-ri-šu-nu* : *i-na* ^{d}utu^{ši}, *ša Lá-li-a* : *e-ra-ba-ni*, *qí-ša-šu-nu* : *da-ni-na-šu-nu-ma*, *i-na maš-kà-nim* sig$_5$: *šu-uk-na-ma*, *a-na* dumu *um-mì-a-nim*, *ke-nim* : *pí-iq-da-šu-nu-ma*. See the parallel mention in AKT 3, 88:42–47, *mì-ma ṭup-pì a-ni-ú-tim me-eh-ri-šu-nu*, *šu-ba-al-ki-it-ma ù šu-nu-tí* : *qí-ša-šu-nu-ma*, *i-na maš-kà-nim da-nim* : *šu-uk-na-ma*, *a-na* dumu *um-mì-a-nim ke-nim* : *ša ki-ma*, *qá-qí-dí-ku-nu* : *i-na* igi *ší-bé-e* : *pì-iq-da-ma*, *lu-ub-lam*.

56 AKT 3, 84:13–23, *ṭup-pá-am*, *ša ku-nu-uk* : *A-šur*-du$_{10}$, *ú En-na-Sú-en$_6$*, *šé-li-a-ma*, *i-na ma-áš-ki-im*, *qí-i-ša-šu-ma*, *dá-ni-na-ma*, *ku-un-kà-šu-ma*, *a-na Ha-áš-ta-i-li*, *ú-lá* : *a-na* ^{d}utu-sipa, *pì-iq-dá-šu-ma*, *lu-ub-lam*. See also AKT 3, 83:18–22, *ú ṭup-pá-am ha-ar-ma-am*, *ša ba-áb* dingir *ša A-šùr*-gal, dumu *A-zu-a-a ú Puzúr-A-šùr*, dumu *I-ku-pì-a i-na*, *maš-ki-im qí-ša-šu-nu-ma*.

57 Gwaltney 1983, no. 19: 28–35, *ṭup-pu-um ša ší-ma-at*, *A-šùr-i-mì-tí i-na Hu-ra-ma*, *iš-tí Ša-lim-A-šùr* dumu *En-um-A-*[*šùr*], *i-ba-ší šu-up-ra-ma ṭup-pá-am*, *lu-ub-lu-ni-ku-nu-tí-ma*, *ṭup-pá-am i-na qá-nu-e lá-wi-a-ma*, [*da*]*-am-qí-iš a-na* dumu *um-mì-a-nim*, [*ke*]*-nim pí-iq-da-ma lu-ub-lam*.

used different writing media, producing inscriptions or manuscripts. The clay manuscripts were durable enough to be recovered, while the main other type of manuscripts, wooden board coated with wax, widely used in Ancient Mesopotamia from the third millennium on, disappeared, as many other organic materials. When a long text, whether a scientific or literary composition, or an administrative document were written on wax tablets, the tablets were held together by hinges on each side alternatively, thus forming a concertina.

Cuneiform clay tablets were rarely bound together because of their material, shape and weight. There are however many series of cuneiform tablets forming codicological units (scholarly, literary, epistolary, etc.) which were not physically tied together, but were linked with the help of a text written usually at the end of each unit, in a colophon, indicating the place of every tablet within the series.

Some other tablets show physical characteristics, like holes, suggesting that it was materially possible to attach such clay tablets together or to other artefacts, as baskets of tablets. These holes allowing the passage of a string where prepared before the tablet was dry, at the same time the text was written.

True devices allowing to bind two tablets (of different sizes) together are clay envelopes. A letter and its supplement could be wrapped into a thin layer of clay forming an envelope. However, this binding was supposed to be ephemeral because the recipient of the letter had to break the envelope to read the letter, and thus to unbind the two tablets. The two normal size tablets corresponding to two pages of a single letter were also most certainly bound together, but the materiality of this binding has disappeared.

Abbreviations

AbB 6 = Rintje Frankena, *Briefe aus dem Berliner Museum* (Altbabylonische Briefe in Umschrift und Übersetzung, 6), Leiden: Brill, 1974.

AKT 1 = Emin Bilgiç, Hüseyin Sever, Cahit Günbattı and Sabahattin Bayram, *Ankara Kültepe Tabletleri*, 1 (Türk Tarih Kurumu Yayınları, 6/33), Ankara: Türk Tarih Kurumu Basımevi, 1990.

AKT 3 = Emin Bilgiç and Cahit Günbattı, *Ankaraner Kültepe-Texte*, 3, Stuttgart: Steiner, 1995.

BIN 6 = Ferris J. Stephens, *Old Assyrian Letters and Business Documents* (Babylonian Inscriptions in the Collection of J. B. Nies, 6), New Haven: Yale University Press, 1944.

CCT 4 =Sidney Smith, *Cuneiform Texts from Cappadocian Tablets in the British Museum*, Part 4, London: The Trustees of the British Museum, 1927.

CCT 5 = Sidney Smith and D. J. Wiseman, *Cuneiform Texts from Cappadocian Tablets in the British Museum*, Part 5, London: The Trustees of the British Museum, 1956.

CCT 6 = Paul Garelli and Dominique Collon, *Cuneiform Texts from Cappadocian Tablets in the British Museum*, Part 6, London: The Trustees of the British Museum, 1975.

CDLI = Cuneiform Digital Library Initiative, https://cdli.ucla.edu/.

CT = Cuneiform texts from Babylonian tablets in the British Museum, copies made by L. W. King, T. G. Pinches, R. Campbell Thompson [et al.], London: Trustees of the British Museum, 1896–1990.

CTMMA 1 = Mogens T. Larsen, 'Old Assyrian Texts', in Ira Spar (ed.), *Tablets, Cones and Bricks of the Third and Second Millennia B.C.* (Cuneiform Texts in the Metropolitan Museum of Art, 1), New York: Metropolitan Museum of Art, 1988, 92–143, 177–192, Plates 66–109, 129–156.

EA = William L. Moran, *Les lettres d'El Amarna* (Littératures anciennes du Proche-Orient, 13), Paris: Éditions du Cerf, 1987.

ICK 1 = Bedřich Hrozný, *Inscriptions cunéiformes du Kultépé*, vol. 1 (Monografie Archivu Orientálního, 14), Prague: Státní pedagogické nakladatelství, 1952.

KT 5 = Veenhof 2010.

KT 6a = Mogens T. Larsen, *Kültepe Tabletleri*, 6a: *The Archive of the Šalim-Aššur Family*, vol. 1: *The First Two Generations* (Türk Tarih Kurumu Yayınları, 6/33d-a), Ankara: Türk Tarih Kurumu Basımevi, 2010.

KT 6b = Mogens T. Larsen, *Kültepe Tabletleri*, 6b: *The Archive of the Šalim-Aššur Family*, vol. 2: *Ennam–Aššur* (Türk Tarih Kurumu Yayınları, 6/33d-b), Ankara: Türk Tarih Kurumu Basımevi, 2013.

KT 6c = Mogens T. Larsen, *Kültepe Tabletleri*, 6c: *The Archive of the Šalim-Aššur Family*, vol. 3: *Ali-ahum* (Türk Tarih Kurumu Yayınları, 6/33d-c), Ankara: Türk Tarih Kurumu Basımevi, 2014.

KT 6e = Larsen 2021.

KT 7a = Sabahattin Bayram and Remzi Kuzuoğlu, *Kültepe Tabletleri*, 7a: *Aššur-rē'ī Ailesinin Arşivi. Aššur-rē'ī'nin Kendi Metinleri* (Türk Tarih Kurumu Yayınları, 6/33e-a), Ankara: Türk Tarih Kurumu Basımevi, 2014.

KT 8 = Klaas R. Veenhof, *Kültepe Tabletleri*, 8: *The Archive of Elamma, son of Iddin-Suen, and his Family (Kt 91/k 285-568 and Kt 92/k 94-187)* (Türk Tarih Kurumu Yayınları, 6/33f), Ankara: Türk Tarih Kurumu Basımevi, 2017.

Kt #/k = Tablet found during the 1948 Turkish excavations at Kültepe, in the lower town, and preserved in the Anadolu Medeniyetleri Müzesi (Ankara).

KTS 2 = Veysel Donbaz, *Keilschrifttexte in den Antiken-Museen zu Stambul 2* (Freiburger Altorientalische Studien Beihefte, 2), Stuttgart: Franz Steiner, 1989.

SAA 10 = Simo Parpola, *Letters from Assyrian and Babylonian Scholars* (State Archives of Assyria, 10), Helsinki: Helsinki University Press, 1993.

SAA 15 =Andreas Fuchs and Simo Parpola, *The Correspondence of Sargon II*, Part 3: *Letters from Babylonia and the Eastern Provinces* (State Archives of Assyria, 15), Helsinki: Helsinki University Press, 2001.

TPAK 1 = Cécile Michel and Paul Garelli, *Tablettes paléo-assyriennes de Kültepe*, 1 (Kt 90/k), Istanbul: De Boccard, 1997.

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Thies Staack

Bindings of Ancient Chinese Bamboo and Wood Scrolls

Abstract: The poor state of preservation of ancient Chinese bamboo and wood scrolls often makes it impossible to study these artefacts in their intact form, allowing us to view the whole only on the basis of its parts. This paper traces typical features of scrolls by gathering the piecemeal information that is available on their production and form, especially their bindings. The topics addressed include the ways in which slips were prepared before tying them together in a scroll, the materials that were used for the binding strings, different techniques by which the strings were applied to the slips, and the relationship between the number of binding strings and visual organisation. Based on a close observation of the traces of binding strings on individual slips, the paper also proposes new lines of research. These might shed further light on largely unknown aspects of early Chinese manuscript culture, such as the direction in which bamboo and wood scrolls were bound, even for specimens that are no longer intact.

1 Introduction

Before paper gradually became the standard writing support during the third and fourth centuries CE, manuscripts in the area we today know as China were produced mainly from bamboo or wood.[1] It had long been known from early textual sources that bamboo and wood were used as a writing support in the first millennium BCE. However, archaeologists only unearthed the first pieces of inscribed wood and bamboo at the beginning of the twentieth century in the

1 Although paper fragments with writing from as early as the second century BCE have been found, scholars generally agree that paper was not widely used as a writing support until several centuries later, because these early examples are few in number. Received historical sources date the 'invention' of paper – in fact, more probably a substantial refinement of papermaking techniques – to 105 CE exactly. See Drège 2017, xi–xlviii; Giele and Peltzer 2015, 684–686; Tomiya Itaru 2010, 8–28; Tsien Tsuen-hsuin 2004, 145–159; Venture 2014b. To the best of my knowledge, there is no evidence of the use of parchment in China, neither for the ancient nor any other period.

https://doi.org/10.1515/9783111292069-003

ruins of ancient border fortifications in the desert regions of Northwest China.[2] These early finds are dated to the Han period (206 BCE–220 CE) and are practically all wood manuscripts. Further excavations in central China, especially since the second half of the twentieth century, have brought to light a significant number of bamboo manuscripts, mostly from ancient tombs or wells.[3] The oldest pieces of inscribed bamboo discovered so far were found in the tomb of Marquis Yi of the state of Zeng. These contain lists of objects carried at his funeral procession and date back to the late fifth century BCE.[4] The oldest extant manuscript made of wood is not quite as old, originating from the late fourth century BCE. This individual tablet records a law on the division of agricultural land from the state of Qin.[5] It is very likely that both materials had already served as a writing support much earlier. The writing system was fully developed by the late second millennium BCE, as extant inscriptions on 'oracle bones' and bronze vessels clearly demonstrate.[6] Brush and ink were presumably already being used to write on bamboo and wood at this point, because these materials would no doubt have been both widely available and inexpensive.[7] While other materials, such as stone tablets or silk, were certainly employed to produce manuscripts as well, these only account for a fraction of all extant examples. Admittedly, the dataset available might contain a certain bias, because silk fabrics were probably more prone to rot and decay without leaving a trace than bamboo or wood artefacts. However, recent studies suggest that even the imperial collection of the Western Han period (206 BCE–9 CE) contained mostly works written on bamboo rather than more expensive silk.[8]

2 For the earliest study in a Western language, still based exclusively on descriptions in received literature rather than the actual manuscripts, see Chavannes 1905. The following decade saw the first groundbreaking studies that made use of the manuscripts excavated in the early twentieth century: see Chavannes 1913; Luo Zhenyu and Wang Guowei 1993 [1914]; Wang Guowei, Hu Pingsheng and Ma Yuehua 2004 [1912].

3 For a chronological overview of and introductions to the numerous finds made between the early twentieth and the early twenty-first century, see Pian Yuqian and Duan Shu'an 2006, 379–479; Shaughnessy 2019, 256–375. Among the manuscripts discovered to date, legal and administrative texts figure most prominently.

4 Habberstad 2014.

5 Hulsewé 1985, 211–215.

6 Boltz 1994, 31.

7 On the early development of Chinese ink, see Franke 1962, 6. For traces of the use of 'exemplar manuscripts' on perishable writing supports in the production process of Western Zhou (1045–771 BCE) bronze inscriptions, see Škrabal 2019.

8 Fölster 2016, 87–88.

The standard book form of the time was the 'scroll' (*ce* 冊), which was usually stored as a 'roll' (*juan* 卷).[9] It was produced by combining narrow slips (usually referred to as *jian* 簡 in Chinese scholarship)[10] of bamboo or wood – before or after the writing was applied to them – with the help of two or more binding strings to form a mat-like object. The character 冊, used to write the Chinese word for 'scroll', has been interpreted as a pictographic representation of such an artefact. The similarity is certainly more obvious in the earliest attested forms of this character that are found in 'oracle bone' or bronze inscriptions (compare Figs 1 and 2 below).[11] Units of bound-together slips were also referred to as *bian* 編 'binding; sth. bound', the same word that was used verbally in the sense 'to tie/bind together'.[12]

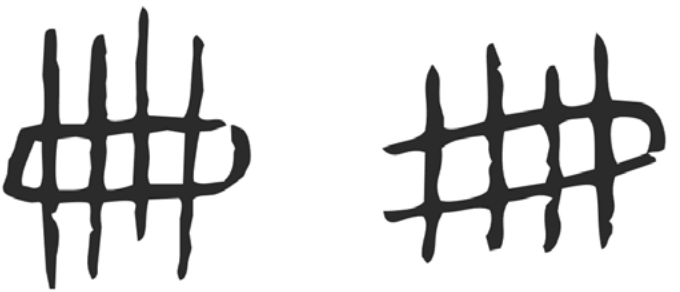

Fig. 1: Early forms of the character 冊 from oracle bone (left) and bronze (right) inscriptions.

9 It has also been shown that scrolls were sometimes folded together rather than rolled up for storage; see Xiao Yunxiao 2017, 241–252. While Xiao suggests that the manuscript in question 'was not in the familiar "scroll" format, but rather a "folded" format' (p. 252), it was clearly a scroll; the only difference to rolled-up scrolls being the way of storage.

10 The term 'slip' will be used throughout this paper to refer to the narrow pieces that are most frequently used to produce scrolls; cf. the wider 'tablets' (usually referred to as *du* 牘 in Chinese scholarship). Note, however, that there is no unified terminology in English. Some scholars, for example, refer to the narrow pieces as 'tablets' and the wider ones as 'boards'; see Tsien Tsuen-hsuin 2004, 120–122. For a discussion of the original Chinese terms for individual pieces of writing support, see Cheng Pengwan 2017, 10–17; cf. Staack 2018, 246–263.

11 For the images in Fig. 1, see the database *Xiao xue tang* 小學堂 'Philological Studies Hall' of Academia Sinica: <https://xiaoxue.iis.sinica.edu.tw/char?fontcode=41.EB63> (left) and <https://xiaoxue.iis.sinica.edu.tw/char?fontcode=31.EA7B> (right) (both accessed on 5 July 2022). Image in Fig. 2 reproduced from Ma Jianhua 2002, 34. On the dating, see Gansu Juyan kaogudui 1978, 9.

12 Cheng Pengwan 2017, 41–42.

Fig. 2: Wood scroll recording a list of items carried by an emissary, 22 CE, excavated at the ruins of the ancient Gold checkpoint of Jianshui company (*Jianshui Jinguan* 肩水金關). Lanzhou, Gansu Jiandu Museum, MS 73EJT21:2–10.

But, of course, not everything was written on scrolls. Especially in the early imperial administration, individual tablets were commonly employed for official correspondence or brief documents that could conveniently be recorded on only one wider piece of writing support.[13] Tablets were also used for maps, personal letters and 'greeting tablets', which served a similar purpose to modern business cards.[14] Due to the natural curvature of its surface, bamboo was less suitable for the production of such pieces than the more versatile wood, although examples of bamboo tablets are known. Another, albeit comparatively rare, form of written artefact involves the use of binding string but differs signif-

13 Sumiya Tsuneko 2003; Sumiya Tsuneko 2012.
14 Venture 2014a. On greeting tablets, see Korolkov 2012.

icantly from the scroll. Several rod-like pieces of wood were planed smooth for inscribing on two or more sides for this written artefact. After the writing had been applied, these pieces – referred to as *gu* 觚/柧 in Chinese sources – were strung on a cord that ran through holes drilled through the top of each piece. This book form was employed mostly for brief literary texts, especially school primers (see Fig. 3).[15]

Fig. 3: Three-sided wood *gu* with the first part of a primer and string hole at the top, excavated near Dunhuang 敦煌. London, British Library, Or. 8211/1, front (left) and back side (right). Courtesy of the British Library Board.

15 Loewe 1967, vol. 1, 30; Martinique 1983, 7. A comparable practice of connecting inscribed pieces of bamboo with one binding string running through drilled holes can be witnessed in Batak manuscript culture. See, for example, the manuscript Hamburg, Museum am Rothenbaum – Kulturen und Künste der Welt, no. 79.8:31, which consists of bundled slips inscribed with a divination text (Zollo 2020, 144–145).

Most scrolls consisted of rather uniform, narrow pieces each measuring between 13 and 75 cm (commonly between 23 and 46 cm, or one and two feet, *chi* 尺) in length, and between 0.5 and 2.5 cm in width.[16] The number of slips in extant scrolls (including reconstructed examples) ranges between less than ten and more than five hundred slips.[17] Based on considerations of usability, it has been argued that it was probably uncommon to have scrolls consisting of more than one hundred slips.[18] In some scrolls, pieces with different widths were purposefully combined. There is evidence of this practice from administrative documents from the early imperial period, where a 'cover letter' was sometimes written on a wider tablet and the 'document proper' (such as a register of convicts) attached on narrow slips.[19] Analogous examples from contemporary funerary culture show letters addressed to otherworld officials (on a tablet) tied together with lists of funerary goods (on slips).[20] There is also evidence suggesting that several wider tablets were occasionally tied together as in a scroll.[21] In contrast to Roman diptychs or triptychs, the connecting strings did not run through holes but were wrapped around the tablets in the same way as would be done

16 Cheng Pengwan 2017, 79–113, and 344–388 (Appendix 2). In contrast to those made of wood, the width of slips produced from bamboo seldom exceeded 1 cm, probably because the material's natural curvature would otherwise have led to problems in the production of a scroll. As far as length is concerned, bamboo seems to have been the more versatile material. While the longest slips discovered to date were produced from bamboo, extant examples of wood slips do not exceed a length of 56 cm.

17 Venture 2014b, 353. An archaeological report on excavations near Dunhuang mentions a scroll consisting of only three slips, see Gansu sheng wenwu kaogu yanjiusuo 2000a, 13. Whether a manuscript consisting of no more than two or three tied-together slips is suitably described as 'scroll' might be a matter of opinion. However, at least structurally it is certainly comparable to manuscripts consisting of a much larger number of slips.

18 Hsing I-tien 2011a, 21–23. This hypothesis has recently received support from a late third-century BCE law which regulates the drafting of official documents. It stipulates: 'In case [a submission concerning] one official matter would exceed 100 slips, divide it up, so that no more than 100 slips are tied together in one unit' (Staack 2018, 269; translation modified).

19 The tablet with the cover letter seems to have normally been placed at the scroll's end (i.e. the far left); see Hou Xudong 2014; Hou Xudong 2019.

20 Guo Jue 2019.

21 Ma Tsang Wing 2020. However, this was probably done for archival purposes only, as the artefact in question consists of three tablets that previously constituted independent documents by themselves. Forming a composite, just like a modern file, it seems to have been folded like a concertina or accordion for storage. In other cases, individual tablets were simply stacked and bound together with string wrapped around the stack as a whole; see Hsing I-tien 2011b; Momiyama Akira 2016, 44–49.

for narrow slips (see Section 4.1 below).[22] In all these cases, at least the length of the tied-together pieces was uniform,[23] but recently excavated manuscripts suggest that even pieces with decidedly different lengths were sometimes bound into scroll-like objects.[24] However, how widespread these practices were is so far unclear.

It must be stressed that current knowledge about bindings of early Chinese bamboo and wood manuscripts is based on a comparatively small number of perhaps a few dozen intact scrolls[25] and a much larger corpus of fragmented scrolls for which only the individual bamboo or wood slips are intact, but not the binding strings that once held them together. Consequently, researchers frequently have to rely on reconstructions. In addition, due to the happenstance of preservation, the intact scrolls all derive from a very specific context, namely, military administration. The original context of production and use regarding the fragmented scrolls is more varied, but examples from outside the administrative sphere normally stem from ancient tombs. To what extent the funerary context may have influenced the physical appearance of these manuscripts is a thorny issue,[26] but there is evidence suggesting that at least some manuscripts were not produced specifically for burial, even though they certainly ended up as burial goods.[27] In the following, this paper reviews the evidence available on

22 At least one diptych-like wood artefact with the two connecting strings running through holes has been excavated in the Han period ruins of the so-called Gold checkpoint (*Jinguan* 金關). The artefact does not bear writing but a drawing of a person and a horse; see Gansu Juyan kaogudui 1978, pl. 3 (top). I am indebted to Ma Tsang Wing 馬增榮 for drawing my attention to this artefact.

23 Chen Mengjia (1964, 59–60) pointed out that the slips appear to have been trimmed in some cases as one of the last steps in the production of a scroll. This is clear from examples where writing at the slips' very bottom is fragmented.

24 Chen Wei and Xiong Beisheng 2019, 53. It should be noted, however, that this statement is not based on intact binding strings but the slips' contents and their position at the time of excavation.

25 Hou Xudong (2019, 120–122) collected information on eleven scrolls with intact binding strings excavated in Northwest China. The excavation report of the Xuanquan relay station (*Xuanquanzhi* 懸泉置) site near Dunhuang mentions 'more than fifty scrolls, some of which have intact binding strings' (Gansu sheng wenwu kaogu yanjiusuo 2000a, 13). Hence, Hou assumes that there might be more intact scrolls among the yet unpublished materials from that site. But this count would certainly be significantly below fifty.

26 Giele 2003, 428–434.

27 See, for example, various examples of corrections in manuscripts recovered from tombs. For an overview of such corrections, see Chen Mengjia 1964, 65–67; Cheng Pengwan 2017, 132–136. Archaeologists have also argued that the placement of manuscripts in tombs itself was a marginal phenomenon and that 'the diversity of texts in the manuscripts indicates their nature

bindings of early Chinese bamboo and wood scrolls and provides an overview of the materials and techniques that were applied during production.

2 Preparations before binding

Before binding pieces of bamboo or wood to form a scroll, the writing support itself, of course, had to be produced. In addition to the manufacture of pieces of a certain shape and size from the raw materials by cutting, splitting or sawing, this also involved polishing and drying, in the air or over fire. The last step was applied especially to bamboo and commonly called 'killing the green' (*shaqing* 殺青).[28] These steps served to make the writing support suitable for the application of ink with a brush and to render the material more durable. However, some preparations commonly undertaken were directly connected with the following procedure of tying pieces of writing support together. On the one hand, these were concerned with determining the slip sequence inside a scroll, on the other, with marking the later position of binding strings on the individual pieces or with securing the strings' proper attachment.

The first of these preparations seems to have been applied exclusively to bamboo. Even before a harvested bamboo culm, or one culm segment of a particular length, was split into multiple pieces – usually narrow slips – a spiral-shaped line was carved around it with the help of a sharp tool.[29] This yielded a line pattern on the slips' back side, which was normally not used for writing due to its smooth surface. As the lines were clearly applied to the bamboo before the binding or even the writing, they primarily marked the sequence the bamboo slips were in as part of the culm segment before it was split lengthwise. It has been argued that the main purpose of this was to suggest the most favourable sequence in which the slips belonging to the same 'set' should be bound as part of a scroll to produce a manuscript which was aesthetically pleasing and convenient to use.[30]

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as personal objects, not the standardized products of a large-scale funerary operation'; see Thote 2017, 38–47 (quote from p. 46). On manuscripts in the context of the whole assembly of burial objects, see Wang Bin 2020.

28 Tsien Tsuen-hsuin 2004, 114; Zhang Xiancheng 2004, 115–116.

29 Han Wei 2012.

30 Jia Lianxiang 2015, 101–102; Staack 2015, 175. Of course, this does not mean that those who later brushed the writing and/or bound the scroll necessarily followed the slip sequence suggested by the lines. This explains cases in which the line pattern on the back side of a scroll

As a side note, whereas the lines just described seem to have rarely been applied to wood in China,[31] wooden codices from fourth-century Roman Egypt show marks that seem to have served a strikingly similar function. Diagonal lines (referred to as 'collational marks' by researchers) were carved in the following way:

> The collational marks [...] were applied by the carpenter to the spine edge of the codex when he completed the boards. Although the notches functioned as a collation guide for the user should the leaves become separated, *they were sawn-in primarily as a guide for maintaining the order as the leaves were cut from the block*. They serve an important purpose, namely, to maintain the original manufactured order of the leaves – more practical physically than as a guide for the reader: when the craftsman sawed the pieces apart, there would be irregularities in the cut, so kept in the order in which they were cut, the whole would lie flat – each irregularity fitting within the irregularities in common with its neighbour.[32]

In contrast to the lines mentioned, numbers marking the slip sequence in a scroll are found in both bamboo and wood manuscripts. Judging from the extant examples, sequence numbers mainly occur on scrolls with literary texts. The sequence numbers were applied to the individual slips with brush and ink, probably directly before or after the writing and before the slips were bound.[33] Extant examples show that numbers could be added on the slips' front or back side, often at the very bottom but sometimes at the top. In case bamboo was used, sequence numbers were sometimes also written at the places on the back

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does not – exactly or at all – match the sequence of the text on the front side. For a recent assessment of the carved lines found on the back of a scroll from Shuihudi 睡虎地 tomb no. 77, which show certain irregularities, see Foster 2021, 421–434.

31 To date, the only mention of lines on the back side of wood slips – in that case applied with ink rather than carved – was made regarding slips of 'group A' of the Qin slips in the possession of Peking University. See Beijing daxue chutu wenxian yanjiusuo 2012b, 66; Staack 2015, 159, n. 12. Complete reproductions of the respective slips still await publication.

32 Sharpe 1992, 132 (emphasis added). I would like to thank Nicholas Pickwoad and Georgios Boudalis for bringing these artefacts and John Lawrence III Sharpe's research to my attention. Another example of a wooden codex with similar marks from seventh-century Egypt is mentioned in He Jin 2013, 468, with Fig. 6.

33 There is no direct evidence regarding the point in time when the sequence numbers were applied. However, it seems most reasonable to do this before the individual slips were bound together. In that case, the numbers could have served the twofold purpose of facilitating not only the original binding process but also a later reconstitution in case the binding strings came apart.

side where the bamboo showed traces of nodes, which were usually scraped smooth.[34]

Most bamboo or wood pieces that were combined into scrolls show small, mostly triangular, notches at the places where binding strings were attached. The notches are commonly positioned on the right side of the slips (seen from the front side with the writing).[35] They probably served a threefold purpose. Firstly, they marked the positions where binding strings were to be attached, which gave the attentive writer the possibility of avoiding these spaces. Otherwise, binding strings might cover writing after the scroll was bound.[36] Secondly, the notches prevented the binding strings from shifting up- or downwards once they had been fastened.[37] Thirdly, they allowed a smaller distance between slips, because the binding string could recede into these cavities, thereby enhancing the appearance of a scroll as a continuous writing surface.[38] Probably, this would also enhance usability.

3 Materials used for binding strings

The binding strings of Chinese bamboo and wood scrolls are referred to as *sheng* 繩 'cord, string' or *bian* 編 'binding' in contemporary sources.[39] Extant administrative documents dating to the time between *c*. 100 BCE and 100 CE frequently mention orders of materials that were necessary for the compilation of official documents, such as writing supports of different shapes and sizes as well as binding strings. The latter are usually measured by length (in *zhang* 丈 'span', *c*. 2.3 m) or weight (in *jin* 斤 'catty', *c*. 220–250 g).[40] The sources reveal a fixed ratio between the number of slips (*zha* 札) and the slightly wider 'two-liners' (*lianghang* 兩行) commonly used for the production of scrolls, on the one hand,

34 Cheng Pengwan 2017, 163–168; He Jin 2013, 452–458.

35 Cheng Pengwan 2017, 37–40; Jia Lianxiang 2015, 79; Zhang Xiancheng 2004, 120–122. Jia argued that this placement of the notches may have to do with the order in which the slips were bound and with most people being right-handed. More research is necessary to substantiate these hypotheses.

36 Li Tianhong 2002, 6–8.

37 Cheng Pengwan 2017, 37.

38 Richter 2013, 27–28.

39 Chen Mengjia 1964, 58. Cf. the use of the term *bian* to refer to an entire scroll above.

40 Chen Mengjia 1964, 60–61; Ji Annuo 2007, 479–483; Ma Zhiquan 2020, 286. For the conversion rates of *zhang* and *jin* into metres and gram, see Qiu Guangming 1992, 520.

and the length of the binding string, on the other: each piece would be allotted around 9 cm of binding string.[41]

Binding strings were produced either from bast fibre plants – mostly hemp (*da ma* 大麻, *Cannabis sativa* L.) and ramie (*zhu ma* 苧麻, *Boehmeria nivea* L.) – or from silk (*si* 糸/絲).[42] Received literature from the time mentions only silk as a binding material.[43] Numerous examples of bamboo and wood slips with remnants of fragmented silk binding strings, which were mostly excavated from ancient tombs in central China, confirm that silk was indeed used. However, both ramie and hemp are similarly attested as commonly used binding materials from excavated manuscripts. In fact, all scrolls with intact binding strings discovered to date show strings made of hemp.[44] Rather than being an indication that hemp is generally a more durable binding material than silk (or ramie), the most probable reason is that these specimens were all excavated in the north-west of present China, where the arid climatic conditions appear to be more favourable for preservation. The binding strings often (partly) decomposed under the more humid or even waterlogged conditions in tombs, especially in central China.

Apart from the function of the manuscript, which probably affected the choice of binding material,[45] this was certainly also influenced by regional

41 Chen Mengjia 1964, 60–61. Calculating with a width between 1 and 1.5 cm per slip, which would be bound at two places (see further below), *c.* 6 cm of string would be needed. Bearing in mind that a certain length of string would be used to cross the gaps between slips and considering that about twice the length of string would be necessary per two-liner, since they are wider than slips, the average number of 9 cm of string per piece (slip or two-liner) seems reasonable.

42 Cheng Pengwan 2017, 51–53. The claim that leather was also used for the binding of scrolls goes back to the occurrence of the phrase *wei bian* 韋編, literally 'leather binding', in received literature. However, to date no examples of leather binding strings have been found. In addition, several other possible readings of the character *wei* 韋 in this phrase have been proposed. For an overview, see Cheng Pengwan 2017, 53–55; Ma Zhiquan 2020, 284–285. Based on a passage in a late third-century BCE law of the state of Qin, scholars have, at times, also argued that grasses or reeds were used to produce binding strings (Cheng Pengwan 2017, 53). However, a comprehensive study that drew on additional textual and archaeological evidence has shown meanwhile that the passage mentioned more probably describes materials that were used for inexpensive wrappings rather than binding strings. See Huang Haobo 2019, 102–103.

43 Chavannes 1905, 21–23, 43; Tsien Tsuen-hsuin 2004, 124.

44 Ma Zhiquan 2020, 285–286. For a material analysis of the ramie binding string traces on the Qin and Han period slips in the collection of Peking University, see Wang Kai and Hu Dongbo 2012.

45 Silk seems to have been used for many scrolls that were placed in tombs, especially during the Warring States period; see Feng Shengjun 2007, 54. Whether this is related to practices

availability and differences in production costs. Hemp and ramie have both been used as fibre plants in certain areas of present China since Neolithic times, however, ramie seems to have spread to the area north of the Yangtze only by the third century CE.[46] In addition, although the properties of ramie are superior to hemp when it comes to the production of textile fibres, hemp fibres are easier to obtain from the stem and the plant also grows in colder regions.[47] Silk is a natural protein fibre produced by the larvae of the mulberry silkworm (*Bombyx mori* L.). The production of silk, which can be traced back at least to the third millennium BCE in China,[48] not only necessitated the cultivation of mulberry trees but also the rearing of silkworms and, therefore, can be expected to involve higher costs.[49] Judging from the processing of the raw materials, it can be assumed that hemp was the most inexpensive and silk the costliest binding material, with ramie ranging somewhere in between.

The binding strings of bamboo or wood scrolls do not appear to have been treated with dye or colour by default, however, a few manuscripts with coloured binding strings have been discovered: some of the Warring States period (453–221 BCE) bamboo slips excavated at Xinyang 信陽 seem to have been bound with a 4 mm wide black silk ribbon.[50] Red binding strings were supposedly used for wood scrolls from the reign of Wang Mang 王莽 (r. 9–23 CE) that were found in Northwest China.[51]

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surrounding burial or reflects common habits of manuscript production in a non-administrative/personal setting remains an open question.

46 The correlation between the use of wood (as a writing support) and hemp (as a binding material) that has been observed by some scholars (e.g. Cheng Pengwan 2017, 53), may, at least in part, be due to the lack of bamboo, ramie or silk in colder areas, especially in Northern China. Similarly, the observation that bamboo manuscripts were mostly bound with silk during the Warring States period, whereas in the following Qin and Han periods silk and hemp (or ramie) were both commonly used (Cheng Pengwan 2017, 53), could reflect more of a regional bias than a diachronic development. After all, most Warring States manuscripts discovered so far come from the ancient state of Chu, which was located in current central China. The finds from the following periods show a greater variety of regional origin.

47 Kuhn 1988, 15–17.

48 Kuhn 1988, 272–273.

49 For details on silk production, see Kuhn 1988, 285–433.

50 Henan sheng wenwu yanjiusuo 1986, 67; Ma Zhiquan 2020, 285. The use of silk ribbons instead of strings is also attested for the Warring States bamboo manuscripts excavated at Yangjiawan 楊家灣 tomb no. 6. See Zhongwenxi gu wenzi yanjiushi Chujian zhengli xiaozu 1978, 65.

51 Cheng Pengwan 2017, 52–53; Gansu Juyan kaogudui 1978, 7. Unfortunately, the authors do not specify the material from which the strings were made. However, as the manuscripts were excavated in Northwest China, hemp is the most likely candidate. For additional examples of

4 Application of the binding strings

4.1 Techniques of binding

As mentioned above, bamboo and wood scrolls were produced by tying together multiple slips with the help of two or more binding strings. In principle, slips could be bound together either before or after writing had been applied to them, and, in fact, both production sequences seem to have been employed.[52] The basic fact that pieces of writing support for bamboo and wood scrolls were somehow connected with binding strings has been common knowledge even before the first specimens of such manuscripts – or rather, fragments of them – were discovered in the early twentieth century.[53] However, the exact techniques employed for tying the strings were seldom discussed. To the best of my knowledge, Aurel Stein was the first to publish a hypothesis about this. Pondering the question of how exactly multiple slips may originally have been connected, he discussed the issue with his colleague Fred Henry Andrews, who made the following proposal:

> Experimenting with a fine raw silk thread, I found that a satisfactory result could be attained by the following method (see illustration) [reproduced as Fig. 4 below].[54] The cord is doubled end to end, the first 'slip' (folio one) is placed in the bend, and an ordinary knot tied with the two ends, care being taken that the encircling cord falls in the notch near one end of the lath, the purpose of which is to prevent the cord slipping. Folio two is then laid with its notch close to the knot, one end of the cord being below the lath and the other on top. The two ends are then half twisted round each other reversing the position of the cords, the upper becoming the lower and the lower the upper. Folio three is next placed between the cords with its notch against the half-twist, and the cords are again half twisted to secure it in position. The process is continued until the last page, after which a knot

coloured binding strings that are mentioned in the received literature as well as the possible connotations of different colours, see Tomiya Itaru 2010, 22–28.

52 Cases in which writing was covered by binding strings suggest that the binding came after the writing (Tsien Tsuen-hsuin 2004, 123), provided the position of the strings did not shift after they had been attached. The reverse circumstance is more difficult to prove since the fact alone that writing is *not* covered is hardly persuasive, at least if the positions of bindings were marked by notches. For a discussion of the issue, see Hsing I-tien 2011a, 23–31, who concludes, based on practical considerations, that it was probably more common to apply the writing before binding the slips together.

53 Chavannes 1905, 40–43.

54 Image reproduced from Stein 1921, 252.

is tied, and the excess length of the two ends is left free to be used as a means of tying the complete record or chapter together.[55]

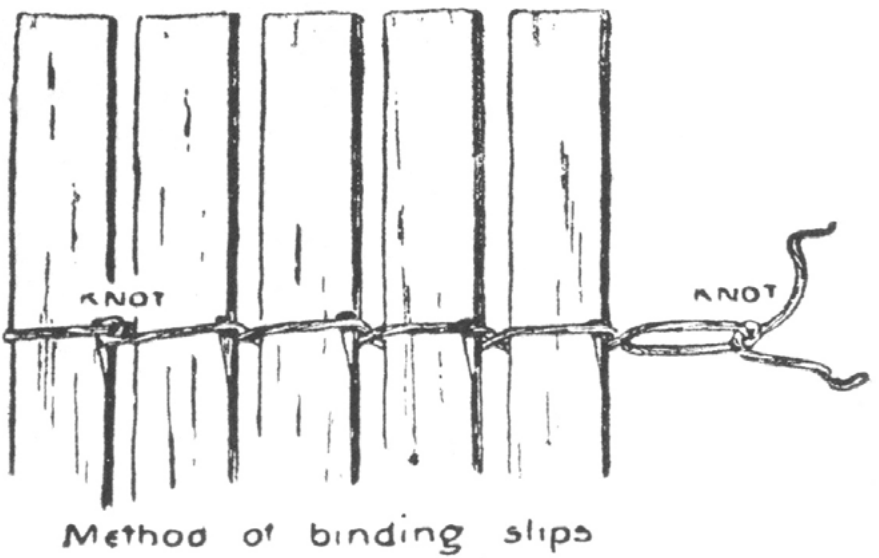

Fig. 4: Reconstructed binding technique employed for the slips excavated by Aurel Stein at Dunhuang (back side of the scroll).

With this method, wherever a binding string is attached to a slip, only one line of string is visible on either side of the slip. While Andrews and Stein do not provide a specific designation for this binding technique, the resulting course of the string visually resembles a basic sewing technique known as 'double running stitch'. Depending on whether the thread of the first passage and the re-

55 Stein 1921, 251–253. It should be noted that Stein and Andrews assumed the scrolls to have been closed for storage like a 'concertina' rather than having been rolled up. This thought was apparently taken up by Tsien Tsuen-hsuin (2004, 123), who stated that '[n]o tablets bound in the accordion form are extant today and no description of this system is found in ancient literature. [...] It seems that the tablets, after being connected by cords, could also be rolled up and stored in that form.' For an example of three comparatively wide (and originally independent) documents on wood from the late third century BCE that were apparently tied together like a scroll but stored in an accordion-like folded rather than rolled-up form, see Ma Tsang Wing 2020.

turning thread turn about each other or not, the double running stitch can be further distinguished into a twined and a plain form (see Fig. 5).[56]

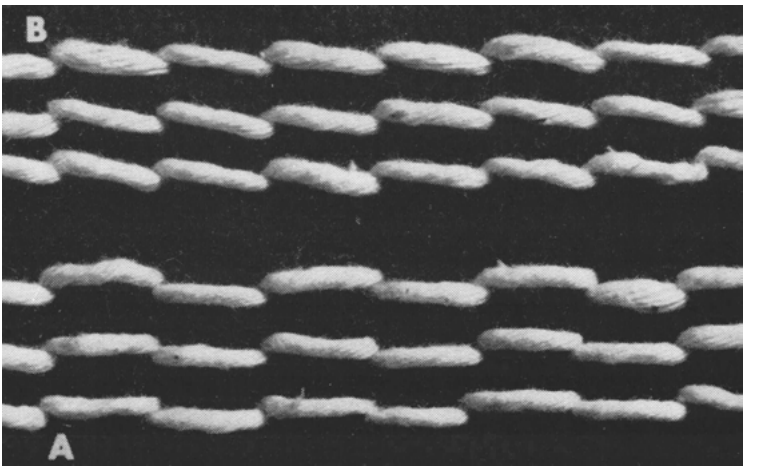

Fig. 5: Plain (A) and twined (B) double running stitch. Courtesy of The Textile Museum, Washington, DC.

In fact, the twined double running stitch seems to come closest to the binding technique reconstructed by Andrews. Actual examples of complete scrolls that have been excavated in Northwest China since the 1930s confirm the use of this technique (see Fig. 6).[57]

56 Emery 1966, 235 and Fig. 353.

57 Hou Xudong 2019, 120–123; Ma Zhiquan 2020, 287–288. Image in Fig. 6 below reproduced from Gansu sheng wenwu kaogu yanjiusuo 2000b, 42.

Fig. 6: Detail of wood scroll with an inventory of carriages and hand carts, 23 BCE, excavated at the ruins of the Xuanquan relay station (*Xuanquanzhi* 懸泉置). Lanzhou, Gansu Jiandu Museum, MS I 90DXT0208[2]:1–10.

It was obviously possible to fix the binding string with only one knot at the very end of the manuscript (left side), while Andrews had assumed that another knot would have been tied after the first slip in the scroll. However, he was right about the general direction of binding. The scrolls with extant binding strings – all administrative documents – were usually bound from the beginning towards the end (right to left, seen from the front), with a certain length of binding string often remaining to the left of the last slip.[58] It has been proposed that, whereas this sequence of binding the slips (from beginning to end) may have been the standard for administrative documents, literary works were more probably bound from left to right (or: the end towards the beginning), yielding leftover string at the scroll's beginning.[59] As no bamboo or wood scrolls with literary works and intact binding strings have been discovered to date, this hypothesis seems difficult to prove or disprove at this point. But, as will be shown below, a closer investigation of the remnants of binding strings, might provide useful evidence in certain cases.

After the proposal by Stein and Andrews, it seems to have taken ninety years before another detailed reconstruction of binding techniques was attempted in the lab report on the Qin manuscripts acquired in 2010 by Peking University. The authors refer to the technique as *suozi kou fangshi* 鎖子扣方式,[60]

58 Cheng Pengwan 2017, 42; Ma Zhiquan 2020, 287–289; Zhang Xiancheng 2004, 123. While it might seem that the scroll in the illustration by Andrews was bound the other way round, from left to right, the direction is in fact identical, since his drawing shows a scroll from the back side.

59 Tomiya Itaru 2003, 72–79. The main basis for this hypothesis is the placement of titles, which most frequently occur on the back side of one of the first few slips in the case of scrolls with literary works. In order not to render these titles invisible once the scroll is stored, it would be most reasonable to roll these scrolls up from the end. This in turn means that additional string to tie the rolled-up manuscript together should be left at the beginning, not the end. Also see Giele and Peltzer 2015, 687–689.

60 Beijing daxue chutu wenxian yanjiusuo 2012a, 37.

literally 'chain-knot method' (cf. the Chinese term *suozi jia* 鎖子甲 for 'chain mail') and provide three drawings for illustration (see Fig. 7).[61]

This technique of applying the binding strings to the slips visually resembles another basic sewing technique commonly called 'chain-stitch' (see Fig. 8).[62]

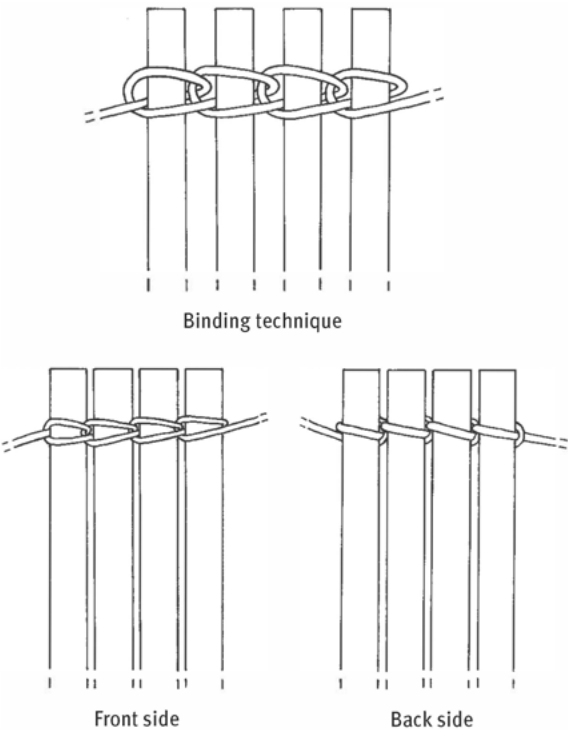

Fig. 7: Reconstructed binding technique employed for the Qin bamboo and wood slips in possession of Peking University.

61 Images in Fig. 7 below reproduced from Beijing daxue chutu wenxian yanjiusuo 2012a, 41 (Fig. 25) (captions translated by author).

62 Emery 1966, 243. I would like to thank Georgios Boudalis for pointing this out to me. As is the case for a particular binding technique of codex manuscripts, which Boudalis discusses in one of his works (Boudalis 2018, 53), the similarity to the chain-stitch sewing technique here is purely visual rather than structural or functional. Chain-stitch in sewing is normally used to decorate already made fabric, whereas, in the case of the binding, it is the very technique through which a structure is created. The same is the case for the double running stitch mentioned above. The images in Fig. 8 were originally published in Boudalis 2018, 53 (Fig. 30).

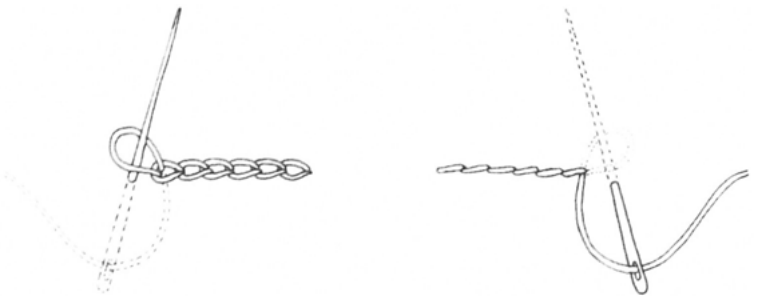

Fig. 8: Chain-stitch. Images courtesy of Georgios Boudalis.

Utilising this method, wherever a binding string is attached to a slip, two lines of the string are visible on one side, but only one line on the other side. In Fig. 7 above, the slips' front side (the side normally carrying writing) shows two lines, the back side one. A survey of bamboo and wood slips that were originally part of scrolls and excavated from various archaeological sites hints towards the possibility that this chain-stitch technique of binding may have been quite common. At least, there are numerous examples of slips that show traces of two lines of string on the front side, at the positions where binding strings were attached to the slips. These include slips excavated from Guodian 郭店 tomb no. 1,[63] Shuihudi 睡虎地 tomb no. 11,[64] Zhoujiatai 周家臺 tomb no. 30,[65] Fenghuangshan 鳳凰山 tombs no. 8 and 168,[66] Zhangjiashan 張家山 tomb no. 247,[67] Kongjiapo 孔家坡 tomb no. 8,[68] and Zoumalou 走馬樓 well no. 22.[69] See Fig. 9 below for an example.[70]

63 See, for example, Jingmen shi bowuguan 1998, 90, slips 19–24 (middle/bottom).

64 See, for example, Shuihudi Qinmu zhujian zhengli xiaozu 1990, 29 (plates section), slips 170–171 (middle) or 124 (plates section), slips 62–63 (top).

65 See, for example, Chen Wei 2014, 129, slips 151–154 (bottom).

66 See, for example, Hubei sheng wenwu kaogu yanjiusuo 2012, 38, slips 97–100 (top/bottom) or 194, slips 48–49 (top/bottom).

67 See, for example, Zhangjiashan er si qi hao Hanmu zhujian zhengli xiaozu 2001, 9, slips 28–33 (middle); 60, slips 94–96 (middle/bottom) or 88, slips 61–65 (top/bottom).

68 See, for example, Hubei sheng wenwu kaogu yanjiusuo and Suizhou shi kaogudui 2006, 85–86, slips 207–213 (top/middle/bottom).

69 See, for example, Changsha jiandu bowuguan, Zoumalou jiandu zhenglizu and Beijing daxue lishixi 2007, 414, slips 4660–4664.

70 Image reproduced from Hubei sheng wenwu kaogu yanjiusuo and Suizhou shi kaogudui 2006, colour plate 6.

Still, it is not entirely certain whether the chain-stitch method was employed in any of the examples above for two reasons. Firstly, we are always dealing with traces of binding strings on individual slips only, as the connections between slips have been lost due to decay. Secondly, photographs of the slips' back sides have not been published for any of the examples mentioned. Hence, it is impossible to verify whether the back sides of these slips show only one line of string, as would be expected for this technique.

Fig. 9: Part of a reconstructed bamboo scroll with hemerological contents, mid-second century BCE, excavated from Kongjiapo tomb no. 8. Wuhan, Hubei Provincial Museum, Hubei Provincial Institute of Cultural Relics and Archaeology, MS *Rishu* 日書 ('Daybook'), slips 205–217, right to left.

A glance at the cache of unprovenanced Qin bamboo and wood slips now in possession of the Yuelu Academy, for which photographs of the back side of all slips have been published, shows that even these will not necessarily yield unambiguous evidence. The front side of many slips shows two lines of string at the positions where binding strings were attached and some of these, in fact, have one line of

binding string on their back.[71] However, the back side of others does not bear any traces of binding strings, although it is clear that strings must have surrounded the slips in some way.[72] There are also slips whose back side shows two lines of binding string – just like the front side.[73] Possible explanations for these phenomena are that lengths of binding string may have been (accidentally) removed from the slips during preservation treatment or that lengths of string stuck to slips other than those to which they had originally been fastened. In sum, the evidence for the chain-stitch method from manuscripts other than those of Peking University is still inconclusive, although it is at least certain that a technique different from the one resembling the double running stitch (see above) must have been employed. This means that at least two different techniques of fastening the binding strings to slips were in use for bamboo or wood scrolls in ancient China.[74] More research, ideally including experiments with scroll replicas, is needed to determine the respective pros and cons of the different binding techniques regarding durability or ease of application and handling.

Before moving on to the discussion of the number of binding strings observable on scrolls, one more note is due on the binding techniques. While checking various publications with reproductions of bamboo and wood manuscripts for evidence of the chain-stitch method, more specifically for slips with the matching two lines of string on the front side, it became clear that the orientation of these two lines of string differs from manuscript to manuscript. The two lines of string usually form an arrow-like shape as they seldom appear entirely parallel. In some cases, this arrow would point to the right (>, as in Fig. 7), in other cases to the left (<, as in Fig. 9). It has been observed regarding chain-stitch that 'the direction of sewing is away from the pointed end of each loop' (also see Fig. 8).[75] Provided that the same can be assumed for the binding technique that closely resembles chain-stitch, this would mean that the orientation

71 See, for example, Zhu Hanmin and Chen Songchang 2010, 95, slip 13 (bottom); 114, slip 13 (bottom); 143, slip 76 (bottom).

72 See, for example, Zhu Hanmin and Chen Songchang 2010, 117, slip 19 (bottom); 122, slip 31 (bottom).

73 See, for example, Zhu Hanmin and Chen Songchang 2010, 47–48, slips 2–3, 5 (bottom); 111, slip 6 (bottom).

74 In some cases, this string binding may have been reinforced by pieces of fabric pasted to the front and/or back side of scrolls. For hints towards this practice in the bamboo manuscripts excavated from Fangmatan 放馬灘 tomb no. 1, see He Shuangquan 1989, 23. Most of the 460 bamboo slips have remains of blue fabric with which the bindings of (one or several of) the scrolls seem to have been reinforced.

75 Boudalis 2018, 53.

of the traces of binding strings allows to determine the sequence in which the slips were bound. Basically, the direction of binding would have been the opposite of the direction in which the arrow shapes are pointing. Following this, it would have to be concluded that the 'Daybook' scroll from Kongjiapo tomb no. 8 (see Fig. 9) was bound from the end towards the beginning (left to right). By contrast, the slips shown in the diagram of the Peking University slips (see Fig. 7) should have been bound from the beginning towards the end (right to left) of the respective scroll.[76] A brief survey of the examples of slips with two lines of string on the front side mentioned above, which were excavated from different tombs, suggests that both directions of binding were about equally common. A more extensive survey of this feature could provide an opportunity to test the hypothesis mentioned above regarding a correlation between the direction of binding and the content of the manuscripts.

While the direction of these arrow-shaped binding traces is often consistent within the same manuscript – or what is deemed to be one manuscript based on reconstruction – this is not always the case. The direction of the binding traces varies, for example, on the 'Daybook' slips from Kongjiapo tomb no. 8, which supposedly originally formed one scroll of nearly five hundred slips.[77] While the arrow-shaped traces point right on slips 141–150, 321–330 and 351–360,[78] they point left on slips 171–180[79] and 205–217 (see Fig. 9). There should not generally be a change in the binding direction for slips that were bound together during the same process and all slips should show identical traces. If that is not the case, the differently oriented traces probably reflect distinct binding processes. This might occur within the same scroll if it was put together as a composite from formerly independent scrolls that had all been bound separately, possibly in different directions, and were joined without replacing the earlier binding strings.[80] Another explanation could be that a scroll, especially if it was to con-

76 These statements presuppose that the writing was applied to the slips *before* the binding, which was probably the case. If not, a prebound scroll could, of course, be turned both ways before the writing would eventually determine where the scroll begins and ends.

77 For the statement that the slips' position in the tomb suggests that they originally formed one scroll, see Hubei sheng wenwu kaogu yanjiusuo and Suizhou shi kaogudui 2006, 29. For images of the reconstructed scroll of 478 slips, see Hubei sheng wenwu kaogu yanjiusuo and Suizhou shi kaogudui 2006, 65–112.

78 See Hubei sheng wenwu kaogu yanjiusuo and Suizhou shi kaogudui 2006, 79, 97, and 100, respectively.

79 See Hubei sheng wenwu kaogu yanjiusuo and Suizhou shi kaogudui 2006, 82.

80 For a prominent case, a wood scroll from the late first century CE that was formed from four originally independent units, see Hou Xudong 2014, 60–61. Such evidence for composite man-

tain a large number of slips, may have been bound in several stages. This would, at least in theory, allow for different directions of binding for the parts.[81]

4.2 Number of binding strings and visual organisation

The number of binding strings that were used to produce a scroll depended mostly on the slip length, which also defined the 'height' of the scroll. Scrolls with originally two to five binding strings have been found to date.[82] As a rule, the longer the slips, the higher the number of binding strings that were employed. Early finds made at the Mozuizi 磨嘴子 (also written 磨咀子) tombs nos 6 and 18 in 1959 provide an illustrative example. The excavations yielded several groups of slips that differed regarding length and the number of bindings strings (see Table 1).

Table 1: Bamboo and wood slips excavated from Mozuizi tombs nos 6 and 18[83]

Group of slips	Material	Length	Number of binding strings
A (*Jia ben* 甲本)	wood	*c.* 55.5–56 cm	4
B (*Yi ben* 乙本)	wood	*c.* 50.5 cm	4
C (*Bing ben* 丙本)	bamboo	*c.* 56 cm	5
Riji zajian 日忌雜簡	wood	*c.* 23 cm	2
Wang zhang shi jian 王杖十簡	wood	*c.* 23 cm	3

uscripts is extremely rare due to the generally poor preservation conditions of bamboo and wood scrolls.

81 Compare the case of the so-called *Xinian* 繫年 'Linked years' scroll from the collection of Tsinghua University, which comprises 138 bamboo slips. Based on small differences regarding the position of the binding strings, Xiao Yunxiao (2015, 75–79) has suggested that it was bound in several stages.

82 Cheng Pengwan 2017, 43–45. Cheng also mentions two examples where a scroll seems to have been formed with the help of only one binding string. However, it has been argued for one of these, the list of funerary goods found in Zhangjiashan tomb no. 247, that the position of the binding string at about one-third of the length from the slips' top suggests that the application of two binding strings had been planned but that the binding was left unfinished for some reason. For the other example, similarly a list of funerary goods (from Fenghuangshan tomb no. 167), conflicting observations – only one vs two binding strings – have been made based on the original manuscripts. See Cheng Pengwan 2017, 45, n. 1; Feng Yicheng 2009, 360, n. 2.

83 Data based on Chen Mengjia 1964, 56, 59.

As can be seen, slips with a length of 23 cm had only two or three strings, whereas slips with a length of more than 50 cm had four or five. At the same time, the slip length was obviously not the only factor that influenced the number of binding strings, as this varied between scrolls produced from slips of the same length. It has been suggested that an additional binding string may have been used for the slips of group C (if compared to groups A and B), because bamboo slips are not as hard as wood slips.[84] Similar to the ratio between the slip length and the number of binding strings, this would certainly concern the stability of a scroll as a material object.

While there are obviously examples of bamboo and wood scrolls with four or five binding strings, it has to be stressed that scrolls with two or three binding strings are *by far* the most commonly encountered form.[85] This is because comparatively few slips exceeded a length of roughly 46 cm/two feet (see above), probably because scrolls would otherwise be too unwieldy. In addition, distances between binding strings of 7 up to 20 cm appear to have been acceptable; the maximum distance between the edges of the slips and the outermost binding strings was usually smaller but could also reach 10 cm or more. Scrolls with an uncommonly low number of binding strings in relation to slip length are most frequently encountered in the form of lists of funerary goods. Such scrolls were certainly produced specifically for the purpose of placing them in tombs rather than for frequent consultation, i.e. rolling and unrolling, or for carrying them around.[86] For these kinds of objects, a less robust design seems unproblematic.

A comparison of scrolls with two and three binding strings shows that the number of binding strings is closely tied to the visual organisation. Scrolls with three binding strings normally had one string running over the middle of the slips and one each over their top and bottom end, respectively. Hence, the writing surface was horizontally divided into two parts of equal size, while the space of 1 to 2 cm above the first and below the third string served as the top and bottom margin (see Fig. 10, right).[87] This area would normally contain only cer-

84 Chen Mengjia 1964, 59.

85 See the specimens collected in Cheng Pengwan 2017, 344–388 (Appendix 2). The three groups of slips cited in Table 1 are, in fact, almost the only examples of scrolls with four or five binding strings. See Cheng Pengwan 2017, 43–44.

86 See, for example, the four lists from Baoshan 包山 tomb no. 2. These scrolls consisted of slips measuring between 65 and 72 cm in length and were bound with only two or three binding strings. See Hubei sheng Jing Sha tielu kaogudui 1991, 3–14.

87 In fact, all known scrolls with more than three binding strings also have a top and bottom margin above the first and below the last binding, respectively. See Cheng Pengwan 2017, 43–45; Venture 2014b, 354; Zhang Xiancheng 2004, 119–120.

tain types of paracontent[88] such as (sub-)titles, marks or collation notes. The presence of bindings near the top and bottom end of the slips not only created a 'natural' margin, it probably also made a scroll sturdier and more suitable for frequent use.[89] In addition, placing two binding strings 'out of the way', also meant that the writing surface would only be interrupted once, which must have seemed preferable especially for recording larger units of continuous text.

By contrast, scrolls with only two binding strings normally had strings running at the positions of about one-third and two-thirds of their length (from the top). This way, the writing surface was horizontally divided into three parts of roughly equal size, without leaving any space designated for an upper or lower margin (see Fig. 10, left). Accordingly, while such margins are present on most scrolls with three binding strings, they are very rare on scrolls with only two binding strings (see Table 2).[90]

88 On 'paracontent' as an extension of the concept of 'paratext', see Ciotti et al. 2018.

89 Richter (2013, 27) states: 'The most frequent type of loss of text occurs in manuscripts that are not bound at the top and bottom ends but only further toward the middle of the slips. The longer the top and bottom ends of slips outside the bindings are, the more easily they can break off.' By contrast, Ma Zhiquan (2020, 287) speculates that the binding might be especially durable if strings are *not* placed so close to the top or bottom end of the slips.

90 Of course, there are exceptions to the rule: it has already been noted that scrolls with three bindings could come either with or without margins (Cheng Pengwan 2017, 44–45; Zhang Xiancheng 2004, 120). In the latter case, the three binding strings divided the writing surface into four parts of roughly equal size, as is the case, for example, with the so-called *Kongzi shilun* 孔子詩論 'Confucius's Discourse on the Odes' scroll from the Shanghai Museum collection. This type of scroll with three binding strings but no margins often consisted of comparatively long slips measuring no less than 46 cm, more commonly above 55 cm. By the same token, there are a few examples of scrolls with two binding strings that, at the same time, have upper/lower margins, none of which are demarcated by binding strings. For an overview that gives an impression of the comparatively low number of these two types of scrolls vis-à-vis the much more common types 'three bindings with margins' and 'two bindings w/o margins', see Cheng Pengwan 2017, 344–388 (Appendix 2).

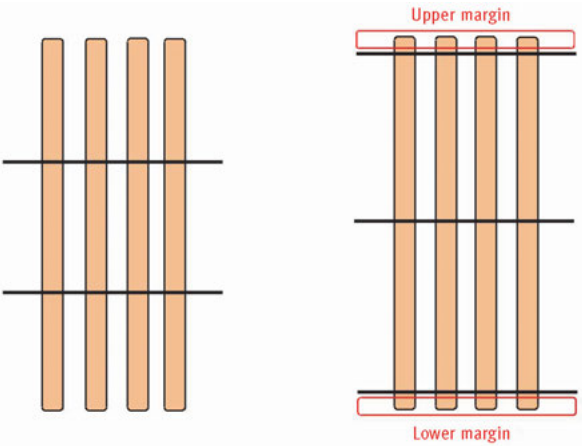

Fig. 10: Typical visual organisation on scrolls with two and three binding strings (illustration by the author).

Table 2: Statistics on the number of binding strings in relation to slip length and occurrence of margins[91]

Number of binding strings	Scrolls (overall)	Slip length (range, cm)	Slip length ≤ 23 cm	Slip length > 23 cm	w/o margins	with margins
2	66	12.8–75	20 (30 %)	46 (70 %)	58 (95 %)	3 (5 %)
3	107	15.1–72.3	10 (9 %)	97 (91 %)	18 (17 %)	87 (83 %)
4	2	50.5–56	-	2 (100 %)	-	2 (100 %)
5	1	56.5	-	1 (100 %)	-	1 (100 %)
Σ	176	N/A	30 (17 %)	146 (83 %)	76 (45 %)	93 (55 %)

Notably, two binding strings (and slips with a length of *c.* 23 cm/one foot) seem to have been the standard for scrolls produced in administrative contexts for most of

91 Data based on Cheng Pengwan 2017, 344–388 (Appendix 2). The table only includes scrolls for which Cheng Pengwan provides data on the number of binding strings. These amount to a total of 176 (the two doubtful examples of scrolls with only one binding string were not taken into consideration, also see note 82 above). For seven of these scrolls, no data on margins is given (five scrolls with two binding strings, two scrolls with three binding strings). Hence, this number was subtracted from the total number of scrolls for the calculation of the percentages in the two columns on margins.

the Han period. This is shown both by extant documents and 'yardsticks' or 'rulers' (referred to as *biao chi* 標尺 in Chinese scholarship) that served as reference materials for determining the position of binding strings (see Fig. 11).[92]

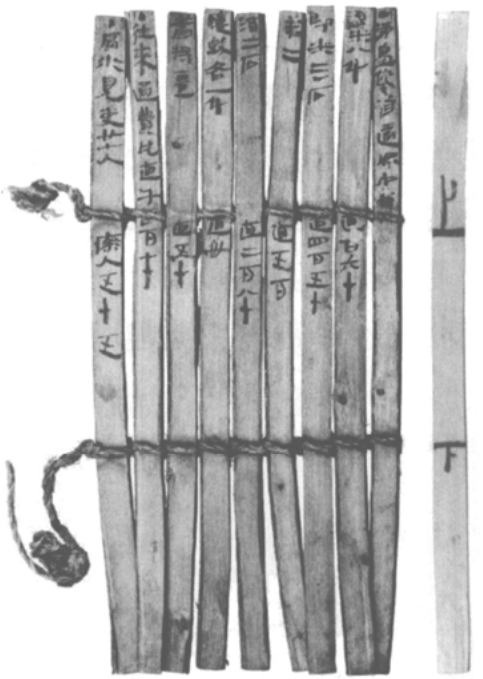

Fig. 11: Wood scroll (Lanzhou, Gansu Jiandu Museum, MS 73EJT21:2–10) with two binding strings and yardstick/ruler (Taipei, Academia Sinica, MS Juyan Hanjian 7.26) placed beside it.

A comparison with scrolls mostly from non-administrative contexts (see Table 2 above) shows that two-thirds (or twenty out of thirty) of the scrolls with slips of

92 Ma Zhiquan 2020, 293. On yardsticks/rulers from the Han period, see Lin Su-ching 1998 who discusses several wood slips on which only the characters 上 and 下 were written (see example in Fig. 11). Apparently, the horizontal strokes of these two characters divided the writing surface into three registers of equal size and possibly also indicated the later position of binding strings. It was more recently discovered that some wood slips that belonged to administrative scrolls have brushed marks on their sides, which may have been done with the help of such objects; see Shih Sheng-shiuan 2017. For bronze, stone, wood, etc., 'rulers' from the Han period, see Qiu Guangming 1992, 12–53. Image in Fig. 11 reproduced from Ma Zhiquan 2020, 287 (Fig. 1).

up to 23 cm length were similarly bound with two binding strings.[93] While a significant group of one-third was bound with three binding strings, even if slips were in some cases only between 15 and 18 cm long, this way of enhancing the stability of scrolls seems to have been unusual for administrative documents.[94] The most likely reason for this is the attempt to economise the material and labour costs of their production. The scrolls produced in the administration were obviously sufficiently stable with only two binding strings. This also suggests that they were neither tailored towards a particularly pleasant visual appearance – margins were certainly not the rule – nor long-term intensive use, apart from potential storage in an archive.

5 Conclusions

The poor state of preservation of ancient Chinese bamboo and wood scrolls often makes it impossible to study these artefacts in their intact form, allowing us to view the whole only on the basis of its parts. By gathering the piecemeal information that is available on their production and form, especially their bindings, the above survey has traced some typical features of scrolls. It addressed the ways in which slips were prepared before tying them together in a scroll, the materials that were used for the binding strings, different techniques by which the strings were applied to the slips, as well as the relationship between the number of the binding strings and visual organisation.

The topic of bamboo and wood scrolls and their bindings certainly warrants further research and could especially benefit from statistical codicology.[95] While this paper has indicated some possible lines of inquiry, a more extensive study would be well beyond the purview of a single article. Further analysis of certain features, such as the exact shape and orientation of the traces of binding strings

93 As has already been noted by Ma Heng (1926, 204), the earliest forms of the character 冊 (see Fig. 1 above) also resemble a scroll with exactly two binding strings.

94 See three of the so-called *Yu cong* 語叢 'Thicket of Sayings' scrolls with collections of aphorisms from Guodian tomb no. 1 (cf. Cheng Pengwan 2017, 369–370). Matthias Richter (2013, 28) argued: 'By using three instead of two binding strings, the producers [...] created narrow margins on the top and bottom ends of the slips, so that even if any of these short ends broke off, no text would be lost. By this method these manuscripts secure their text most effectively.' Loewe (1967, vol. 1, 34) mentions that at least some administrative scrolls seem to have had three binding strings.

95 For a recent example of this approach, focused on European codices, see Maniaci 2022.

on individual slips, might help to shed more light on binding techniques and the direction of binding. However, the relevant data would first have to be collected. This is not only time-consuming but also dependent on the quality of reproductions, which is often too low, especially in publications predating the turn of the century.

Another major caveat is that we often simply cannot judge whether two groups of slips with identical codicological features but perhaps distinct contents were originally part of the same scroll or whether they constituted two separate scrolls.[96] The latter would be the default assumption in most editions and scholarly literature, unless there is evidence suggesting otherwise. Accordingly, the number of 176 'scrolls' for which data on the number of binding strings and slip length is presented in Table 2, is probably too high. However, bearing in mind that this generally applies to all types of scrolls, this will hardly change the basic conclusions drawn in the respective section. It is hoped that future manuscript finds together with the increasing standards in both the archaeological documentation and publication of manuscript facsimiles will bolster this promising line of research.

Acknowledgements

I thank Michael Friedrich for commenting on an earlier draft of this paper. I am also indebted to Georgios Boudalis, Mélodie Doumy and Tong Chun Fung 唐俊峰 for their help in obtaining some of the images. The research for this paper was funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) under Germany's Excellence Strategy – EXC 2176 'Understanding Written Artefacts: Material, Interaction and Transmission in Manuscript Cultures', project no. 390893796. The research was conducted within the scope of the Centre for the Study of Manuscript Cultures (CSMC) at Universität Hamburg.

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96 On this problem, see Liu Chuanbin 2014. This is especially true for manuscripts that were not archaeologically excavated and hence usually lack information on the exact original positions of the slips *in situ*.

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Georgios Boudalis

Chains, Links, and Loops: Towards a Deeper Understanding of the Sewing Structure in Eastern Mediterranean Bookbinding

Abstract: The sewing of a number of gatherings into a book block is the single most important process in the making of a functional codex. There are several stages and variations in the techniques used, which vary with the period and cultural context. This contribution aims to give an overview of the technicalities of the sewing used in the unsupported bookbinding traditions of the Eastern Mediterranean, which are directly related to the earliest codex structures. Issues of terminology and the relation to the techniques used in fabric making are also considered.

1 Introduction

As explained in detail elsewhere, the sewing structure of a codex is essentially the structure of a fabric.[1] The purpose of this paper is to look more closely at the sewing of manuscript books bound with unsupported sewing, primarily those following the Byzantine tradition, to enrich the existing bibliography on the subject;[2] and, wherever possible, to try to incorporate the technology, terminology and classification of textiles. The research and resulting literature in the latter fields are much larger and older than the literature on the technology, terminology and classification of bookbinding techniques.

Unsupported sewing was typical of all codices bound until the seventh to eighth centuries. From then until the eighteenth century, it was almost exclusively used in codices bound in the Eastern Mediterranean, and is still occasionally used today, mostly in book conservation studios. In the West, supported sewing structures were introduced around the eighth century; around the eighteenth century, these gradually supplanted the unsupported sewing struc-

1 Boudalis 2018, 49–68.

2 The most important contribution on the subject remains that of Guy Petherbridge from the year 1991.

https://doi.org/10.1515/9783111292069-004

tures of post-Byzantine bookbindings, and then the remaining Eastern Mediterranean bookbinding traditions.[3]

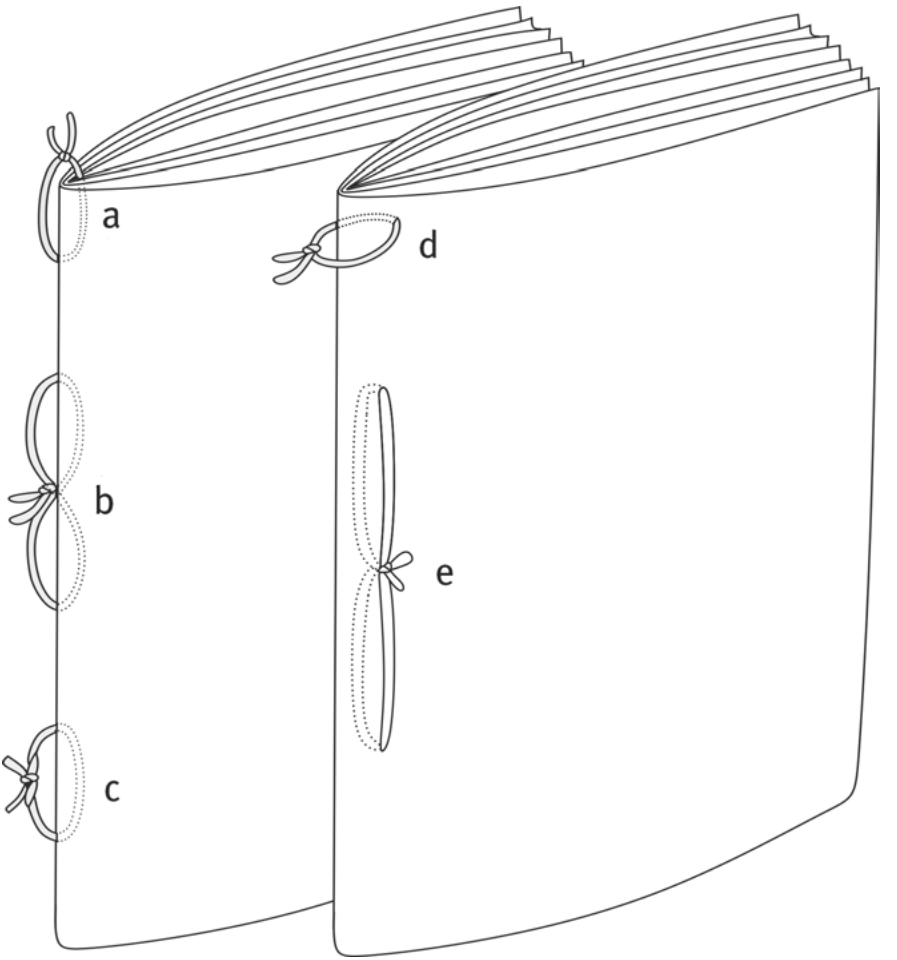


Fig. 1: Different types of tackets. Normally just one of these would have been used in a gathering. In the drawing, the knots are shown in the spine, but they can be likewise be found in the centrefold of the gathering. The tackets on the left are sewn through the fold, while those on the right are sewn through the full thickness of the gathering.

3 Boudalis 2016.

Although there are examples of book blocks sewn with unsupported sewing from Italy in the late fifteenth and sixteenth centuries, and later on from Germany and France, this type of sewing was reintroduced in the West in the eighteenth to nineteenth centuries: first most likely as a provisional way to hold the gatherings of books together as they went through the book trade, and later on as a result of machine sewing.[4]

Binding a number of gatherings into a codex was done to facilitate their use and protection. Therefore, it seems sensible to suggest that in most cases, once a manuscript was written or copied, it would have been bound soon after, unless, for one reason or another, this was not possible or posed difficulties. Nevertheless, we do have evidence of the circulation and use of manuscripts in unbound form: for example, a letter from Patriarch Gregorios to Theodora Raoulaina, written around the third quarter of the thirteenth century, in which he refers to a pair of manuscripts that he copied – one for himself, the other for Raoulaina. In the letter, he writes that he will send his copy to the bookbinder to be properly bound into a real book, and that he would be willing to do the same with the manuscript he has already given to Theodora Raoulaina in unbound form as long as she sends it back to him.[5]

2 The sewing process

2.1 Preliminary and temporary stitching

The book block of a multi-gathering codex is composed of a number of gatherings or quires, the composition and structure of which can vary. Normally they are composed of a limited number of bifolia (often four or five, in which case the resulting gatherings are called quaternions and quinions, respectively) placed one inside the other.[6] It was probably the responsibility of the scribe or the person who repaired books to mark and number the gatherings of a book block so that, once it passed to the binder (assuming that the binder was a different indi-

4 I am grateful to Nicholas Pickwoad for this information. See also Pickwoad 2000.

5 See Kotzabassi 2011 and Bianconi 2018, 95–99.

6 The literature on the composition and structure of gatherings is extensive; see, for example, Irigoin 1998. For a synthesis and recent bibliography related to the various book traditions of the Eastern Mediterranean, see Bausi et al. 2015, 79–80, 97–99, 121, 134–135, 142–144, 159, 196, 214, 241, 254–256.

vidual),[7] they would be bound in the right order. There were several ways to number the gatherings of a book block, using letters or numbers usually written on the recto of the first folio of a gathering, the verso of the last, or even both. The numbering of the gatherings was usually placed in the upper or lower margins of the folios.[8] Occasionally, it is possible to identify different numbering series on gatherings of the same manuscript, a clear indication that it was rebound.

It was presumably also the responsibility of the scribe to make sure that the bifolia of the gatherings would not be misplaced or lost on their way from the scribe to the binder, or even by the reader, assuming that in some cases book blocks would have been used for some time without being permanently bound in a codex. As pagination or foliation was almost unknown in manuscript books, this could be achieved, for example, by using gathering tackets, that is, 'a short length of flexible material used to attach one component to another by lacing it through one to four matching holes made through both components.'[9]

Gathering tackets can be of at least five different types, as shown in Fig. 1. Three of these are sewn through the spinefold (Figs 1a–c), and two through the whole thickness of the gathering (Fig. 1d).[10] These would usually be cut and removed once the gatherings were bound into a book block, but were occasionally left in place, where they can be still found today in the spinefold of gatherings in bound codices (Fig. 2). The stab sewing shown in Fig. 1e was also used

7 See, for example, the note on the last folio of codex Lisbon, Archivo de Torre do Tombo, 669, where the following note is written in Greek, obviously addressed to the binder: 'Just so you know, the gatherings (τετράδια) that Kamilos wrote (ἔγραψε) contain the Book of Numbers. So take good care to bind them together (δέσεις σωστά μαζί) with those written before'. See Harlfinger and Escobar 2008, 273. I am grateful to Elias Tsolakopoulos for bringing this to my attention.

8 The literature on the subject is extensive. For example, see Andrist 2004 and Bausi et al. 2015, 81–82. Specifically on Arabic manuscripts, see e.g. Déroche 2006; on Greek manuscripts, Mondrain 1998; and on Syriac manuscripts, Briquel Chatonnet 1998. See also Bianconi 2018, 87–88 and 90. Maybe it is worth mentioning here the case of codex Venice, Biblioteca Nazionale Marciana, gr. Z. 269 (coll. 533) (Diktyon 69740), in which the gatherings are not numbered with the typical sequence of the Greek alphabet letters but rather so that the letters used for the numbering of the gatherings form the initial verse from Psalm 103: Εὐλόγει, ἡ ψυχή μου, τὸν Κ(ύριο)ν. Κ(ύρι)ε ὁ Θεός μου. Mentioned in Bianconi 2009, 28, and n. 42.

9 See the *Language of Bindings Thesaurus*, *s.v.* 'tackets': https://www.ligatus.org.uk/lob/concept/1657. See also Gullick 1996; Gumbert 2011; and Petherbridge 1991.

10 See Petherbridge 1991, 376–378.

occasionally, mostly as a sort of informal binding for a limited number of folios or gatherings rather than as a preliminary stitching.[11]

Some of these preliminary stitches could also be used to hold together not just the leaves of a single gathering, but all the gatherings of a book block. This could be achieved, for example, with the tackets shown in Figs 1a, d and e if sewn through all the gatherings of a book block:[12] for example, in codex Athos, Monē Ibērōn, 1322 (Lambros 5442) (Diktyon 24917), a nineteenth-century *paterikon* (collection of patristic and monastic writings) that was never properly bound, i.e. the gatherings were never sewn together and the book was given no boards and no cover. Instead, the two tackets at the head and tail of each gathering were all held together with a cord wrapped around them, creating a sort of tuft at each end of the spine. At the head there is also a piece of leather inserted through these tackets as a sort of sewing support (Fig. 3).

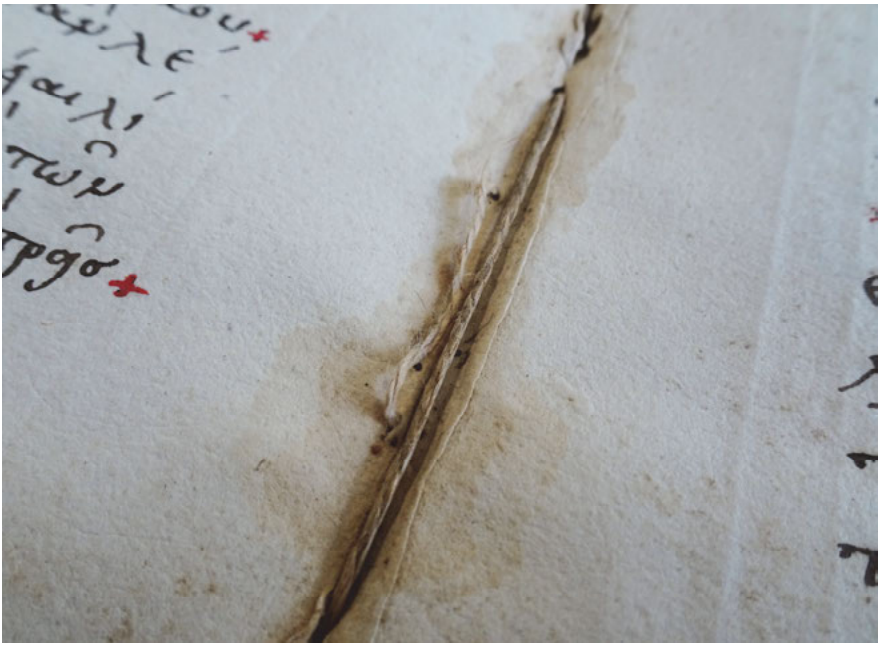


Fig. 2: The sewing thread (black arrow) and the tacket thread (red arrow) as seen in the centrefold of fols 4^{v} and 5^{r} in codex Veria, Dēmosia Kentrikē Bibliothēkē, KB 10 (detail).

11 See Petherbridge 1991, 378–379.

12 See van Regemorter 1967, p. 115, fig. 3 and Grosdidier de Matons 2008, 369–371, pl. 1–5.

Fig. 3: Athos, Monē Ibērōn, 1322, a *paterikon* written in the nineteenth century (detail).

2.2 Spinefold repair stitching

Usually, when codices were rebound, this was done not for aesthetic purposes, but rather because they had suffered some sort of damage to one or more of their component parts, i.e. the folios, boards, sewing etc. In such cases, it was common to have the spinefolds of some or all the gatherings repaired by pasting strips of paper or parchment, or very often by stitching. The presence of such spinefold stitching is unequivocal evidence of repair of the book block, normally related to the current binding of a codex; the repair can thus be dated according to the date of the binding. This sort of stitching could be also used for simple, informal 'books' like the one from the sixth or seventh century CE found in the Epiphanius monastery in Egypt (see Fig. 4).

The stitching was normally done with plain, rather thin thread, but dyed threads are also occasionally recorded, as are thin parchment strips or catgut, for example in Sinai, Monē tēs Hagias Aikaterinēs (Saint Catherine Monastery's Library), Geo. 49 (Fig. 6).[13] Although such stitching could be simply improvised, at least five consistent types have been recorded:

1. Simple overcasting. Also known as whipstitch, this stitch goes through the whole thickness of the gathering and around its spine in one direction, e.g. from head to tail (Fig. 5a).
2. V-shaped overcasting. This is essentially an overcasting performed in two directions, say from head to tail and back, so that a sequence of V-shaped stitches is formed along the spine (Fig. 5b). This can occasionally take the form of a more or less consistent X shape.
3. Running stitch. A stitch that goes through the whole thickness of the gathering parallel to the spine, in one direction, e.g. from head to tail. Although this is a very simple stitch to make, it occurs rarely in Byzantine codices, possibly because it provides no protection or reinforcement of the actual spinefold of the gathering (Fig. 5c).
4. Backstitch. This is essentially a running stitch performed in two directions, for example from head to tail and back, so that on both sides of the gathering, a continuous sequence of stitches is formed parallel to the spine, enclosing the folios on both sides (Fig. 5d). This is a rather uncommon stitching in spinefold repairs of codices. There are instances of manuscripts repaired in the twentieth century with a similar stitch, made by a sewing machine.

Sometimes different stitches were combined together, especially the different types of overcasting. The process usually started and ended with a knot, for example a stopping knot.

13 On the characteristics of the threads used for the sewing of codices and how to record them, see Petherbridge 1991, 386–391.

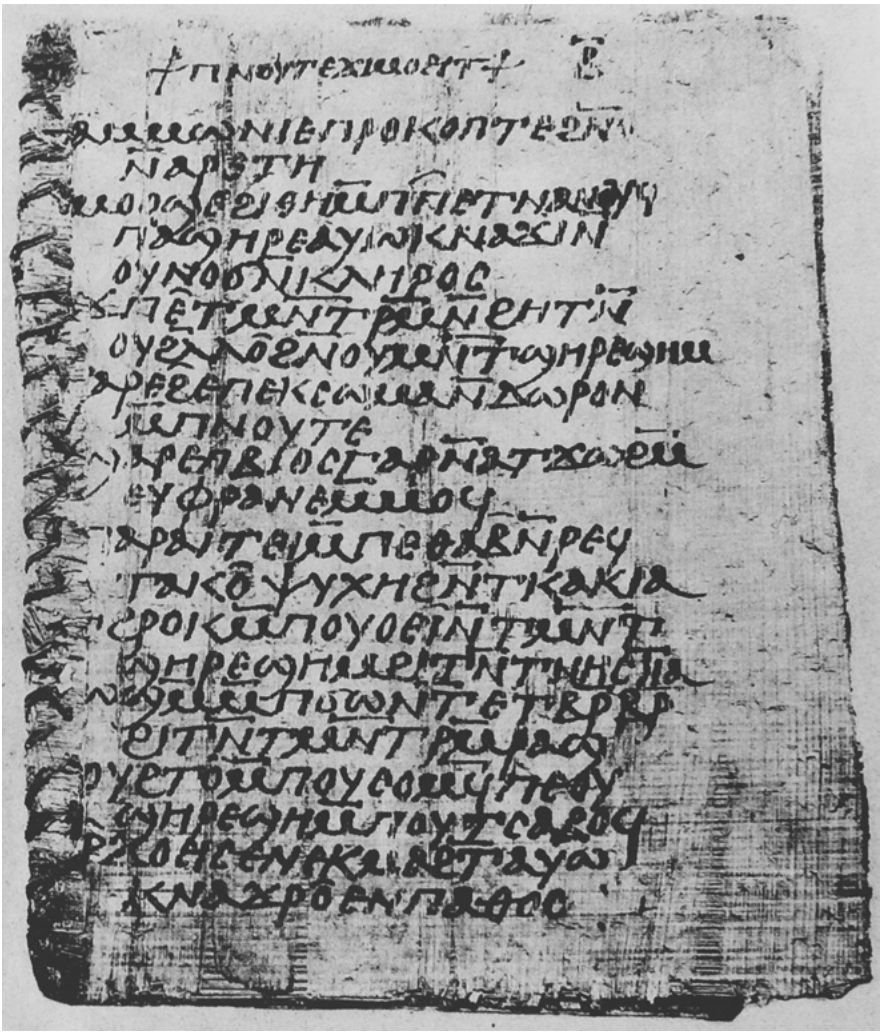


Fig. 4: A codex of eight single leaves sewn with overcasting, found in the monastery of Epiphanius in Egypt, dated to the sixth or seventh century CE; Winlock 1926, vol. 2, pl. 4 (no. 592).

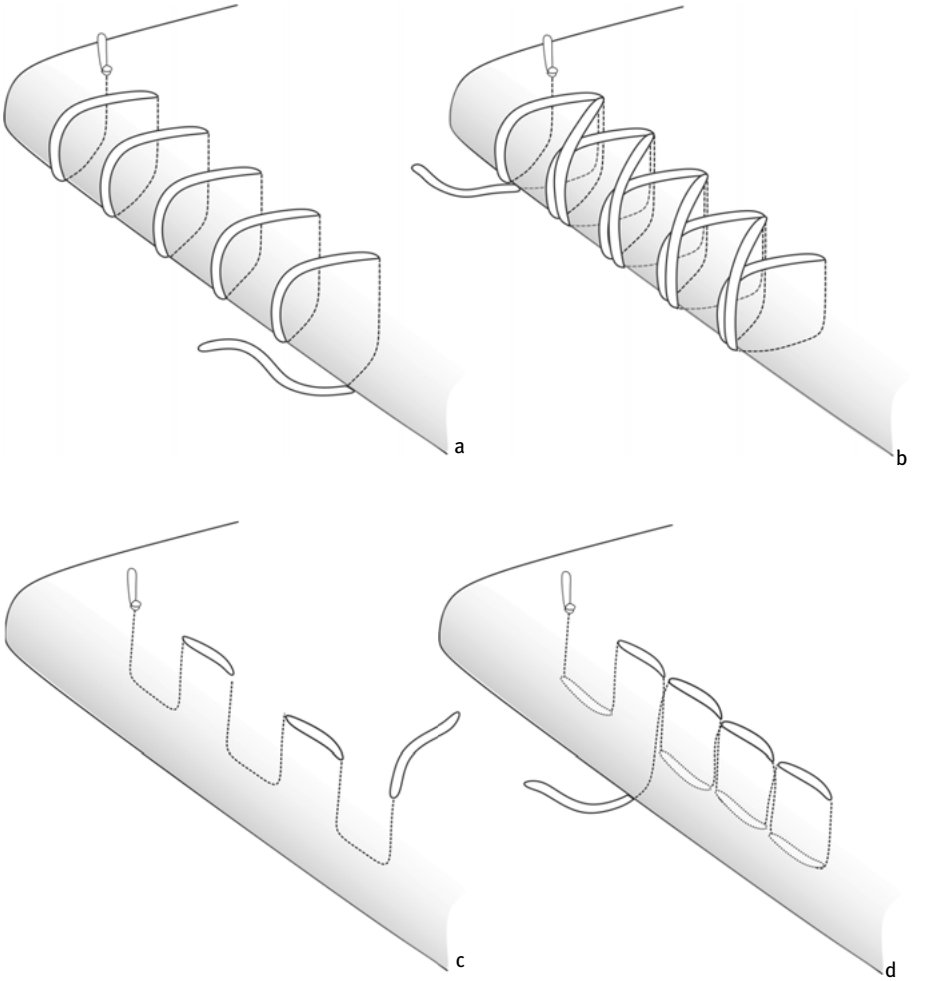


Fig. 5a–d: Five different types of spinefold repair stitching: (a) simple overcasting, (b) V-shaped overcasting, (c) running stitch and (d) backstitch.

a

b

c

Fig. 6a–c: Gatherings of the same codex, Sinai, Monē tēs Hagias Aikaterinēs, Geo. 49 (details), with their spines repaired with different types of stitching: V-shaped overcasting (a), running stitch (a, b) and backstitch (b). These are used to hold together single reused palimpsest folios, as can be seen in gatherings three to six from the top in (c).

2.3 The arrangement of the sewing stations

Once all the gatherings of a book block were on the bookbinder's bench ready to be sewn together into a codex, the first thing to do would be to mark the sewing stations along the spinefolds. Sewing stations can be divided into main sewing stations and change-over stations; the latter are the ones where the sewing thread proceeds from one gathering to the other.[14] As a rule, the sewing stations are distributed along the spine in a symmetrical way, and the ensuing rectangles that form between the head and tail edges of the book block, the change-over stations and the main sewing stations are called sewing panels. The relations between the outermost panels and those in between the change-over stations yield four different arrangement patterns:[15]

1. The arrangement where all the panels are of the same width. This arrangement is not affected by the total number of sewing stations used on a book block (Fig. 7a).
2. The arrangement where the outermost panels (shown in red) are narrower than their adjacent ones (shown in yellow, blue and green). This arrangement is affected by the number of sewing stations used, and therefore a number of variations can be observed (Fig. 7b; from top to bottom, two, three, four, five and six sewing stations).
3. The arrangement where the outermost panels (shown in red) are wider than their adjacent ones (shown in yellow, blue and green). This arrangement is also affected by the total number of sewing stations, and similarly there are a number of variations (Fig. 7c; from top to bottom, two, three, four, five and six sewing stations).
4. The arrangement where no clear symmetry or pattern can be identified. This is a very rare option, found in bindings of very low standards.

It would seem that some arrangements are typical of specific periods, binding ateliers or even individual binders. Most of the Byzantine bindings follow the type B arrangement, with only a few recorded examples of types A and C. The latter seems to become more common with the gradual adoption of sewing supports and the consequent rise in the number of sewing stations.[16]

14 See Spitzmueller 1982–1983.

15 On this, see also Petherbridge 1991, 400–404.

16 See Boudalis 2004, 335–336.

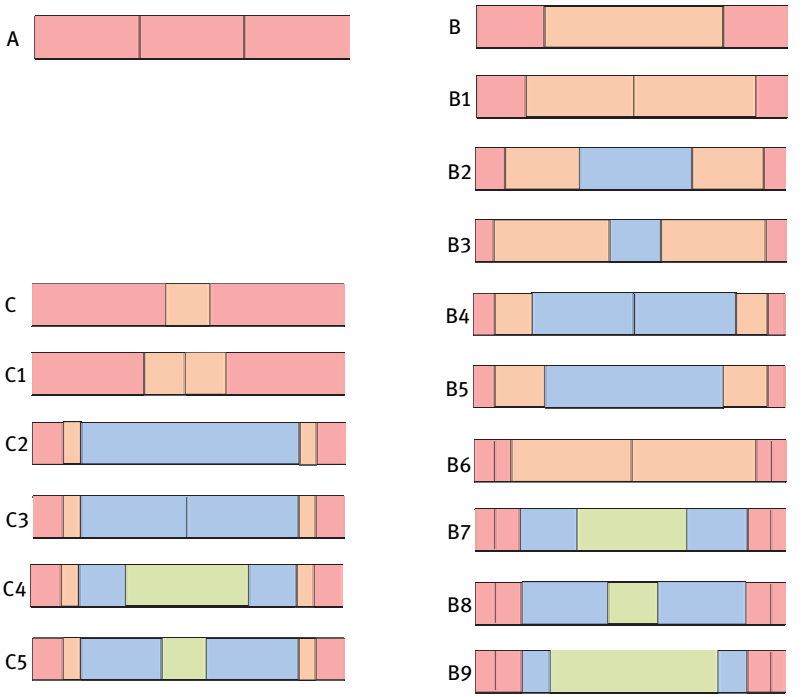


Fig. 7: From left to right, panel arrangements of types A, B and C, with differences within each based on the number of sewing stations used.

2.4 The opening of V-shaped cuts

An almost ubiquitous feature of Byzantine bindings is the V-shaped cuts opened in the spines of the gatherings corresponding to the sewing stations. These are used in order to facilitate the passage of the sewing thread through the gatherings and recess the bulk of the 'chains' that result from the sewing process, allowing the spine of the volume to remain smooth (Fig. 8). They were most likely opened before the start of the sewing process, once the arrangement of the sewing stations was decided, and have been somehow marked along the spine of the gatherings, possibly with graphite or with just a pointed or sharp tool.

V-shaped cuts are a typical feature of Byzantine bookbindings, but they are not equally common in other binding traditions, like the Syriac or the Islamic ones, in which simple needle holes were used (Figs 9 and 10). In the Islamic

tradition, the absence of V-shaped cuts is certainly due to the thin threads used for the sewing of the book block gatherings. It is interesting to note that once the thread passes through a simply cut sewing station and pulled, it will somehow open it and give it a sort of V-shaped form. V-shaped cuts and recesses were a common feature in wax tablet codices, used for keeping the sewing thread in place as well as recessing and protecting it.[17]

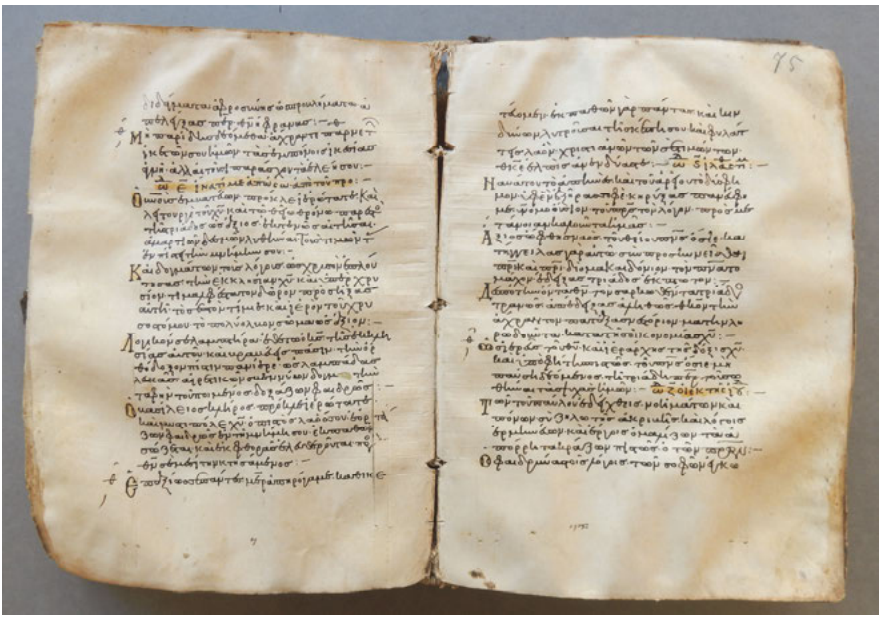


Fig. 8: The V-shaped cuts of the three main sewing stations in codex Sinai, Monē tēs Hagias Aikaterinēs, Gr. 566 (Diktyon 58941), fols 74ᵛ–75ʳ; the change-over stations have only straight cuts; courtesy of the Saint Catherine's Monastery on Mount Sinai.

17 Boudalis 2018, 27, fig. 12.

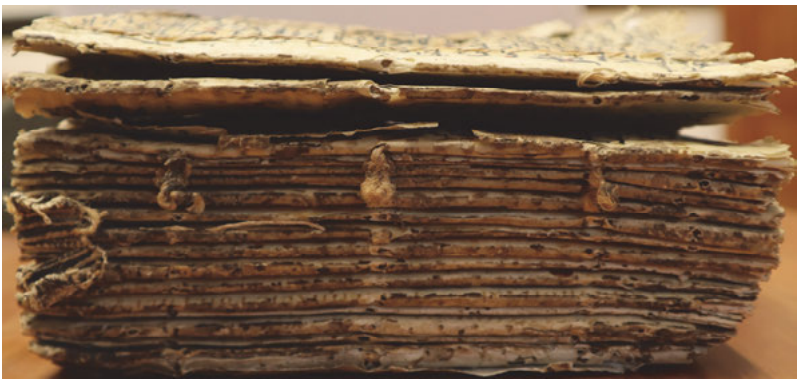


Fig. 9: The sewing holes in the five sewing stations of codex Sinai, Monē tēs Hagias Aikaterinēs, Ar. NF 28.

Fig. 10: The sewing holes of the six sewing stations of codex Sinai Monē tēs Hagias Aikaterinēs, Gr. 211 (Diktyon 58586).

There are also a few examples where, instead of a V shape, the cuts are clearly U- or Π-shaped (according to whether the angles are rounded or not). An example of the former is codex Brussels, KBR, 11344 (Diktyon 9953), a Greek manuscript bound in Italy sometime in the second half of the fifteenth century, in an imitation Byzantine binding also known as 'alla greca'[18] (Fig. 11); an example of the latter is codex Sinai, Monē tēs Hagias Aikaterinēs, Gr. 1775 (Diktyon 60150), probably also written and bound in Italy in the seventeenth century, before 1661 (Fig. 12).

18 On the binding of this codex, see Boudalis and Gialdini 2022.

Fig. 11: The U-shaped openings used in the sewing stations of codex Brussels, KBR, 11344. Notice the crossing scored lines marking the board lacing station.

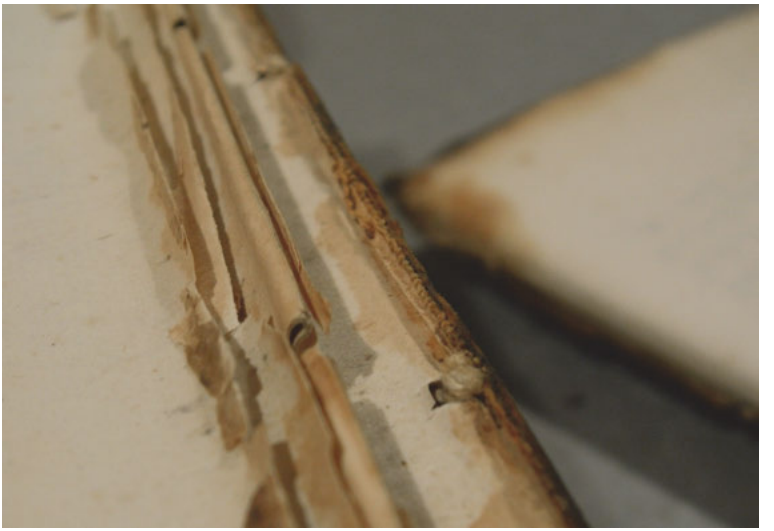


Fig. 12: The Π-shaped openings used in the sewing stations of codex Sinai, Monē tēs Hagias Aikaterinēs, Gr. 1775.

There seem to have been at least two options for the opening of these V-shaped cuts:

1. Two-step V-shaped cuts. Two converging cuts were performed at an angle forming a V. There are several examples in which one or both cuts can be seen extending beyond the apex of the V. The angle of the V is usually around 60 degrees (Fig. 14a).
2. Three-step V-shaped cuts. Instead of two converging cuts, one could make a straight cut exactly at the sewing station point, perpendicular to the spine-fold of the gathering. Consequently, using that cut as a guide, two lateral converging cuts could be made, both meeting at the vertical cut (Fig. 14b). Using this method, one can easily control both the depth of the V-shaped cut as well as the consistency of the cut angle. There are a few examples of codices with knife cuts along the spine of their book blocks, which seem never to have been used and can be understood as simple cuts that for some reason were abandoned before being turned into V-shaped cuts (Fig. 13).[19] One example of this practice is evident in the gatherings of Los Angeles, The J. Paul Getty Museum, Ms. Ludwig II.5 (83.MB.69) (Diktyon 39946), where in most of the V-shaped cuts one can see a small vertical cut extending from the apex of the V.[20] Of course, in this case, three cuts rather than two are required for each opening, which somehow increases the amount of time and effort required.

The vertical cut could also be made in all the gatherings in one go with a knife while the book block was secured in a wooden press, spine facing up. In this case, it could be understood both as a marking for the sewing stations and the first step towards the opening of the V-shaped cuts.

19 Examples of this practice can be seen in the codex Athens, Ethnikē Bibliothēkē tēs Hellados, 67 (Diktyon 2363); Sinai, Monē tēs Hagias Aikaterinēs, Gr. 1218 (Diktyon 59593) (Fig. 13); and Oxford, Magdalen College, gr. 1 (Diktyon 48694). The latter contains Saint John Chrysostom, *Commentary on Gospel of John*, written on parchment in the eleventh century (I am grateful to Jane Eagan for the information provided).

20 I am grateful to Nancy Turner for putting this manuscript to my attention while at the Getty Research Institute.

Fig. 13: The spine of codex Sinai, Monē tēs Hagias Aikaterinēs, Gr. 1218. Besides the sewing recessed in the V-shaped openings, marking the three main sewing stations, two cuts that have never been used can be seen in all the gatherings between the change-over stations and main sewing stations.

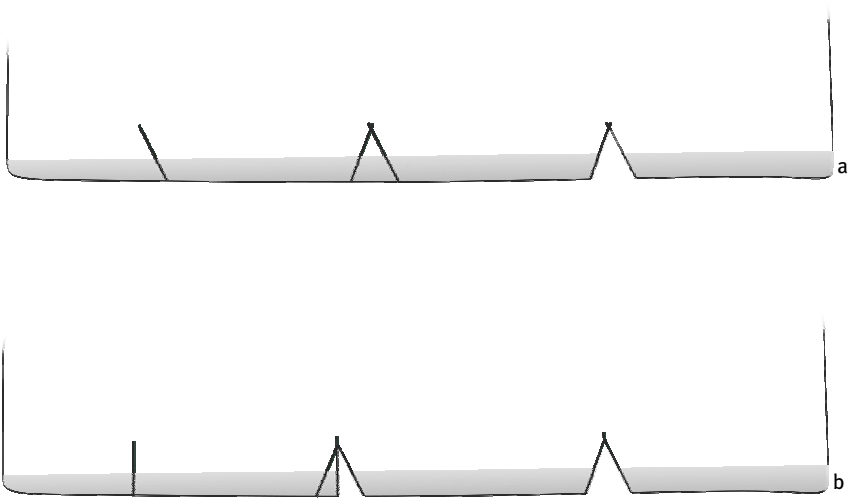


Fig. 14a–b: Two-step V-shaped openings (top) and three-step V-shaped openings (bottom).

In either case, the V-shaped cuts could have been opened on each gathering, either individually or, alternatively, in several gatherings simultaneously, perhaps while placed under weights. The perfectly aligned cuts in, for example, codex Sinai, Monē tēs Hagias Aikaterinēs, Ar. 314 are probably evidence of such a method (Fig. 15).

Fig. 15: The V-shaped cuts in one of the sewing stations in codex Sinai, Monē tēs Hagias Aikaterinēs, Ar. 314. The 'chains' formed by the sewing are recessed within the grooves created by these openings under the textile spine lining.

2.5 The actual sewing and its variations

Once the sewing stations were marked and the V-shaped openings cut, it was time to proceed with the actual sewing of the gatherings, which structurally is the single most important operation in the binding procedure.[21] Generally, the process could be started in either of two ways: one is to start the sewing from the board and continue with the gatherings in a single, continuous process; the other is to complete the sewing of the gatherings of a book block first, and subsequently to attach the boards on the already sewn book block.[22] In both cases, the sewing of the gatherings and their connection to the boards is greatly improved by the adhesion of the spine lining (which covers the spine and extends

21 On this, see Petherbridge 1991; Grosdidier de Matons and Hoffman 1998; and Szirmai 1999.
22 A third possibility, proposed by Federici and Houlis (1988, 25, fig. 17), is just conjectural, as neither the authors nor any other scholars offer a specific example.

to the outer face of the boards), the sewing of the endbands (which, as a rule, extend over the edges of the boards and are sewn onto them),[23] and the adhesion of the leather or textile cover.

Both sewing options mentioned above have a few variations, and it is often difficult to decide if one or the other has been used in a specific codex, unless the quality of the thread used for the sewing of the book block is clearly visible and different from that used to connect the boards to it. It is only in those instances when a book is undergoing conservation treatment – and there is both access to the details of the binding as well as time to notice and record them – that one has a greater chance to identify the exact sewing method used. In fact, the examples presented below are both from codices that were repaired by the author in the conservation studio.

2.5.1 Sewing the boards and the gatherings in the same process

In this technique, the sewing starts from one board and proceeds to the gatherings. There any many variations on this basic technique, which is exemplified here by the sewing of codex Veria, Dēmosia Kentrikē Bibliothēkē (Central Public Library), KB 9 (Politis 4) (Diktyon 9605) , a fourteenth-century lectionary written on paper, with a fifteenth-/sixteenth-century binding, shown in Fig. 16. In this example, the sewing starts with a stopping knot at point A. From there, and through diagonal channels opened through the board between the board attachment holes marked with an * and the spine edge of the board, the thread follows the route to point B (Fig. 16-I). The process is repeated in alternating directions to points C and E (Fig. 16-II through IV), where it continues into the centrefold of the first gathering, entering at point F (Fig. 16-V). From then on, the sewing thread exits from each of the sewing stations, drops down and loops around the board until the change-over stations at point G, at which point it enters the second gathering and the process is repeated in the opposite direction (Fig. 16-VI). At the end of the process, the inner face of the board bears no signs of threads, holes or channelling, while, in the outer face of the board, there is a groove connecting all board attachment holes parallel to the spine in which the sewing thread is recessed. These channels are subsequently covered

23 There are two exceptions within the broad category of Eastern Mediterranean bookbindings: the Islamic and Ethiopic bookbindings in which the endbands do not extend to and are not sewn through the boards.

with the extensions of the textile spine lining and the cover of the volume, thus usually leaving no sign of their presence in the completed binding.

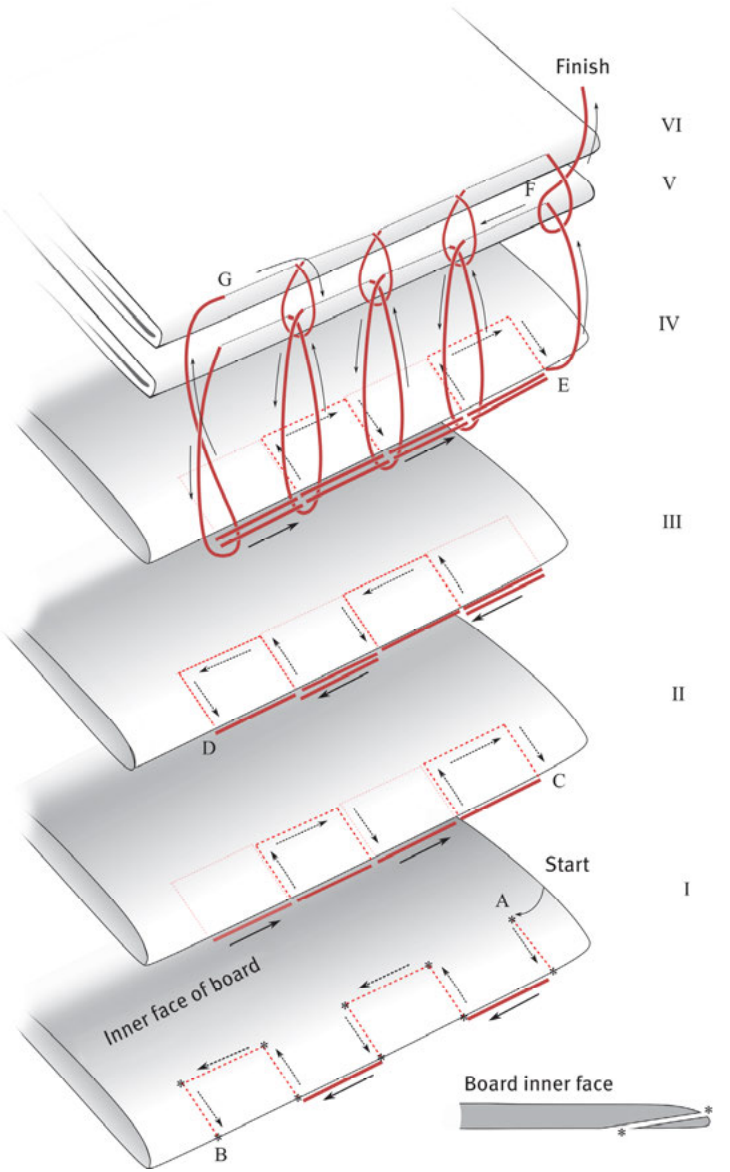


Fig. 16: The sewing of codex Veria, Dēmosia Kentrikē Bibliothēkē, KB 9.

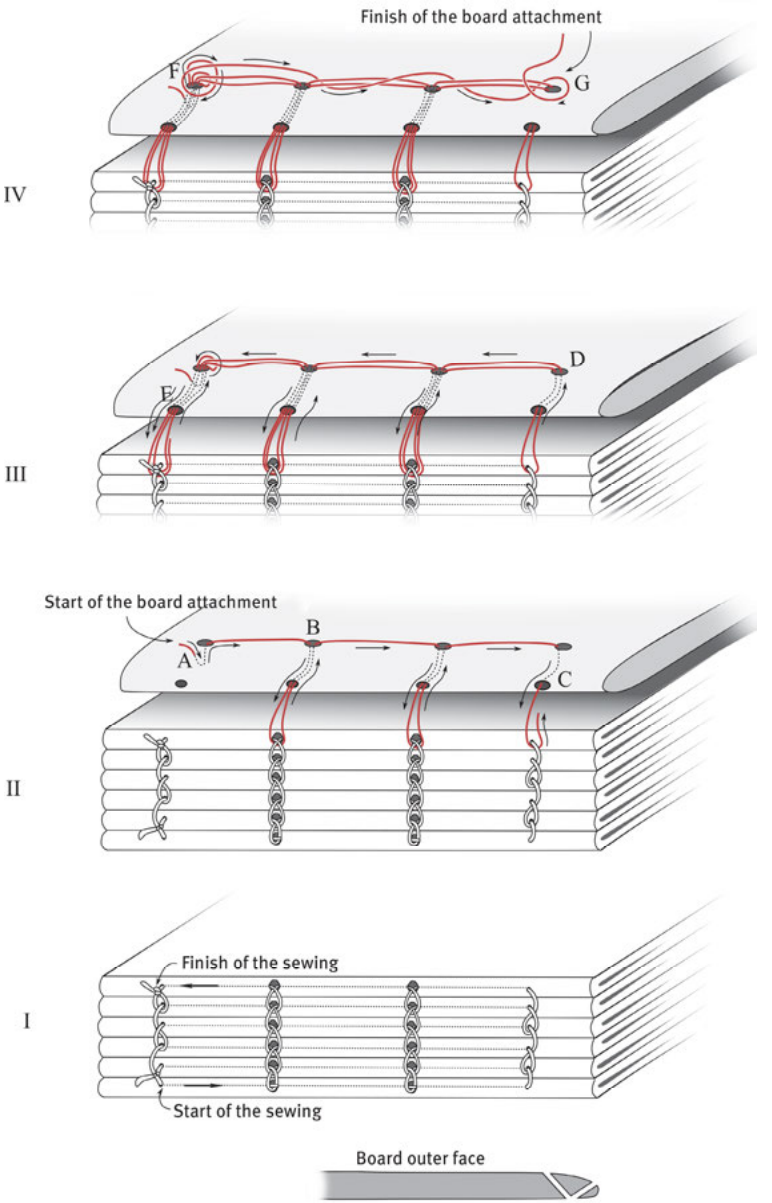


Fig. 17: The sewing of codex Thessaloniki, Aristoteleio Panepistēmion, Spoudastērion Philologikēs Scholēs, 47.

2.5.2 Sewing the book block and subsequently sewing the two boards on

In this technique, the gatherings of the book block are first sewn to form a completed book block and, subsequently, the two boards are attached to it in a different process using a different length of thread, usually of the same quality as the one used for the sewing of the book block, often making the identification of the technique very challenging if not impossible. There are also a few variations on this technique, mostly related to the pattern formed by the thread and the grooves opened to recess it into the surface of the boards. This technique is exemplified here by the Thessaloniki codex Aristoteleio Panepistēmion (Aristotle University), Spoudastērion Philologikēs Scholēs (College of Philological Studies), 47 (Diktyon 63284) [the collection of manuscripts in the Spoudastērion Philologikēs Scholēs is now in the Rare Books Department of the Aristotle University Central Library] (Fig. 17).

The process starts with the thread being passed from the outer face of the board to the inner face and blocked with a stopping knot at point A (Fig. 17-II). From there, it exits the outer face through V-shaped tunnels opened through the boards (see the cross-section of the board in Fig. 17-I), then moves to the next board attachment station in point B (Fig. 17-II), where it enters and exits through the V-shaped tunnel in order to loop around the sewing of the book block. It then re-enters the board and proceeds to the next board attachment station, repeating the process until point C, where it re-enters the board, exiting at D. From that point, the exact same process is repeated in the opposite direction, until the last board attachment station in point E (Fig. 17-III), where the thread loops to the change-over station of the book block and re-enters the same board attachment tunnel, exiting at point F (Fig. 17-IV). From there, the thread moves in the opposite direction, winding around itself until point G, where it is knotted. There are channels worked into the outer face of the wooden boards, between the board attachment holes, into which the thread is recessed so that once the boards are covered with the extensions of the textile spine lining and the cover, there is no sign of their presence.

In both these examples, the pattern formed parallel to the spine edge of the board by the thread route is a continuous ITTTTI, although it is equally common to have a continuous I\I\I\I pattern instead.[24]

24 See, for example, van Regemorter 1967, p. 20, fig. 7 and Szirmai 1999, 72, fig. 6.6.

2.6 Single- and double-sequence sewing

The sewing of the gatherings of a book block in the Byzantine bookbinding tradition could be done in one single go or two halves.

The simplest technique, and in fact the one that is typical in all bookbinding traditions of the codex book format, is the one that starts from one end of the book block and ends at the other: for example, from the first gathering to the last, or vice versa. This can be done in both of the ways described above, i.e. by starting and finishing the sewing to and from the boards, or simply by sewing the gatherings of a book block and subsequently attaching the boards to it. If the spine of the book block is visible, this sewing technique can be identified by the fact that the 'chains' formed in the process all point in the same direction, either >>>>>>>>>>>> or <<<<<<<<<<<<, according to the direction in which the gatherings were sewn together, considering that the pointed end of the 'chain' indicates the direction of sewing (Fig. 18).

Fig. 18: Single-sequence sewing in codex Sinai, Monē tēs Hagias Aikaterinēs, Gr. 34 (Diktyon 58409).

The other option is to sew the gatherings of a book block in two halves, a particular technique that is in fact very common in Byzantine bookbindings, but not in the other Eastern Mediterranean traditions, like Syriac, Arabic, Coptic etc. Nevertheless, in the Sinai library, there are examples of double-sequence sewn book blocks among the Arabic and the Syriac manuscripts, but these seem to be the product of the amalgamation of binding techniques reflecting the multicultural and multilingual environment of Sinai.

The first to identify double-sequence sewing was Petherbridge, in a paper delivered in 1983 and published in 1991.[25] The technique consists in sewing the gatherings of a book block in two halves, which at the end are connected with the sewing thread performing a sort of figure-eight, looping around the sewing stations of the two halves.[26] The thread is usually quite visible along the spine of the gatherings between the sewing stations as it moves from one sewing station to the other. Besides the thread, which connects the sewing stations at the point where the two halves are connected and which usually runs more or less parallel to the spine, the clearest sign of the use of this technique is the contrasting direction of the 'chains' formed in the process, in a configuration of contrasting angled brackets (Fig. 19):

>>>>>>> <<<<<<.

Fig. 19: Double-sequence sewing in codex Sinai, Monē tēs Hagias Aikaterinēs, Gr. 1205 (Diktyon 59580).

Remarkably, the same pattern is used as a decorative frieze in a marble panel from the thirteenth century, now at the Metropolitan Museum of Arts (Fig. 20). The only advantage of this technique seems to be the possibility to create the exact same rounding of the gatherings at the spine edge of the two boards, and therefore to create a consistent and symmetrical rounding of the spine of the bound codex without any hammering or other processes. This technique always seems to be employed together with the sewing of a book block that starts with

25 Petherbridge (1991, 398–399) called this *biaxial stitch disposition.*
26 See Szirmai 1999, 68, 69, fig. 6.4.

the boards (as in the example of codex Veria, Dēmosia Kentrikē Bibliothēkē, KB 9 above), as this in fact creates the symmetrical and consistent rounding in the spine.

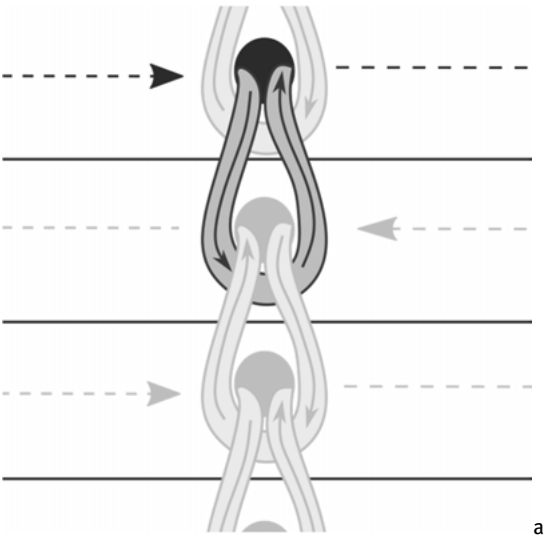
Fig. 20: Byzantine marble panel with a griffin, around 1250–1300, possibly made in Greece or the Balkans. New York, Metropolitan Museum of Art, accession number 2000.81; courtesy of the Metropolitan Museum of Art.

2.7 The different types of stitches

Unsupported sewing structures rely on a specific type of stitch that has variably been called a link-stitch or chain-stitch, but which, for reasons explained below, will here be called a linked-loop stitch. This stitch, and the technique by which it is applied in the sewing of books, is an adaptation of an ancient technique called cross-knit looping or nalbinding, used at least since Roman and Late Antiquity times to make everyday cloth items such as socks.[27] In all cases, the pointed end of the loop indicates the direction of the sewing. There are a few variations on this basic technique.

2.7.1 Open linked-loop stitch

This stitch consists in the looping of the sewing thread around the loops of the previous gathering sewing, as shown in Fig. 21a. It works better with simple needle holes in the sewing stations rather than V-shaped cuts, since the loop thus formed takes the width of the opening through which the thread passes: V-shaped cuts result in wide open loops, while needle holes result in tight open loops, which in fact work better. This type of unsupported stitch has not been described before, and so far has been identified only in Syriac bindings (Figs 21b and 21c).



a

27 See Boudalis 2018, 54–59.

b

c

Fig. 21a–c: Diagram of open linked-loop stitch (a), with two examples as recorded in codex Sinai, Monē tēs Hagias Aikaterinēs, Syr. 44 (b) and Manchester, John Rylands University Library, syr. 57 (c).

2.7.2 Crossed linked-loop stitch

This is the typical stitch used in unsupported sewn book structures, and can work equally well with sewing stations that are merely pierced or those opened with V-shaped cuts (Fig. 22c). Two options are possible, as shown in Figs 22a and 22b. In the former, called 'variation a', the thread exits from the sewing station opening (here shown as simple holes for clarity) – moving, say, from left

to right – drops, loops around the sewing in the previous gathering, climbs and enters the same sewing station opening by passing *above* itself (Fig. 22a). In 'variation b', the thread exits, loops around the previous gathering sewing, climbs and enters the same sewing station opening, but this time passing *under* itself (Fig. 22b). This second option creates a much more compact, tight and stable sewing, as the thread is somehow locked in place in the process. So far it has not been possible to identify the use of one or the other variation in any bound codex. The only way to be able to distinguish one variation from the other is to have visual access to the sewing in the spine of a book block and, most importantly, to know the direction of the sewing for a given gathering.

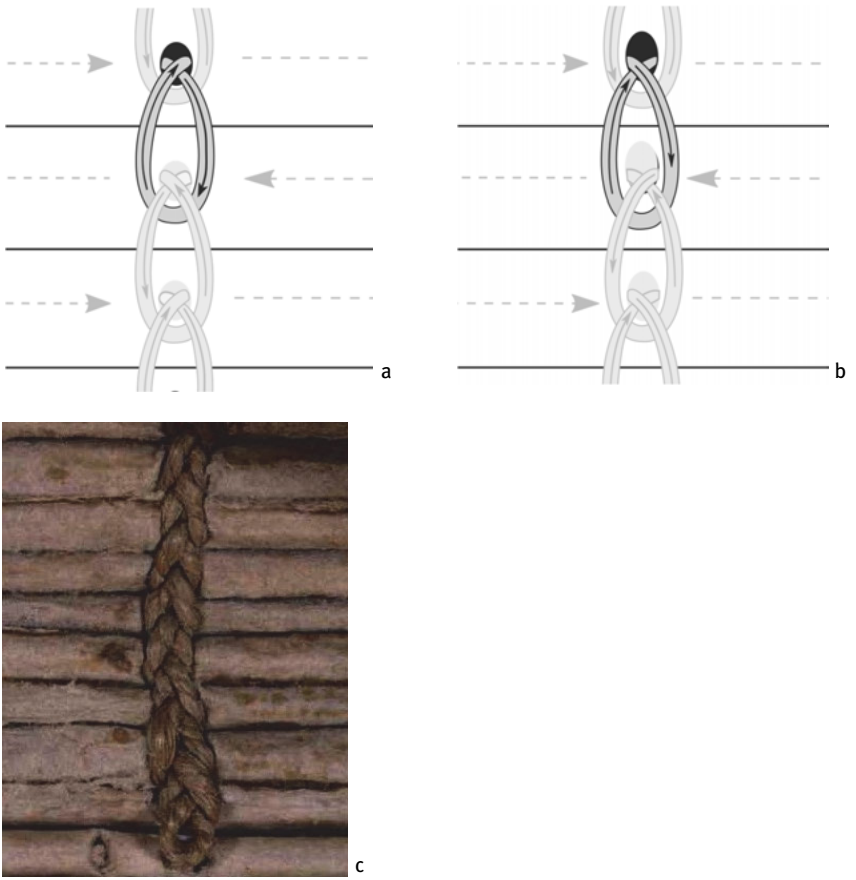


Fig. 22a–c: Diagrams of crossed linked-loop stitch: variation a (a), variation b (b), and an example as recorded in codex Sinai, Monē tēs Hagias Aikaterinēs, Gr. 824 (Diktyon 59199) (c).

2.7.3 Double-crossed linked-loop stitch

In this variation, the thread exits, loops around the previous gathering sewing, climbs and enters the same sewing station after crossing itself twice, as shown in Fig. 23. This is illustrated extensively in Theodore C. Petersen's book,[28] but the author provides no specific examples where he has identified this stitch, a fact rightly noted by Janos Szirmai.[29] The author of this article also knows of no specific example of this stitch, and therefore the question of whether it was actually ever used remains an open one.

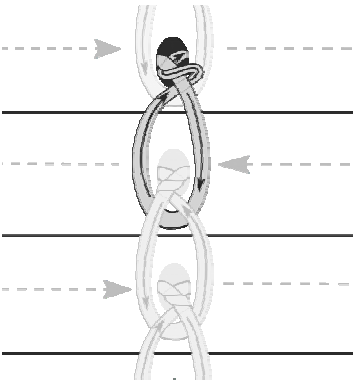


Fig. 23: Diagram of double-crossed linked-loop stitch.

The open linked-loop stitch is less bulky compared to the crossed linked-loop stitch, as in the latter, the crossing of the thread indeed doubles the thickness of the 'chains' formed in the process. For the same reason, the double-crossed linked-loop stitch is bulkier than the crossed linked-loop stitch. The thickness of the resulting 'chains' further increases with the use of the extended linked-loop stitch, i.e. linked-loop stitches that loop around the sewing of the penultimate gathering (Fig. 24) or the one before.[30] As the sewing on these bindings is often done with rather thick hemp or linen threads, the resulting 'chains' can be ra-

28 Petersen 2021, figs 12a–b, 13a–b, 14a–b, 15, 16a–b, 17.

29 Szirmai 1999, 16–17, 33, fig. 2.1.β.

30 Szirmai 1999, 16–17, fig. 2.1.a, c, d. Here they are called two-step, three-step etc. link-stitches.

ther thick, and therefore the presence of V-shaped cuts in the sewing stations allows them to be recessed and the spine of the book to remain smooth.[31]

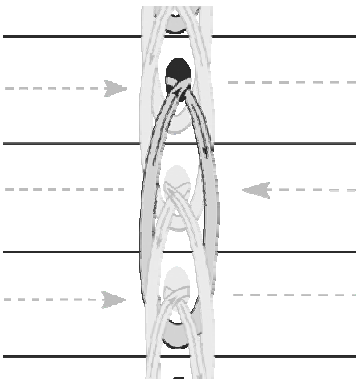


Fig. 24: Diagram of two-step linked-loop stitch.

There are also a few variations in the sewing at the change-over stations, where the thread passes from one gathering to the next.

2.7.4 Bridge

This describes the movement of the thread from one gathering to the next at the change-over station with no looping or linking of any sort (Figs 25 and 26a). This results in a somewhat weaker structure at the two ends of the book block, as the total number of connecting points between the gatherings at the change-over stations is divided between the two ends of the book block.

31 Of course, in Islamic bindings, the use of thin silk threads results in very thin 'chains', which therefore need not be recessed in order for the spine of the book to remain smooth.

Fig. 25: Bridge sewing in the change-over stations in codex Sinai, Monē tēs Hagias Aikaterinēs, Gr. 824 (Diktyon 59199).

2.7.5 Linked loops towards the inside

This describes the movement of the sewing thread at the change-over station where the thread exits, drops down to the sewing of the previous gathering, loops around it and, passing under itself, climbs towards the book block (Fig. 26b).[32]

2.7.6 Linked loops towards the outside

This describes the movement of the sewing thread at the change-over station where the thread exits, drops down to the sewing of the previous gathering, loops around it and, passing under itself, climbs away from the book block, towards the edge (Fig. 26c).

There is also the possibility to have the thread pass not under but above itself, though this creates a much looser link between the gatherings, as it lacks

32 This is what Spitzmueller 1982–1983, 44, fig. 4 describes as 'to-the-inside'.

the self-blocking of the thread that occurs when it passes under itself. This might be an extra hint that variation b of the crossed linked-loop stitch described above is probably more sensible than variation a.

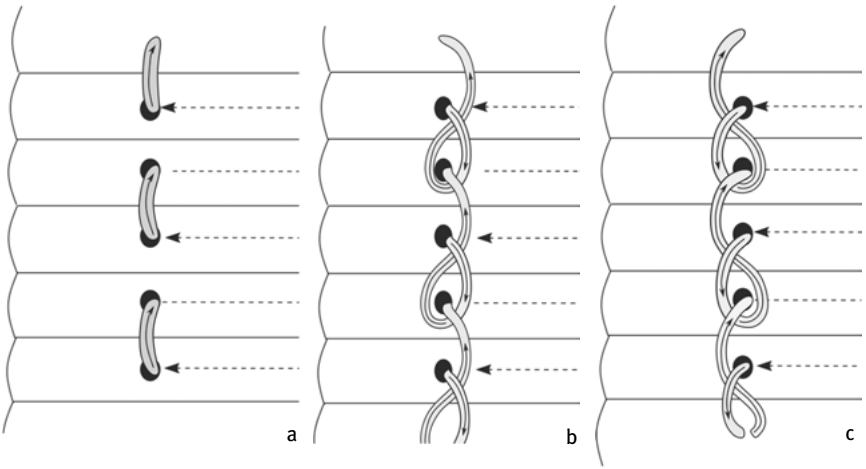


Fig. 26a–c: Bridge sewing (a), linked loops towards the inside (b), and linked loops towards the outside (c).

As a rule, the thread used was either hemp or linen, occasionally surprisingly thick. Unless the number and/or dimensions of the gatherings were small, multiple lengths of thread were used in order to sew all the gatherings in a single book block. Once one thread length was used, another one was added by knotting it to the first. Such knots are occasionally found in the centrefold and rarely the spine of gatherings (see below). Although the thread compressed between the gatherings sometimes looks like it was waxed, there is so far no unambiguous example of the waxing of the sewing thread known to the author.

In practical terms, a curved needle works particularly well for the sewing of the gatherings. We have no direct evidence of the use of such curved needles save for the miniature of Saint Luke on fol. 3^{r} of codex Saint Petersburg, Rossijskaja Nacional'naja biblioteka, F.I.591, written in Serbia in 1429. In the miniature the curved needle is shown among other tools, as well as what may be understood as a straight needle (Fig. 27). The inclusion of needles among the scribe's other tools may also indicate its use in the tacketing of the folios of gatherings, as described above. A thin, straight and rusted needle has been found secured inside the textile board lining of codex Sinai, Monē tēs Hagias

Aikaterinēs, Gr. 1244 (Diktyon 59619), but there is no way to know if this was actually used for sewing the gatherings of the book block or, rather, if it was secured in the textile as a means to prevent its loss. The needle is in fact rather thin to use for the sewing of the codex, although this possibility cannot be excluded. We should also mention here the small sewing needle used to sew the gatherings of codex Paris, Bibliothèque nationale de France, gr. 550 (Diktyon 50126), as mentioned in the rebinding note on fol. 1[r][33] as well as the note on a letter written by monk Frange in Egypt around the seventh to eighth century.[34]

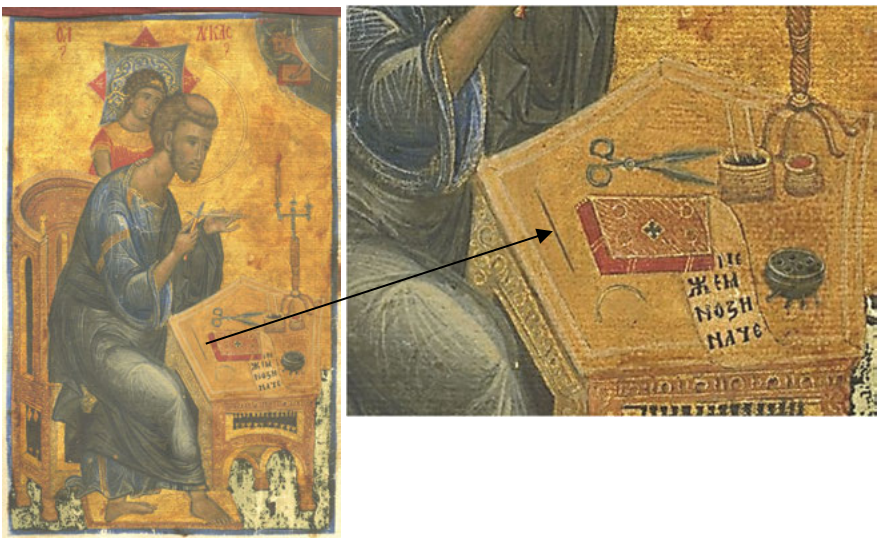


Fig. 27: Saint Luke, fol. 3[r] of codex Saint Petersburg, Rossijskaja Nacional'naja biblioteka, F.I.591; photo from https://nlr.ru/manuscripts/RA1527/elektronnyiy-katalog?ab=8168AAF3-FC6A-4032-9860-8EF24AFBB162 (accessed on 6 February 2023).

33 A 'corrected' version of the note is transcribed in D'Aiuto 1997, 11, n. 19. The note includes some quite intriguing phrases, like τριμαλιάς ραφίδος, which obviously refers to the sewing needle used to sew the gatherings. The word τριμαλιάς is, by all evidence, an incorrect version of τρυμαλιάς (and not a *hapax*, as asserted by Bianconi 2018, 92), referring to either the needle holes or the sewing holes of the gathering. The very words τριμαλιάς ραφίδος allude to the metaphor in the Gospel of Mark in which a rich man's entrance to paradise is compared to a thread passing through the eye of a needle. This note requires further investigation. I am grateful to Elias Tsolakopoulos for clarifying this passage and explaining the reference to the Gospel of Mark.

34 Thebes, Ostracon inv. no. 292238 in Boud'hors 2008, 158, fig. 4. Also mentioned in Boudalis 2018, 49.

One last thing that should be noted here is that in the sewing process, the parchment at the V-shaped openings is sometimes folded by the sewing thread itself, a feature that may allow one to identify the direction of sewing, which in turn may allow for the identification of version a or b of the crossed linked-loop stitch described above (Fig. 28).

Fig. 28: Veria, Dēmosia Kentrikē Bibliothēkē, KB 7 (Diktyon 9603), showing the folding of the parchment, which indicates the direction of the sewing.

2.8 Knots

The knots used to connect two sewing threads together (also referred to as bends)[35] can usually be found in the centrefold of gatherings (Fig. 29), and occasionally also along the spine, although there the presence of adhesive can make identifying the type of knot quite difficult. So far, no attention has been paid to knot types, at least in Byzantine and related bindings, but the few examples recorded by the author indicate that the possibilities were much greater than we would have suspected. Often a knot needs to be totally or partially undone in order to be recorded and subsequently identified, and for these reasons, the ideal conditions for recording them occur when a book block is undergoing conservation. Even if it is not possible to identify their type, the place of the

35 See Ashley 1993, 257–273.

knots should be recorded and, in the case of the resewing and rebinding of a codex, the sewing threads of the original sewing should of course be preserved.

In Fig. 30, eight different knots are shown as recorded in Byzantine bindings. More specifically, a stopper knot was recorded in codex Sinai, Monē tēs Hagias Aikaterinēs, Ar. NF (Fig. 30a); a square knot in codex Thessaloniki, Aristoteleio Panepistēmio, Spoudastērion Philologikēs Scholēs, 81 (Diktyon 63318) and codex Sinai, Monē tēs Hagias Aikaterinēs, Gr. 1122 (Diktyon 59497), in both cases used for the endband tiedowns (Fig. 30b); an unidentified knot in codex Veria, Dēmosia Kentrikē Bibliothēkē, KB 4 (Diktyon 9609) (Fig. 30c); a weaver's knot in codex Athens, Ethnikē Bibliothēkē tēs Hellados (National Library of Greece), 2106 (Diktyon 4138), rebound before 1430 (Fig. 30d); two similar sheet bends in codex Veria, Dēmosia Kentrikē Bibliothēkē, KB 4 (Figs 30e and 30f, the latter much more stable and effective than the former); an unidentified knot in codex Thessaloniki, Mouseio Byzantinou Politismou (Museum of Byzantine Culture), 26 (Diktyon 75180) (Fig. 30g) and a half knot in codex Veria, Dēmosia Kentrikē Bibliothēkē, KB 10 (Diktyon 9606), written in 1511, in its original binding (Fig. 30h).

Fig. 29: Veria, Dēmosia Kentrikē Bibliothēkē, KB 10.

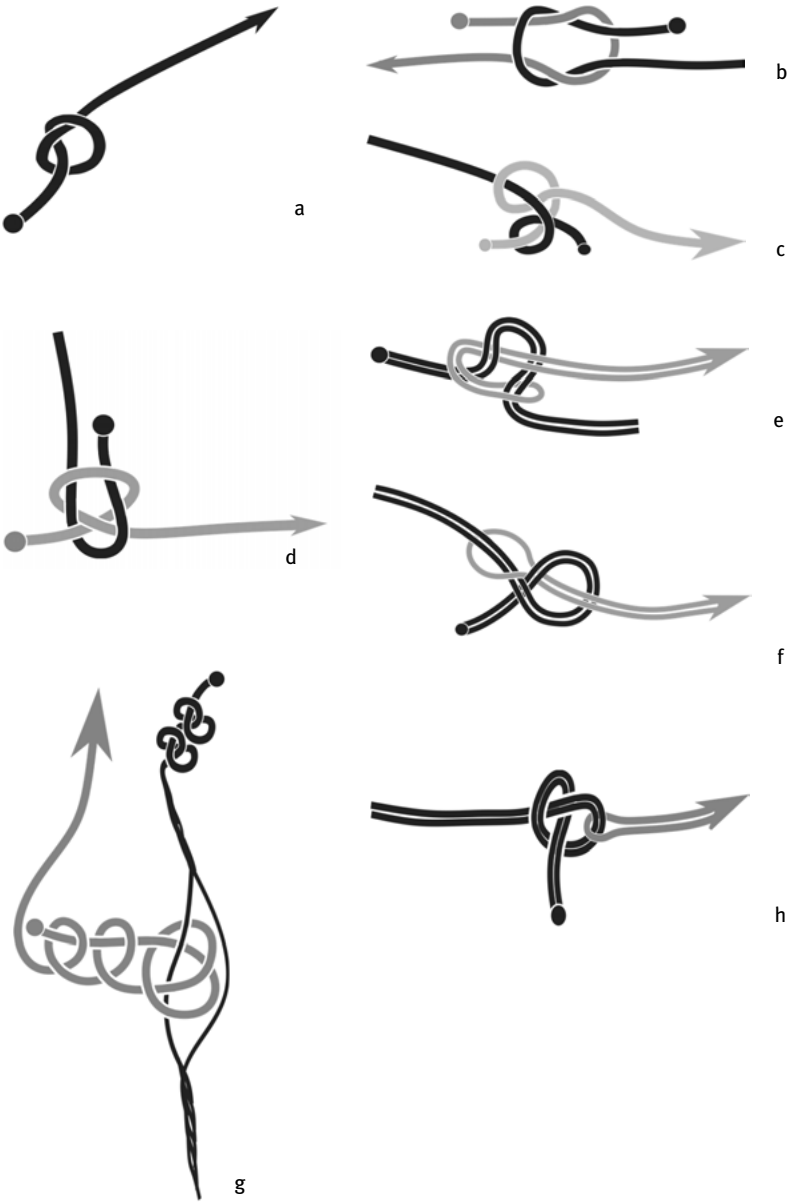


Fig. 30a–h: Eight different knots from Byzantine bindings; a dot indicates the inactive end of the thread/s and an arrow the active one.

2.9 Rounding of the spine

No evidence of the use of a hammer for the rounding of the book block spine has ever been found on any Byzantine or related binding. The natural rounding of the spine and the bending of the gatherings around the spine edge of the boards, as can be seen in many bindings, is usually the result of sewing the gatherings with the boards in one process, using the double-sequence sewing described above. Although one should be cautious about identifying the use of double-sequence sewing without having visual access to the spine of a codex, the presence of the same bending of the outermost gatherings around the spine edge of the two boards of a book should normally indicate the sewing of the book block in two halves.

Occasionally it is possible to find evidence of the flattening of the gatherings' spine – once these were sewn together into a book block – using some hard tool, for example a bone folder. In parchment manuscripts (Fig. 31), especially when thick parchment was used, this process would probably require some moisture, so it was perhaps done after the adhesive to attach the spine lining was applied. The flattening of the spinefolds of the gatherings was easier to make in paper manuscripts, where in fact it is more commonly encountered (Fig. 32).

Fig. 31: Sinai, Monē tēs Hagias Aikaterinēs, Gr. 33 (Diktyon 58408).

Fig. 32: Sinai, Monē tēs Hagias Aikaterinēs, Gr. 1205 (Diktyon 59580).

3 Terminology

The aim of this section is to elaborate on the various terms used to designate and describe the unsupported sewing technique used in Byzantine and related bindings, and to draw attention to the complexities of the issue itself, as different scholars and different professionals use different words and terms to describe the same things and techniques.

Let us start by saying that all terms are to an extent conventional, and they can work perfectly well as long as the people who use them agree on their meaning. So even if one term – for example, 'loop' – may describe the stitch used in unsupported sewing more accurately than the term 'link', both terms can work perfectly well in the context of an agreement between the people using them. Nevertheless, here I shall propose a few new terms for the following reasons:

1. They are consistent with terms used in textile terminology, and thus they support and work towards an integrated terminology between books and textiles whenever this is possible.

2. They are more accurate in structural terms.
3. They enrich and broaden our pool of terms, and therefore allow for a more nuanced description of the sewing of book blocks.

The most consistent attempt to describe the process and terminology of sewing in bookbindings can be found in an article by Pamela Spitzmueller.[36] The author conceives of the sewing of a book block in three levels: the sewing stitch ('the action of sewing as the sequential combination of a limited number of distinct motions';[37] in other words, the sewing process); the sewing pattern ('the built-up design of the sewing thread as it unites the sections into a text block');[38] and finally, the sewing structure (i.e. essentially supported or unsupported). Spitzmueller's vocabulary to describe the sewing of a book block comprises fourteen terms, of which about half are relevant for the unsupported sewing structures discussed here.

In Spitzmueller's terminology, the term 'sewing stitch' can indicate both the process as well as the particular type of stitch used, such as overcasting, running stitch, backstitch, link-stitch and chain-stitch, to limit ourselves specifically to those used in bookbinding. To avoid confusion, I shall use the phrase 'sewing process' to describe exactly this (therefore not using stitch as a verb), and reserve the term 'sewing stitch' for the specific types of stitches used.

When dealing with unsupported sewing structures, the type of stitch used has been variably described as a chain-stitch, link-stitch and recently as a loop stitch. Let us look more closely at these terms.

3.1 Chain-stitch

The term 'chain-stitch' has a rather long history in bookbinding literature and in languages other than English.[39] The term's use derives from the visual similarity between the built-up pattern of the consecutive stitches along the sewing stations in the spine of a book block and metal chains. In fact, Spitzmueller calls this a chain or link pattern.[40]

36 Spitzmueller 1982–1983, 44–46.
37 Spitzmueller 1982–1983, 45.
38 Spitzmueller 1982–1983, 45.
39 In German, it is called *Kettenstich*; French, *couture à chaînette*; Greek, ραφή τύπου αλυσίδας; Italian, *cucitura a catenella* and Spanish, *cadeneta*.
40 Spitzmueller 1982–1983, 45.

The *Language of Bindings Thesaurus* (hereafter *LOB*) defines a chain-stitch as follows:

> A type of unsupported sewing in which the sewing thread, as it emerges from an individual sewing station, is taken down and round the thread emerging from the same station in the previous gathering(s), forming linked chains of thread across the spine. Chain-stitch can be found on both supported and unsupported structures.[41]

In the *LOB*, 'link-stitch' and 'link-stitch' are proposed as alternative terms.

A chain-stitch is a common stitch in embroidery, where it consists of a sequence of loops linked together on the vertical axis, as shown in Fig. 33.[42] As explained elsewhere,

> Chain-stitch [...] does provide some visual similarity to the actual sewing technique used for the codices we are considering here, but the similarity is only superficial and visual, not structural or functional. As a rule, chain-stitch is used on already made fabric, and its purpose is decorative rather than structural, to embellish rather than create a fabric.[43]

Similarly, the 'chain' in nalbinding (Fig. 34),[44] sinnets[45] and crochet (Fig. 35) consists of a series of loops linked together on the vertical axis, although unlike in embroidery, here the process actually creates a fabric rather than just embellishing it. Again, the similarity between the chains in these techniques and the stitch used in the sewing of codices is only visual, not structural.[46] Chains are also very common in jewellery, and some of them are visually very close to the sewing we consider here, especially the wheat or spiga chain and the fox-tail chain (Fig. 36).[47]

The visual (and only to some extent structural) similarities between these different 'chains' are sometimes striking, and in fact it was these visual similarities that led to the author's research in textiles as the ultimate source of the sewing technique used in unsupported sewing structures.

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41 https://www.ligatus.org.uk/lob/concept/1249 (accessed on 10 December 2022).

42 On chain-stitch, see also https://trc-leiden.nl/trc-needles/techniques/embroidery/embroidery-stitches/chain-stitch. See also https://trc-leiden.nl/trc-needles/techniques/embroidery/embroidery-stitches/twisted-chain-stitch (accessed on 10 December 2022).

43 Boudalis 2018, 53.

44 See Claßen-Büttner 2015, 12–16. See also Hald 1980, 292.

45 See Ashley 1993, 471–473.

46 See also https://trc-leiden.nl/trc-needles/techniques/looping/chain (accessed on 10 December 2022).

47 On chains and their terminology, see e.g. https://thechainhut.co.uk/necklace-chain-style-type-guide (accessed on 10 December 2022).

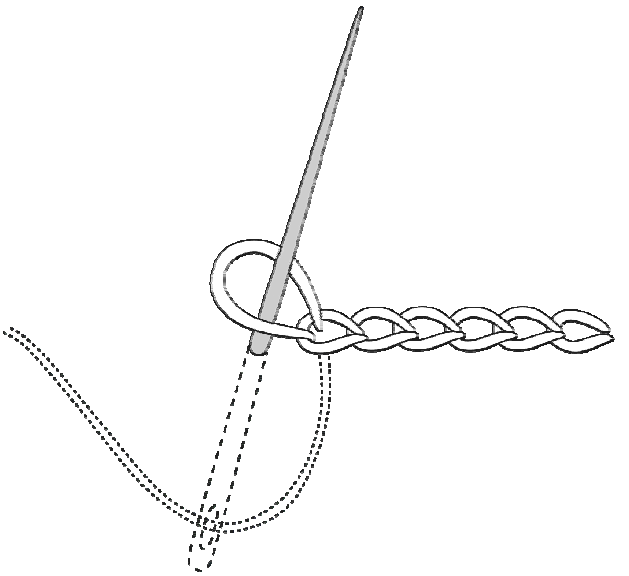

Fig. 33: Chain-stitch in embroidery.

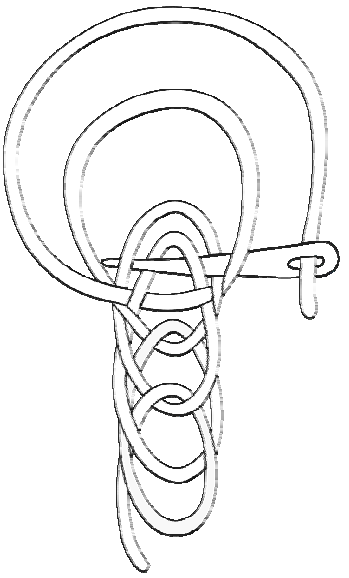

Fig. 34: Chain-stitch in nalbinding. Drawing adapted from Hald 1980, fig. 326.

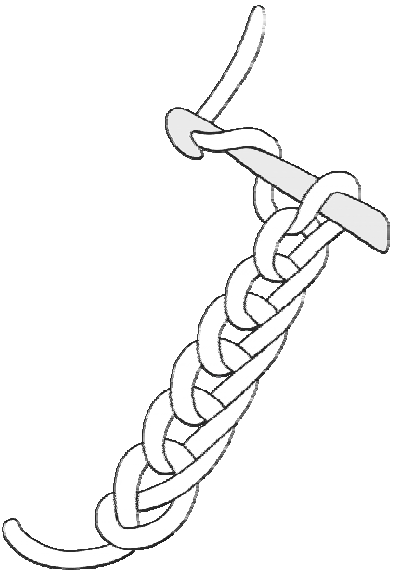

Fig. 35: Chain-stitch in crochet. Drawing adapted from https://trc-leiden.nl/trc-needles/techniques/looping/chain.

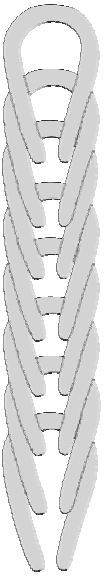

Fig. 36: Metal fox-tail chain. Drawing adapted from https://www.cgtrader.com/3d-print-models/jewelry/necklaces/double-loop-in-loop-chain.

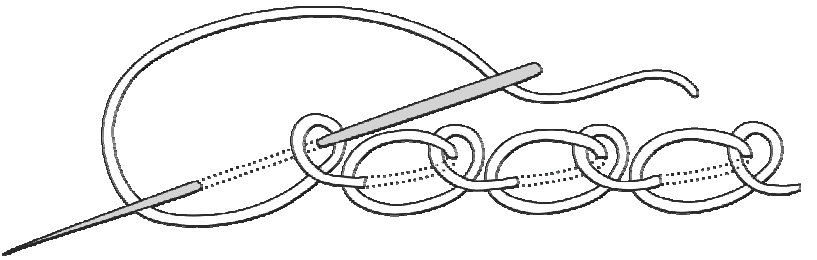

Fig. 37: Drawing showing what, in textile terminology, is called a link-stitch. Based on https://www.needlenthread.com/2013/08/stitch-fun-knotted-chain-stitch.html.

3.2 Link-stitch

Spitzmueller uses the term 'link' or 'linking' to describe the situation in which one thread catches another thread (although, in unsupported sewing, this other thread is in fact the same thread, only used in the previous gathering/s) before continuing in the sewing process. Her definition is broad and applies to all types of sewing stitches in which one thread passes under another thread exiting from another gathering (see her drawings in Figs 1–2 in her article, all three showing different types of stitches), and quite significantly, she does not use the term 'link-stitch'.

In the *LOB*, 'link-stitch' or 'link-stitch' is used as a synonymous or alternative term for 'chain-stitch'. Instead, the term 'linking' describes a completely different technique.[48]

The link-stitch as described by the Textile Research Centre is a different stitch still, similar to a chain-stitch.[49] More specifically, in textile terminology, a

48 'A technique in which a length of thread is wound across the spine of the book a) around the individual tiedowns or groups of tiedowns of an endband or b) the sets of thread of a long-stitch binding after the sewing was completed. It could be done with the end of the thread with which an endband was sewn, either just below the core or at the point where the tiedowns emerge from the spine, often at the height of the changeover station. Linking stitches on long-stitch sets can be found at one or both ends of each set, but only one end of one set can be sewn with the thread used to sew the book. The other, or often both, linking stitches will be sewn in a variety of styles with separate lengths of thread'. See *LOB*, *s.v.* 'linking stitch': https://www.ligatus.org.uk/lob/search?search_api_fulltext=Linking (accessed on 10 December 2022).

link-stitch, like a chain-stitch, is an embellishment stitch, i.e. it is used to decorate a fabric. In textile terminology, linking is related to single element structures, i.e. structures produced by a single continuous thread, in fact like the sewing structure of a codex.[50]

3.3 Linked-loop stitch

Due to the fact that the sewing in the main sewing stations of these bindings essentially consists of loops around other loops,[51] I have previously proposed that we use the term 'loop stitch' to describe the specific sewing stitch used for unsupported sewing structures.[52] The reason behind this is, first, the fact that 'link-stitch' is a broad term that does not accurately describe the stitch used in these bindings, and also because this and 'chain-stitch' have a different meaning and function (decorative rather than structural) in textile technology and terminology. Furthermore, as has been previously explained, the sewing technique used in unsupported sewing structures is an adaptation of a so-called looping technique, as it is based precisely on the construction of a fabric by loops looped around other loops, or in other words, by linked loops both on the horizontal and vertical axes (Fig. 38).

Considering the above, a sensible and a more accurate alternative for the terms 'chain-stitch' and 'link-stitch', as they have been applied in bookbinding terminology, could be the term 'linked-loop stitch'.

49 'A link stitch is a composite stitch used to create a decorative line. It consists of chain-stitches that are worked as a knot, and linked to the next chain-stitch with a simple straight stitch. The link stitch is also known as a knotted chain-stitch'. See https://trc-leiden.nl/trc-needles/techniques/embroidery/embroidery-stitches/link-stitch (accessed on 10 December 2022).

50 On linking, see also Seiler-Baldinger 1994, 7–9.

51 This is how Emery (1994, 45) defines the use of the word 'loop': 'It is generally agreed that the word loop suggests the curved enclosing boundary of a space, and the idea of looping something over or round something else so that a loose fastening is formed'.

52 See Boudalis 2018, 52.

Fig. 38: A composite image showing (in the background) the 'chains' of a sock made with cross-knit looping, and (in the foreground) those formed in the unsupported sewing of codex gatherings, manipulated in Photoshop to show them as closely spaced.

4 Discussion and conclusions

Despite the fact we now have a much clearer understanding of the technology and variations of the unsupported sewing structures of codices, there are still things that have thus far escaped our attention and understanding. One example is the different types of knots used in the sewing process. It is also important to be prepared to observe and identify techniques and variations that have not been recorded before, as in the example of the open linked-loop stitch recorded in Syriac bindings. To this end, the role of book conservators is of primary importance, as it is usually only in cases in which bound codices undergo conservation treatment that such technical details can be studied and recorded. Besides the conservation of codices themselves, this is in fact one of the positive side effects of bench work, and book conservators should be prepared to be able to observe, understand, and record such details.

The terminology we use for bookbinding processes such as the sewing of a book block should evolve and follow the evolution of our understanding and knowledge of the subject. In the specific case of the sewing of the gatherings of a codex into a book block, and following its close relation to fabric-making techniques, I believe that we should try to adopt and adapt the terms used in textile terminology, especially given the fact that research in this field is older, wider and richer than research in bookbinding techniques.

Acknowledgements

I am grateful to the organizers of the conference and the editors of this volume containing the papers presented there. Furthermore, I am grateful to Alexandra Gillespie, Elina Dobrynina, and Elias Tsolakopoulos, as well as the librarians of the various book collections consulted in the course of my research. Last but not least, a heartfelt thank you to Archbishop Damianos, the librarian Father Justin and all the fathers of Saint Catherine's Monastery in Sinai, who preserve and make the unparalleled collection of this library accessible to scholars.

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Karin Scheper

Bindings, Bags and Boxes: Sewn and Unsewn Manuscript Formats in the Islamic World

Abstract: This paper offers an overview of the most important varieties of the different techniques used in the Islamic world to *keep things together*. The codicology of manuscripts in Arabic script has been studied in depth in recent years,[1] and the archetypal book structure has been described in detail.[2] Certain variants of the predominant manuscript structure, however, are less well known. These specific types are susceptible to loss when they are not sufficiently understood or recognised. This paper, therefore, focuses on structures and practices that are less common, such as the cohesive structure that does not involve sewing which might have had only a temporary function. The paper also addresses repair techniques and codicological characteristics that are not yet explained fully. In addition, it includes manuscript enclosures: slipcases, satchels, bags and other containers, that were used to keep texts together. These appurtenant items are often overlooked in book-historical studies, and indeed, in library collections and catalogues. However, to understand the *codicological unit*, these objects deserve to be included.

1 The protective outer shell

The outpouring of manuscript production in the Islamic world is phenomenal, with the manuscript period spanning more than thirteen centuries and a vast geographic area.[3] The wide range of different text carriers and codex formats in this manuscript culture is, therefore, not surprising. Because of the early adoption of the art of papermaking, the bulk of manuscript production is found in that medium, and the codex format became the predominant form. Paper was of course preceded by epigraphy and papyrus and parchment. Substrates such as

1 Déroche 2000 and 2006.

2 Scheper 2011 and 2018.

3 The term 'Islamic world' refers to countries which are or were Muslim-dominated. The outer borders of the Islamic world have changed significantly over time, and the Islamic world has always included various cultures.

https://doi.org/10.1515/9783111292069-005

textile, bark fibres, and wood were also used. The properties and character of such different materials influenced the manuscript formats, and the development and usage of scrolls, codices consisting of folded sheets grouped in gatherings, concertina-shaped manuscripts, and loose-leaf volumes is partly related to the material characteristics. A manuscript tradition is also shaped by neighbouring manuscript cultures through an exchange of goods and travelling craftsmen. In addition, practical matters, such as the availability of materials, the use of region-specific resources, technological developments, economy, fashion, and the social context of production, affected the final product.

The bindings of manuscripts served to protect the contents regardless of the aesthetic appearance, and because of that function, the covers of a codex suffered directly from mechanical damage and unfavourable conditions. The accumulated damage to the binding often led to its replacement. This is part of book history, yet, it hampers our studies of bookmaking traditions across cultures; the older the book, the greater the chance that its original covers have not survived. Historic manufacturers and users of bound books were evidently also aware of the impact of mechanical damage, as they took precautions in the form of additional housing to protect the whole entity: manuscript *and* binding. This indicates that the craftsmen and owners recognised the value of a sound binding, which provided the structure that kept the gatherings in place and, thus, was key to the usability of the manuscript. In certain cases, enclosures have been applied to protect particularly beautiful bindings, but in numerous instances, it is clear that the binding inside an enclosure is nothing special, certainly not spectacular, nor extremely frail. Such evidence shows that people have been protective of their bound manuscript regardless of the level of decoration and aesthetics of the materials chosen for the covers, which implies that the vital function of a sound structure was understood.

Looking at Islamic manuscript and bookbinding practices, several types of protective enclosures can be identified that were used to further protect the bound manuscripts, such as bags, satchels, pouches, and slipcases (see Fig.1). Documentary sources may be scarce, but pictorial evidence in medieval manuscript paintings, and later in historic photographs, also sheds light on the variety of enclosures that were used.[4] This, together with surviving items, suggests a development in form and material over the centuries that will be discussed below. Since these enclosures served to protect the manuscript(s) inside, they

4 Wooden boxes or chests could be used for storage, especially of Qur'ans, see Gacek 2009, 254–255. Representations in manuscript paintings of other enclosures are discussed in more detail below.

were also prone to wear and tear. Damage could be caused by the environment and transportation, while mechanical damage could also occur when the bound volume needed to be retrieved from its container. This explains their scant survival. Despite the fact that enclosures as artefacts in their own right provide additional information to the book historian and manuscript scholar, these objects have received little attention. Not only are they under-studied – they are also under-represented in catalogues, and often not digitised together with their associated manuscript. These circumstances make the study of these items even more difficult. A preliminary overview of what types were made and how they were used follows below. Yet, we first need to consider the physical properties of the items they contain in order to understand the rationale behind the different enclosures.

Fig. 1: A variety of enclosures: UBL, Or. 2275, an indigo blue bag for an Acehnese manuscript, before 1877; UBL, Or. 23.461, a leather satchel, early nineteenth century, with its associated loose-leaf manuscript in a leather wrapper, sub-Saharan Africa; UBL, Or. 25.428, a textile and leather satchel, manuscript dated 1187 AH / 1773 CE; UBL, Or. 1335, a silk pouch, manuscript dated 1226 AH / 1811 CE, Maghreb; UBL, Or. 2551, a slipcase, the manuscript it contains dates to 872 AH / 1468 CE, the slipcase is probably from the nineteenth century.

2 The early development of a predominant structure

The advantage of studying developments in bookbinding techniques and sewing structures from a technical point of view is that we stay close to the reasoning of the craftsmen. Bookbinders had a range of options to choose from, depending on when, where, and from whom they had learned the trade (that is, in which cultural tradition), and choices depended on a combination of economical and practical matters. They included factors such as context, for example, whether a book was destined for a public library or private use. Bookbinders will have consciously opted for a certain structure and materials to go with a specific manuscript, even if the decision was made routinely. Understanding the rationale behind the bookbinder's practice helps to analyse the manuscript as a physical object.

The predominant type in the Islamic world, that probably developed over the tenth or eleventh century, has several characteristic features.[5] The making of the codex starts with a stack of gatherings that is sewn together with an unsupported link-stitch, usually on two stations. The text block spine is then lined with a piece of textile or leather; this spine lining runs the full length of the spine and extends on both sides of the joints. The extending sides (or so-called flanges) are usually pasted onto the inside of the boards at a later stage of the process. The third component, which completes the basic sewing structure, is the endband, sewn at head and tail. The endband tiedowns are sewn over a leather core and through the centre of each gathering.[6] They are, therefore, an important element in the structure, as they provide a connection between the lining material and each gathering, close to the head and tail of the spine where stability and cohesion is crucial. The secondary endband, with a decorative pattern, gives a little further coherence (see Figs 2a–c).

This structure is the basis of most text blocks, while the composition of the binding, the materials for the boards and covering, and the level of embellishment may vary. We may notice the effects of the wishes of the commissioner,

5 Parchment was the predominant substrate in the first centuries of Islamic bookmaking, and these text blocks had a slightly different structure, and may have had either loose wooden boards or a so-called box-binding. See Déroche 2006, 261–262; and Di Bella 2011.

6 Not all endband cores consist of a leather core. We see variations including vegetal material and strips of cloth, especially in South-East Asia. See Scheper 2018, 356–359; and Scheper 2019, 370–371.

the function that the book would have, and/or the fashion of the time from these additional binding components. Given the consistency in the Islamic bookmaking tradition, it is important to pay attention when bookbinders deviated from convention and bound manuscripts using divergent techniques. This signifies different circumstances.

Fig. 2a: UBL, Or. 850, an archetypal construction and binding, 1067 AH / 1657 CE.

Fig. 2b: UBL, Or. 849, an archetypal sewing structure with link-stitch sewing thread in the centre, and the endband tiedowns at head and tail, 1068 AH / 1658 CE.

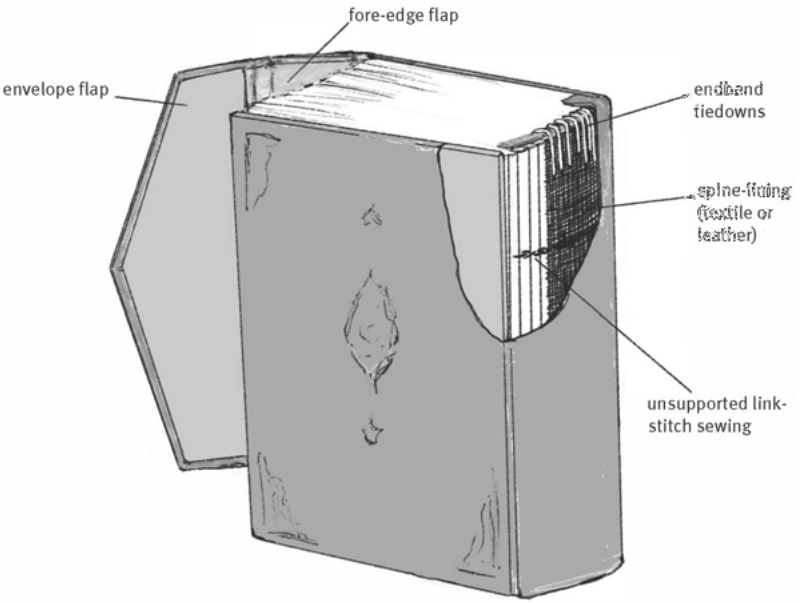


Fig. 2c: Drawing showing the link-stitch on the text block spine, the spine lining, and the tiedowns from the spine side.

3 The repair practice

Though bookbinders bound new books, most of them probably also spent a substantial part of their time on the repair of books. Manuscripts with a worn-out sewing structure or detached boards would have been taken to their workshops with the request to repair or rebind the volume. Depending on the condition of the various materials, bookbinders could repair a text block and reuse a binding, applying new leather to the spine with which the boards were reattached. They could repurpose other boards, but also completely replace a binding with a new one. When edges of the text block were very tattered, for example, a bookbinder may have chosen to trim the edges in order to create smoother ones that would ease leafing through the text block. Consequently, the former boards would no longer be flush with but larger than the trimmed text block, and that would be reason enough to make new boards. The leftover boards may have suited another volume.

Customers may have come to the binder's workshop with other requests as well. All sorts of interventions are conceivable: composite volumes could be

separated and (re-)bound as single volumes, or new composite volumes could be assembled. The bookbinder would have assessed the condition of the paper of previously sewn manuscripts in order to decide whether the paper in the spinefolds was sound enough to be sewn in a specific manner. Paper mends would often have been necessary, and repair patches are frequently found in the spinefolds, over the former sewing stations. Such repairs were made to facilitate the new link-stitch sewing as well as the making of the new endbands, close to the head and tail where the former tiedown was positioned.[7]

Thorough text block repair would have been time-consuming. It is not surprising, therefore, that less labour-intensive methods were also developed. Instead of using elaborate paper repairs, the cohesion of the text block could be achieved by adapting the sewing structure, using two additional sewing stations placed close together between the former two stations, and spacing out the first and fourth station towards head and tail. This arrangement, resulting in a link-stitch sewing over four stations, avoided the weakened parts of the paper around the original stations and allowed for a quick and sound enough method of resewing. The spine lining would add further coherence to this structure (see Figs 3a–b).[8] The exact execution of the structure as found on Islamic manuscripts can be distinguished from unsupported link-stitch sewing structures on four stations from other cultures (e.g. Coptic or Syriac) because the sewing thread between the two middle stations passes across the spine side and not inside the gathering.[9]

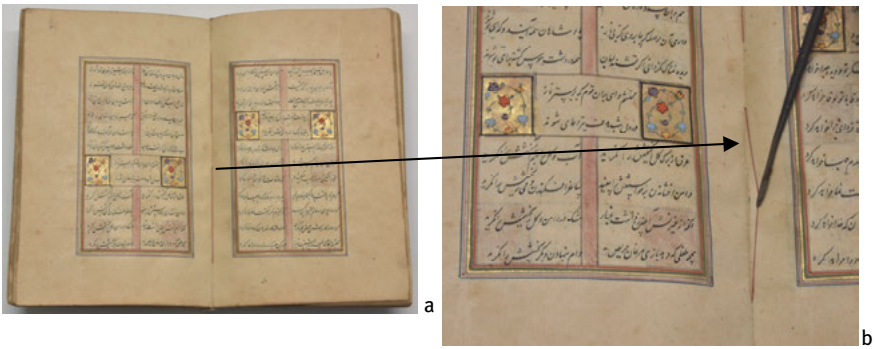
Another technique that has frequently been used as a quick means of sewing is a so-called stabbed sewing technique. Spinefolds are not needed for this method because the thread is passed through holes, pierced through the stack of gatherings or folios, a centimetre or so out from the spine edge through the inner margins. A stabbed sewing can, thus, be used for loose leaves or a much-used manuscript with a broken structure and severe paper damage; completely torn spinefolds are no problem when this technique is used. It could also be used as a temporary structure because it offered a swift method of sewing and keeping all leaves together. The gatherings could be freed from the stabbed connection again with a simple cut of the knife should the owner wish or the manuscript's use require that it was sewn *properly*, with the more durable and functional traditional link-stitch sewing. This would remedy the drawback of the stabbed sewing, which often prevents the book from opening well. Whilst the stabbed sewing technique

7 A first overview of typical historical repairs of Islamic manuscripts was provided by Kropf 2013.

8 Though this sewing scheme could have been applied to new books, evidence shows that it is typically used as a repair sewing. See Scheper 2018, 65–66, 281.

9 See Scheper 2014, 98–100.

may have been used for damaged manuscripts, it also frequently caused damage to the paper in the inner margins because of the tension it causes (see Fig. 4).



a b

Fig. 3a–b: UBL, Or. 14.369, a Persian manuscript, dated 998 AH / 1589 CE. Link-stitch sewing on four stations, a repair structure. The detail shows the former sewing station that belongs to the original link-stitch structure on two stations in the spinefold underneath the pink sewing thread of the current structure.

Fig. 4: UBL, Or. 22.331, Berber, 1134 AH / 1721 CE. Stabbed sewing. The pressure-sensitive tape on the left side of the sewing thread marks the breakage of the paper due to this sewing structure.

4 Common sense and economy

Bookbinders were usually practical people, who consciously chose techniques and materials that served the functionality of the book and were economically viable. They would adapt standard methods to suit a particular large or slim book. Two Arabic manuscripts in the Universiteitsbibliotheek Leiden (UBL) illustrate this: UBL, Or. 1676a, a fragment of the Qur'an (suras 38–66), and UBL, Or. 1676c, a poetic miscellany (see Fig. 5).[10] They both consist of only one gathering, which does not allow for a functional endband. Given the importance of endbands to the Islamic bookbinding structure, a bookbinder would have been reluctant to refrain from making them, unless he had a suitable alternative. With thin manuscripts, such as these, bookbinders created that alternative by deviating from the traditional link-stitch sewing on two stations. They chose a sewing structure using more stations instead, with the outer stations positioned closer to the head and tail. In this way, they could forgo the endband, because the outer stations took over the function of the tiedowns.

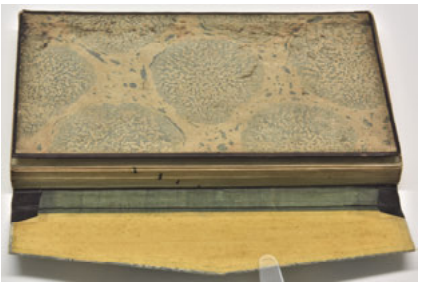
Fig. 5: Unsupported link-stitch structures that are adapted to one-gathering manuscripts, utilising outer sewing stations close to the head and tail instead of tiedowns. UBL, Or. 1676a, fragment of the Qur'an (suras 38–66), not dated, and UBL, Or. 1676c, a poetic miscellany, not dated.

10 For the UBL Oriental manuscript descriptions see the inventories of Witkam 2007–.

5 Tacketing

Tacketing is not a technique normally associated with Islamic manuscripts. Nevertheless, UBL, Or. 25.723, an eighteenth-century composite volume with five texts on astronomy, shows that its use can also occur in the Islamic world. Each gathering in the third, fourth and fifth text of this manuscript has two tackets, in the upper and lower part of the spinefold, in-between the tiedown of the endbands and the link-stitch sewing stations. The text block itself is sewn with a natural-coloured thread; the tackets vary from natural-coloured to blue and brown, and are neatly sewn and knotted on the inside of the spinefolds. The composite volume also displays another interesting feature: the fore-edge of each text has been marked with ink in such a manner that the demarcation allows quick access to the individual texts.

The use of these tackets appears to be related to the fact that the last texts were supposed to be illustrated, as is indicated by the blank spaces in the layout of the pages. The first two texts in this volume, which do not have tackets or traces of tackets, are not illustrated and were not designed to have illustrations either. Therefore, it seems probable that the tacketing has, in this case, supported the work process and division of labour. The tackets would have kept the individual gatherings together when the copyist passed on the gatherings to the artisan who was to make the illustrations, either in the same workshop or at a different location. We do not know why the illustrations were never executed, and why it was then decided to bind the volume without it receiving its intended drawings. However, since the bookbinder did not remove the tackets (which in itself makes sense, because these thin threads were not in his way and did not hamper the sewing process, while their removal would have taken time), we can at least reflect on their presence – and it may also lead us to keep an eye out for more examples (see Figs 6a–d).


a


b


c


d

Fig. 6a–d: UBL, Or. 25.723; a composite manuscript with tackets, dated between 1172 and 1202 AH / 1759 and 1788 CE.

6 Flexible and portable bindings

A phenomenon in the Islamic tradition that is not often mentioned is the occurrence of limp leather bindings. There is a substantial number of such bindings in the Leiden collections, originating from different places and periods, so my assumption is that they can be found in other collections as well.[11] These bindings have a traditional structure, including a spine lining with extending sides that are used to strengthen the inner joint and endbands, exactly as should be expected, yet there are no paste paper boards. Two subtypes can be established. The oldest seems to be the one that uses thick leather of a firm, good quality, which protects

11 The oldest datable limp leather binding, UBL, Or. 685, is dated 1029 AH / 1620 CE. The type is used at least throughout the sixteenth and seventeenth century: Scheper 2018, 320–325.

the paper text block when used or stored.[12] These covers are not lavishly decorated, although some are blind tooled. They have no turn-ins: the full leather covers are cut flush with the text block. The second type consists of a thinner and suppler quality of leather, that was cut larger than the text block and of which the edges are turn-in, despite the absence of boards. This specific characteristic will have taken careful paring of the leather and precise measuring when folding, otherwise these covers would not align with the text block; we can, therefore, assume that it took experienced craftsmen, and they will have made more than a few such books. Limp bindings may have endleaves or doublures, but it is not always clear whether these belong to the original making or if they are later additions.

As yet, we have no historic reference to this practice, but it is obvious that the tactile quality of these bindings is very different from the much more common books bound in boards. The latter are more robust, which surely would be the choice of binding for volumes that would be kept in libraries with regular visitors and users. The limp bindings would have had a different use. Their content indeed points to a more personal use,[13] and the lightweight and flexible bindings would certainly have added to the portability of these manuscripts (see Figs 7a–b and 8).

Fig. 7a: UBL, Or. 894. Limp leather binding; a work on Ottoman history, ranging between 1048 and 1070 AH.

12 It should be kept in mind that Islamic manuscripts were traditionally stored horizontally, therefore, the limpness of the binding was not a cause of worry for the librarian or collector in terms of shelving.

13 Examples are volumes with assembled recipes and medical notes, and *safina* containing collected poems.

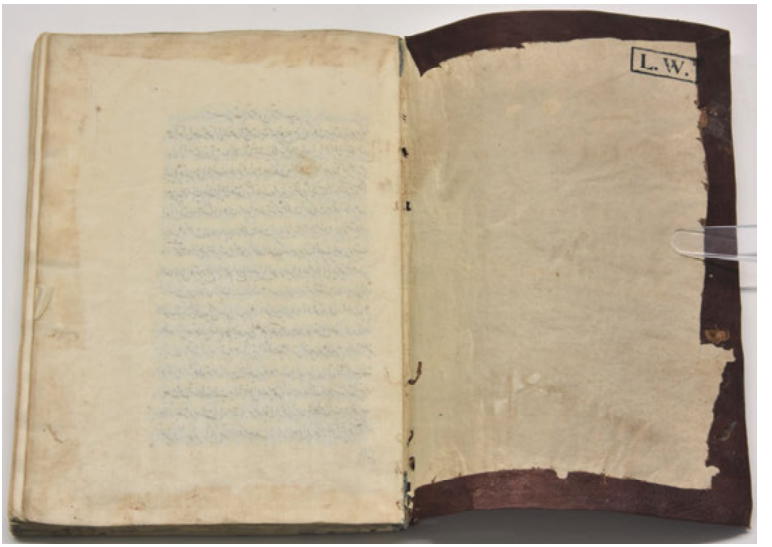


Fig. 7b: UBL, Or. 894. Inside of the limp leather binding with endleaves, pastedowns which are part of the outer gathering; the endband tiedown can be seen in the joint.

Fig. 8: UBL, Or. 465, the biography of Shaykh Safi al-Din, dated 890 AH / 1485 CE. Limp leather binding with blind tooling, impression visible on the inside.

7 Anomalies

A single occurrence of a structure that does not seem to be a direct development from the traditionally used techniques can be considered an anomaly, although we need to keep in mind that the physical assessment of innumerable Islamic manuscript collections remains to be done. We generally expect bookbinders to have executed several – if not many – books with similar structures, even when they were experimenting. A surprising structure in the UBL collection is a manuscript sewn on one single leather support. It decidedly falls into the category of anomalies. Because of the use of a sewing support, it seems to have been inspired by European sewing techniques. However, although the Western tradition indeed influenced Oriental bookbinding, its tradition of supported sewing always uses multiple supports.[14]

Hypothesizing, the structure could be based on the Islamic repair sewing technique using four stations discussed above. When we imagine the unsupported link-stich sewing structure on four stations to include a leather support, it would actually match the appearance of this particular manuscript (see Figs 9a–c). The catalogue description of UBL, Or. 14.449 mentions 'of Russian manufacture', although the source of this information is not provided; the manuscript is dated 1784. Perhaps more examples of this sewing structure will turn up and it is possible that this method was used at a specific time and place.[15] Until then, we may consider this specimen to be an experiment which was not widely embraced.

14 The occurrence of manuscripts sewn on leather supports in the Islamic world, using two supports, is found on Indo-Persian manuscripts and in South-East Asia. Kristine Rose-Beers studied this specific type of manuscript from India in the Chester Beatty Library; see Rose-Beers forthcoming. Their presence in Indonesian manuscripts in the Arabic and Malay collections in Leiden was noticed in Scheper 2018, 78.

15 After submitting this paper, the author identified a second exemplar of this specific binding structure using only one sewing support in the Royal Collection at Windsor Castle. This manuscript, RCIN 1005011, *Ilahinamah*, a book of Islamic prayers written in embossed script, was made for Amir Abd al-Rahman Khan, king of Afghanistan and dates to 1896–1897.

Fig. 9a–b: UBL, Or. 14.449, not dated. Manuscript with a supported sewing structure, using only one sewing support, the leather strap in the centre.

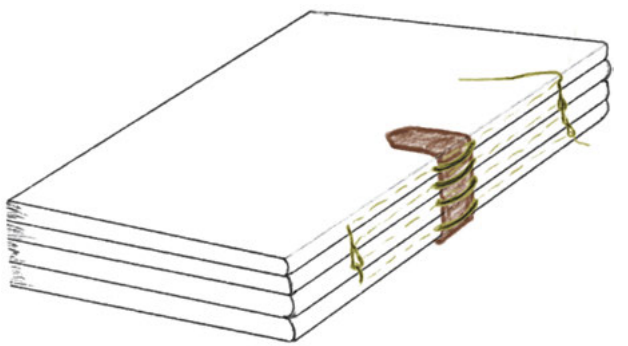


Fig. 9c: Schematic drawing of the structure using one sewing support.

Fig. 10a–d: UBL, Or. 25.573. Manuscript with individually sewn gatherings. The photographs show the manuscript in its wrapper binding (a); the stack of gatherings seen from the spine (b); a close-up of the sewing threads (c); the inner bifolios of two gatherings with the attachment of the sewing threads (d). Not dated.

Another unique structure is noticed on a relatively late (nineteenth century?) copy of Vol. 1 of *Futūḥ al-Šām*, the 'Conquest of Syria', by pseudo-al-Wāqidī, UBL, Or. 25.723. All the gatherings of this substantial manuscript are individually sewn. A black thread was used for the bulk of the gatherings, a few are sewn with natural coloured thread, and the last part is sewn with pink thread. The knots are found in the spinefolds in a rather remarkable manner: it seems that an effort was made to use the smallest length of thread required because the

ends are not tied together. Instead, each piece of thread is secured with a knot immediately behind the sewing station. Keeping each individual gathering secured but not binding them into a manuscript suggests a copying practice, because several copyists could work on the reproduction of this text simultaneously without the folios getting into disarray. In other words, this manuscript may have been the *exemplar* in a *pecia* system (see Figs 10a–d).

8 Unsewn yet connected

An overview of less common structures in the Islamic world needs to include the unsewn manuscript that is kept together with connective strips.[16] Surviving examples of this specific type mostly stem from the late eighteenth or nineteenth century. The text blocks consist of normal gatherings, yet, a sewing structure is absent, and there are no traces of former sewing. The gatherings are solely connected with leather strips, and sometimes strips of cloth or even paper, that are pasted onto the text block spine, with the small extending sides folded over and pasted onto the inner margins of the outer leaves. Strictly speaking, these connective strips only keep together the outer bifolios of the gatherings; the inner bifolios are not secured. Nevertheless, model-making has demonstrated that this method is actually more stable than one would think. The text block is further protected by a wrapper binding with a fore-edge and envelope flap; a manuscript with connective strips is hard to distinguish from a traditionally bound one when it is on a shelf. Once off the shelf and opened, it appears that the binding has no connection with the text block, and that, in fact, the binding is finished differently. Since the spine is not attached, the interior of the spine of the wrapper binding is lined, usually with leather or fabric, at least over the inner joints, for strength, sometimes combined with (decorated) paper, presumably as a more economic option (see Figs 11 and 12).

16 The sub-Saharan loose-leaf manuscript does not fall into this category.

Fig. 11: UBL, Or. 14.204a. Unsewn manuscript with connective strips made of leather, the full-leather wrapper binding has strips of leather lining the inner joints and a separate piece of paper lining the spine; with a slipcase. Dated 1275 AH / 1859 CE (part b has similar structure and slipcase).

Fig. 12: UBL, Or. 14.209. Unsewn manuscript, connective strips missing but traces of textile strips, the wrapper binding has decorated cloth lining the fore-edge flap and spine, 1273 AH / 1856 CE.

Unfortunately, we currently lack a historic reference to this method of bookmaking and, therefore, can only speculate about the rationale for its use. It is noteworthy that this method of keeping texts together is found in manuscripts and printed books alike. From a practical point of view, it is clear that the pasting of the two strips sped up the process enormously. It may be no coincidence that most specimens with this structure originate from the period in which the implementation of printing in the Middle East contributed to the ever-increasing demand that bookbinders were facing. It seems plausible that this specific type was developed to serve the publishing and bookselling trade.

In addition to the wrapper binding, these books are often provided with a slipcase that keeps the whole entity together. This is a sensible protective measure for books with connective strips and a loose binding. We will return to these slipcases below.

9 Demarcation of the spinefold

When one examines physical characteristics of books from a culture that extended over numerous centuries and such a vast geographic area, it is not surprising we sometimes encounter features that are not yet fully understood. An example in the category of 'Tied and Bound' is UBL, Or. 14.210, Cairo 1846 (four volumes, copied by Ḥasan al-Farrāʿ, in the al-Azhar Mosque in Cairo). Each of these volumes consists of a thick stack of gatherings previously held together with connective strips (which are now missing) and a wrapper binding. Though the connective strips are gone, we can see that they probably consisted of leather, judging by the discoloration on the spine.

Upon closer examination, it appears that the text block spine is marked by a row of tiny holes running from front to back, more or less located in the centre of the gatherings. These holes are not visible in every bifolio, only in the spinefold of the outer bifolios. They, therefore, do not belong to a former sewing structure; a sewing structure that employs only one sewing station would not be a very functional, or common, structure either. When the holes are not related to a sewing structure, it follows that they have an external cause. It could possibly be damage, caused by a thread that was once wrapped around the stack of gatherings. However, in that case, one would surely expect to see a similar sort of mechanical damage at the fore-edge of the text block, which is not the case (see Fig. 13).

Fig. 13: UBL, Or. 14.210b. Part two of four volumes, dated 1262 AH / 1846 CE, copied by Hasan al-Farra', in the al-Azhar Mosque in Cairo. Unsewn manuscript, the connective strips missing but discolouration suggests leather strips. A tiny hole is visible in the centre of the spinefolds.

Further examination of the paper shows that there appears to be a small fold in the centre of each gathering, perpendicular to the spine, as if the paper has been nipped tightly in that area – not completely folded altogether, but pressed briefly so as to demarcate the foldline. The nipping and subsequent unfolding would have left a slight distortion in the spinefolds, and the tension caused by this distortion in the outer bifolios, combined with use and age, may have led to abrasion; this damage seems to present itself as a small hole.

The function of such nipping or squeezing does not seem to have a historic reference, so, again, we need the artefacts as witnesses to the bookbinding practices. Therefore, more manuscripts were surveyed, looking for further evidence of these subtle folds. The phenomenon may be better visible in unsewn volumes – possibly because the gatherings were never pressed or used under the same tension as bound volumes – yet, it can also be seen in sewn and bound manuscripts. In contrast to the unsewn manuscripts, bound volumes could only be examined inside; possible similar damage to the outer bifolios could not be observed because of the binding attached (see Figs 14a–c and 15).

Fig. 14a: UBL, Or. 12.86. Unsewn manuscript, the loose gatherings in their wrapper binding as seen from the back, also showing the ruling lines in the last page. Dated 1269 AH / 1853 CE.

Fig. 14b: UBL, Or. 12.861. Detail of the nipping or subtle fold-marks in the centre of the inner margins.

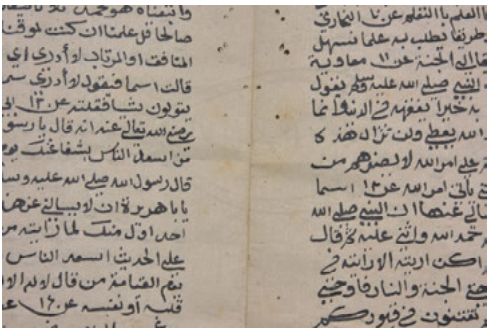


Fig. 14c: UBL, Or. 12.861. Detail of one of the gathering's centres, with the nipping or subtle fold-mark showing in the centre, where the watermark (double-edged shield with crescent, or *Abū Shubbāk*) can be seen.

Fig. 15: UBL, Or. 14.366. Sewn manuscript, detail of spinefold showing the nipping or fold-mark, opposite the central line of the ruled lines. Undated.

Although this topic may warrant a full project that includes the survey of the whole collection, only a selection of manuscripts was surveyed for the current paper. A lot of examples were found without utilising any particular method of selection. The subtle folds do not occur exactly in the centre of the spine, with equal measurements from the fold to the head and the tail. Instead, the folds appear to exactly match the central ruling line.

A plausible explanation, therefore, is that the nipping, primarily intended to mark a specific point in the length of the spinefold, is related to the positioning of the *mistarah*, the ruling board. Since the number of lines is often uneven, the central thread on the *mistarah* would then be positioned next to the mark. This would be an easy way of controlling the similarity of the page layout throughout a manuscript. The nipping of the centre of the spinefolds allowed the positioning of the ruling board, without taking any measurements of the margins and doing maths to calculate its central position. Moreover, the practice of aligning the ruling board in this way – and not, for example, using a

given distance from the upper and fore-edge margins – would allow a particular *mistarah* to be used for manuscripts with slightly different sizes. Consequently, the copyist would be able to prepare the layout of the page without having to calculate the position of the text panel, regardless of the exact size of the paper. In turn, it would explain the sometimes slightly unbalanced width of the top, bottom and fore-edge margins in comparison with the inner margin. When the hypothesized procedure was indeed used, the inner margin then had a set distance: the one that the *mistarah* dictated. Even when the paper format of a particular book allowed for wider spacing, towards the fore-edge margin, the alignment of the ruling board to the squeezed paper prohibited the ruling lines, and therefore the text area, to be spaced out further to the centre of the folio.

10 Into the printing era

In terms of the sewing technique and structure, the bookbinding tradition in the Islamic world is remarkably consistent, and we still find traditionally bound books in the nineteenth century, when more books than ever needed to be bound because of the output of the printing presses, even though Western bookbinding techniques had become more widely established by that time. Regarding these printed books, we see that the stab-stitched construction, which was formerly used mainly as a repair technique, is now applied as the initial structure. Although this is not a technique to be favoured when one has the longevity of a book in mind, it does speed up the production process.

The construction using connective strips and a wrapper binding is also frequently found in printed books. The appearance of these books is similar to the manuscripts of that type; the only noteworthy change is a slightly different use of materials. Though a lot of these bindings are covered with full leather, paper appears to be the predominant choice for the connective strips to keep the printed gatherings together, and the lining of the fore-edge flap is often a piece of fabric. This textile is usually coloured, or patterned. Bookbinders continued to make slipcases for these printed volumes as well. Though we cannot always be certain that a slipcase is contemporary with the book it contains, there is sometimes material evidence that a book and its associated slipcase were made at the same time, possibly in the same workshop.[17] An example of such evidence

17 These items were very common in the Ottoman world, thus, it is feasible that these containers were produced in separate slipcase ateliers, but they may also have been made in a book-

is the slipcase for a volume that was printed in Cairo in 1876, since the block-printed textile used for the lining of the spine of the wrapper binding and its fore-edge flap is similar to the lining of the closing flap of the slipcase (UBL, 865 C 24) (see Fig. 16). It is interesting to reflect on the costs of labour and materials that would have gone into the making of the slipcase, which seems to contrast with the fact that the associated book was not sewn but has a seemingly low-budget construction. This reminds us we have to be careful with drawing conclusions too quickly from structures whose contextual use we, as yet, do not fully understand.

Fig. 16: UBL, 865 C 24, Cairo, 1293 AH / 1876 CE; printed volume, unsewn, connective strips of paper, wrapper binding lined with decorative textile on the spine, the closing flap of the slipcase lined with the same fabric.

binder's workshop; how this craft and trade was organised is currently unknown. See Plummer, Hepworth and Scheper forthcoming.

11 Enclosures

The slipcase shown above has a specific form of mechanical damage. The hole in the front board of the case is an indication of where the manuscript release strap would have been laced through the board (see Fig. 17).[18] The manuscript release strap, usually a ribbon, is a long strap that goes down to the bottom of the enclosure, across the bottom and back up to protrude a few centimetres from the mouth of the slipcase. Pulling this strap would open the closing flap and lift the book from the bottom, so that it can be retrieved.

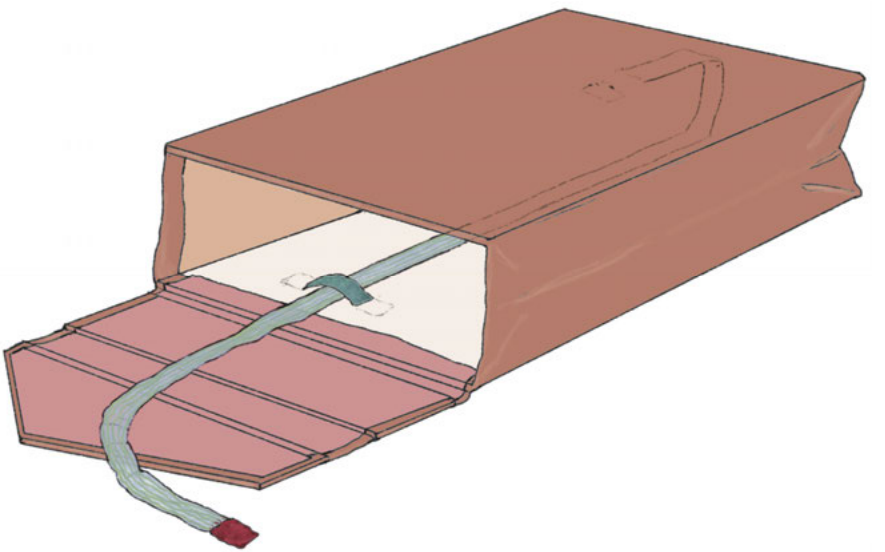


Fig. 17: Drawing showing the position of the manuscript release strap, its attachment explaining the particular damage in the front board of the slipcase belonging to UBL, 865 C 24, in Fig. 16.

18 Together with David Plummer and Paul Hepworth, I developed a terminology to describe all the different components of a slipcase, in order to facilitate communication about these items. In contrast to a 'insert flap release strap' (a short leather strap attached to the flap with which the slipcase is closed), we denoted the strap or ribbon that helps to retrieve the manuscript from the slipcase the 'manuscript release strap'. See Plummer, Hepworth and Scheper forthcoming.

Such a slipcase may almost seem essential for a book that is not sewn but is only held together with strips adhered to the spine, which is not too securely protected by a loose cover wrapped around the text block and has no *proper* fastening. Edward William Lane, the nineteenth-century pioneering Egyptologist, notes (in his account of the manners and customs of the modern Egyptians) that *many* books are unsewn, though he does not explain exactly where he saw such books or how they were used. However, he does note that because of this 'the gatherings are kept together with an outer case of pasteboard and leather'. He also provides a sketch that actually illustrates a slipcase.[19]

It is interesting to see in his drawing that the slipcase does not have a manuscript release strap, but something that we (David Plummer, Paul Hepworth and I) have called an insert flap release strap. This smaller strap, nearly always made of leather, does not help to retrieve the book from the case, though it does give access to the book by opening the flap. This type is found frequently on nineteenth-century slipcases.

Slipcases, however, were also made for numerous manuscripts that were sewn in the traditional manner, and a lot of those date from before the nineteenth century. It seems that the manuscript release strap was used more frequently for these older items. This can also be observed in the wonderful engravings in d'Ohsson's book *Tableau Général de l'Empire Othoman*. Plate 39 of the first volume represents at least ten slipcases, the majority of which appear to have a manuscript release strap.[20]

The slipcase, however, is by no means the earliest type of protective enclosure that was used in the Islamic world. Before slipcases appeared on the scene, we find bags, pouches, and satchels (see above, Fig. 1). Unfortunately, it is difficult to date these protective enclosures. Unlike books, they have no colophons, and we lack sufficient information about these items in the known historic treatises. What complicates their study is the fact that they are not necessarily made at the same time as their associated manuscript. What makes matters more complex is that even if the slipcase is contemporary with the binding, as in this example – which we know because similar materials and ornamentation were used – we still may be wrong-footed because the binding may not be original to the manuscript. This is actually the case here, as the repairs in the text block indicate; this manuscript was resewn and rebound. Careful examination is, therefore, crucial.

19 Lane 1836, 265.
20 d'Ohsson 1790.

There is no evidence of slipcases dating to the seventeenth century. Textile bags and satchels precede the use of slipcases. Unfortunately, only a few textile bags seem to have survived. These items must have been fragile, and a large number of them were likely replaced at a certain point in time. Others may have been repurposed, pretty and useful as they were. For these reasons it is impossible to deduce how common they were. Some of the surviving bags are not so old, though the bag made of the striped silk that was used to protect this large, two volume Qur'an seems to date from the seventeenth century (see Fig. 18).

Fig. 18: UBL, Or. 1217, part one of a Qur'an in two large volumes. A silk bag with its associated manuscript 55 × 36.5 cm, the bag measures 57 × 97 cm from the bottom to the pointed end of the flap.

We do, however, have earlier iconographic evidence of such bags. In two miniatures in a manuscript dated 1501, a few items do not look like bound manuscripts but appear to be a bag.[21] The ornamentation of these items does not correspond with the tooling of bindings, nor does their shape – with the envelope flap along the long side – correspond with the format of manuscripts from that period (see Figs 19 and 20).

21 Oxford, Bodleian Library, MS. Elliott 192, *Nizami*, fol. 111b and fol. 319a; more examples from around 1500 can be found, see for example https://wayback.archive-it.org/6780/20210227212741/https://www.bodleian.ox.ac.uk/whatson/whats-on/online/love-and-devotion/sufi-poets (accessed on 23 March 2022), displaying several manuscripts in which bags are represented in paintings.

Fig. 19: Oxford, Bodleian Library, MS. Elliott 192, fol. 111^{v} (detail), with three bags in the lower part of the painting. Courtesy of the Bodleian Library.

Fig. 20: Oxford, Bodleian Library, MS. Elliott 192, fol. 319^{r} (detail), with three bags in the lower part of the painting. Courtesy of the Bodleian Library.

How exactly the making and use of enclosures developed in the following centuries is hard to say, based on our current knowledge. More enclosures have survived from the nineteenth century. Among those are a lot of slipcases, such as those discussed above, and a fairly large number of manuscripts have retained their satchel. Satchels are often made of tooled and dyed or painted leather, and decorated with leather or thread embroidery. A lot of satchels were made for loose-leaf manuscripts from sub-Saharan Africa, that received a primary cover which was wrapped around the stack of leaves, with an envelope-shaped flap that closed over the front cover, held together with a strap. This entity then could be slipped into the satchel; numerous of which have a shoulder strap, or remnants of such a strap. Another type of enclosure is a pouch, that is softer and perhaps more suitable for smaller items, such as this popular North-African prayerbook, *Dala'il al-Khayrat wa-Shawariq al-Anwar*, UBL, Or. 1335, dating from 1226 AH / 1811 CE and measuring 8 × 7.8 cm (see Figs 21 and 22).

Fig. 21: UBL, Or. 25.427, Qur'an, *maghribi* script, not dated. Leather satchel, tooled and painted, with its associated loose-leaf manuscript kept in a leather wrapper binding with matching decoration.

Fig. 22: UBL, Or. 1335, *Dala'il al-Khayrat wa-Shawariq al-Anwar*, dated 1226 AH / 1811 CE. Silk pouch and full leather binding of a North-African manuscript.

12 The codicological value of enclosures

It is clear with the present hiatuses in our knowledge that in order to understand the practice of slipcase and satchel making within the manuscript world, we first need to further study their occurrence and usage, the different varieties of enclosures, and the variations in composition of the different types. Ironically, the study of enclosures is hampered because the value of these items does not seem be recognised: many bags, slipcases, and other enclosures are not included in the description of their associated manuscripts in institutional catalogues.[22] This worries me as a conservator, because uncatalogued items will not easily surface and receive the care that they may need in terms of preservation policies and priorities. While it may be argued that many of the surviving enclosures cannot indisputably be linked to the books they contain, and, therefore, the historic context is uncertain, it should be unquestionable that enclosures are far more common in the Islamic world than in many other book cultures. That fact alone warrants a better understanding of the historic development of these enclosures.

At present, it seems that the addition of a slipcase to manuscripts was almost standard practice in certain institutional libraries in the later Ottoman period, and these slipcases may consist of simple materials and lack individual characteristic decoration. However, even non-distinct slipcases, produced in bulk in workshops specialised in producing series or large numbers economically, may eventually be informative and helpful to pinpoint a certain location in the history of a manuscript that is contained within it. These mass-produced items share materials and display similar workshop-specific methods; however, we have yet to learn how to recognise and use the information that such items contain in their material composition. In order to do so, it is essential to preserve them and make them accessible. Other slipcases are more luxurious, ornamental, and made especially for an individual valued manuscript, quite possibly in a private collection. The nature of these protective items is such that they could easily be transferred to other manuscripts. The codicological item-

22 This conclusion follows the catalogue search in several institutions (Leiden, Berlin, Sarajevo, Manchester), combined with a physical survey of the stacks. See Plummer, Hepworth and Scheper forthcoming. A notable exception is an inventory of the al-Jazzar Pasha library, a copy of which was recently discovered in the Ankara Endowment Ministry. Numerous manuscripts listed are described as having a ظرف *ẓarf* (slipcase). The history of this library, including the materiality of its collection, is currently being studied within the 'al-Jazzar Library Project' at the Centre for the Study of Manuscript Cultures, Hamburg.

specific information may, therefore, not necessarily be valuable, but the fact that a manuscript received the enclosure *is*. For that reason alone, its existence should be noted in the catalogue description.

In order to further the study of historic enclosures – in all their different physical appearances, substances, and designs – they need to be identifiable. In addition, we need to learn how to ascertain whether a manuscript under study is contemporary with its associated enclosure. When the correlation can be established, the conservation of both items is all the more important. Cataloguing, preservation, and digitisation are intricately linked in the field of manuscript studies, and in the field of Islamic manuscripts, this includes the protective enclosures made for the books.

13 A common vocabulary as a tool for book historians

Some concluding thoughts concern our means of communication. A common vocabulary is essential in any exchange or study in the field of manuscripts and books. Catalogue descriptions, conservation reports, articles or essays addressing new finds or insights, and papers and presentations in conferences are useful only when terms to describe phenomena are used that mean the same thing to everybody. We need to be precise and consistent. This is certainly not easy as the field has developed over time and gradually included increasingly diverse traditions. The numerous languages in which the primary vocabularies associated with the different traditions have been developed add to the complexity. A consistent vocabulary for different types of enclosures is lacking altogether.[23] Examples can be found on social media and some collections' websites of how a variety of terms is used to denote these items, mixing up the different types, which illustrates how confusing it is when a common vocabulary is lacking. It certainly hampers the study of these artefacts that are part of the item's codicological entity and of the manuscript tradition at large.

Therefore, terminology is vitally needed and should be used consistently. The illustrated online 'Terminology', that was developed for the conservation

23 Besides the Islamic world, it concerns other book traditions as well, in Asia, Africa, and Europe. An exemplary study was conducted recently into Ethiopic manuscript bags; see Hanscom 2016.

and description of Islamic manuscripts, includes a page for 'Enclosures'.[24] These suggested terms and definitions can be a useful start. Regarding a more detailed description of item-specific features, there is a need for an extended, refined terminology that zooms in on different components. Such an in-depth terminology has recently been developed for slipcases.[25] We hope that the availability of terms and definitions may stimulate further study that will help to identify and make accessible a lot more of these codicological units that are still hidden in collections and remain unknown up to this day.

14 Concluding thoughts

This overview of how books are kept together in the Islamic world is bound to become outdated in due course. Examples of additional methods and practices will surface, and new studies will explain the techniques that, as yet, still puzzle us. This is something to look forward to, because it will further contextualize the making and use of manuscripts and printed books. However, it is good to point out that such progression is possible only when all of us who work with these collections do so collaboratively. We should try to improve ourselves by keeping up to date with the latest insights, using each other's knowledge, and sharing what we know ourselves, even though it is not always evident what the best platform would be for sharing the information and expertise that we have. It will also require a continued effort: accessibility to and preservation of collections is essential, as is the correct description of items so that objects can be searched for and found. The study of the materiality can also be supported by making more manuscripts available in a digital format, although digitisation practices may often (need to) be improved by including item-specific features. Not every scholar may need the physical characteristics of a book for his or her studies, but in order to study the material and technical developments and increase our understanding of bookmaking traditions, we need to be able to study a book as an object.

24 Hepworth and Scheper, launched in 2014, with continued updates. The terminology is not a static list and we welcome suggestions; see: https://www.islamicmanuscriptconservation.org/terminology.html (accessed on 23 March 2022).

25 Plummer, Hepworth and Scheper forthcoming.

Acknowledgements

All photographs and drawings in this article © Karin Scheper, all objects from the oriental collections, Leiden University Libraries, with the exception of Oxford, Bodleian Library, MS. Elliott 192 in Figs 19 and 20, of which the images were generously provided by the Bodleian Library Imaging Services Team.

Abbreviations

UBL = Universiteitsbibliotheek Leiden

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Giovanni Ciotti

Strategies for Binding Pothi Manuscripts

Abstract: This article offers an overview of the different strategies for binding a particular form of manuscript, namely the pothi. Surveying cases from across Central, South and Southeast Asia, it offers the first comprehensive typology of such strategies, together with an account of the peculiarities and commonalities that can be noticed across these areas. To further contextualize the topic, a few pertinent primary sources are presented to the reader. A short selection of case studies from manuscripts hailing from Tamil Nadu is also included in order to hint at the philological and codicological implications of the 'loose' nature of pothi binding.

> Nel suo profondo vidi che s'interna,
> legato con amore in un volume,
> ciò che per l'universo si squaderna
> (*Divina Commedia*, Paradiso, XXXIII, 85–87)[1]

1 Introduction

The term 'pothi' (*pothī*, from Sanskrit *pustaka*/*pustikā*) can be used for the sake of convenience as an umbrella term for any manuscript that is made of a stack of folios in landscape format that are flipped upward rather than sideward. Historically, this manuscript form was prominently used in South and Southeast Asia (both Mainland and Maritime) as well as in Tibet and Mongolia, but also to a lesser extent – in terms of the sheer number of extant exemplars – in other areas of Central Asia, such as the Tarim Basin (Xinjiang, China) or Merv (Turkmenistan).[2] In Dunhuang, and at times in the Tarim Basin too, we find pothis in portrait format due to the orientation of writing systems such as Chinese and Uyghur.[3]

1 I saw that in its depth far down is lying | Bound up with love together in one volume, | What through the universe in leaves is scattered (tr. Longfellow 1867, 220).

2 For references, see Ciotti 2021a.

3 See, respectively, Galambos 2020, 25–27 (though we also have Chinese written horizontally; Galambos 2020, 143–152) and Kasai 2022.

https://doi.org/10.1515/9783111292069-006

The folios of pothis can be made of a great variety of materials. The leaves of palm trees (both talipot, *Corypha* sp., and palmyra, *Borassus* sp.) and paper are the most common among them, with the former arguably the first to have been used, in an unfortunately undefinable past.[4] From at least the fifth century onwards (but most probably even before then), birch bark was also used to produce pothis. Later on, the list of materials expands to include several kinds of handmade paper and the bark of the agarwood tree (*Aquilaria* sp.). More rarely, folios were also made of silk, leather, poplar wood, bamboo and sheets of metal or ivory.[5]

As we will see, binding is a relatively simple aspect of the pothi manuscript, particularly compared to the intricacies of quires and ligatures in codices. Even the validity of the term 'binding' may be disputed in this context, though it remains effective at least for the sake of convenience.[6] Owing to such relative simplicity, secondary literature tends to rush through the topic, though there are of course laudable exceptions.[7] What contributes to this tendency is also the fact that, on the one hand, indigenous sources concerning the production of manuscripts and matters of binding in particular are relatively rare and, on the other hand, the codicology of the pothi cannot at the moment rely on either quantitative studies or the support of extensive material analyses.

What follows is thus a first attempt at an overarching view on the topic across several manuscript traditions that gathers relevant information from my direct experience, the generosity of several colleagues who have shared their expertise with me in person or via email,[8] and the available secondary literature. A handful of case studies of manuscripts hailing from Tamil Nadu is also included to showcase a minimal set of the possible philological and codicological implications of the ways in which pothis are bound.

4 See Baums 2020 and Ciotti 2021a for some considerations on the history of the pothi form. The leaves of the Gebang palm were also used in West Java (Gunawan 2015), though rather rarely.

5 For references, see Ciotti 2021a.

6 For a more in-depth reflection on whether the very term 'binding' is applicable to pothis, in particular the unstrung ones, see Helman-Ważny 2014, 53–55.

7 For example, see Isaacs 2014 on Burmese *sasigyo*s (see below, § 2.1.2); Helman-Ważny 2014, 53–58 on Tibetan manuscripts; and van der Meij 2017, 156–179 on Indonesian manuscripts.

8 See acknowledgments below.

2 Binding pothis

The folios of a pothi can be strung together by means of a thread (usually made of cotton, but nowadays often replaced with synthetic fibres) that runs through holes pierced on their surface. Alternatively, pothis can remain unstrung, with the folios left unpierced and simply stacked upon one another. Both strung and unstrung pothis can be placed between covers (or boards) generally made of wood – although other materials can also be used – and wrapped with textiles. Different configurations thereof are possible too, as well as more rarely used alternatives (e.g. paper sleeves).

We can see all these different ways of binding pothis as forms of 'loose' binding. Once the components of the manuscript are ready, they can be easily assembled, disassembled and reassembled in a matter of seconds by anybody without the need for any special tools.

2.1 Strung pothis

2.1.1 Holes and threads

Let us take palm-leaf pothis as our first port of call. Given a stack of regularly sized, oblong leaves, at least one hole is punched through each of them. A thread is then passed through this set of holes in order to keep the leaves in the desired order and prevent them from slipping out of the stack. Often, empty (i.e. unwritten) leaves and covers made of wood (or more rarely bamboo[9] or other materials) are added to both the beginning and end of the manuscripts to offer further protection and stability (Fig. 1). To tie the manuscript, a knot is made at one end of the thread, which is then drawn tight from the other end. The leaves are gently grouped together (against the cover, if present) to form a horizontal stack. The thread is then wrapped multiple times around the manuscript in a more or less neat cross-gartered fashion (Fig. 2), or simply over and over around the same spot (Fig. 3). The loose end of the thread is then tucked under one of the loops that the thread has formed around the stack (Fig. 4). Occasionally, either one or both ends of the thread may bear a small object (a bead, coin, etc.) that is variously attached to it (Fig. 5).

9 An interesting series of images of bamboo covers used in Maritime Southeast Asia can be found in van der Meij 2017, 169–172.

Fig. 1: Paris, BnF, indien 74; photo by Emmanuel Francis-Gonze; courtesy of the BnF.

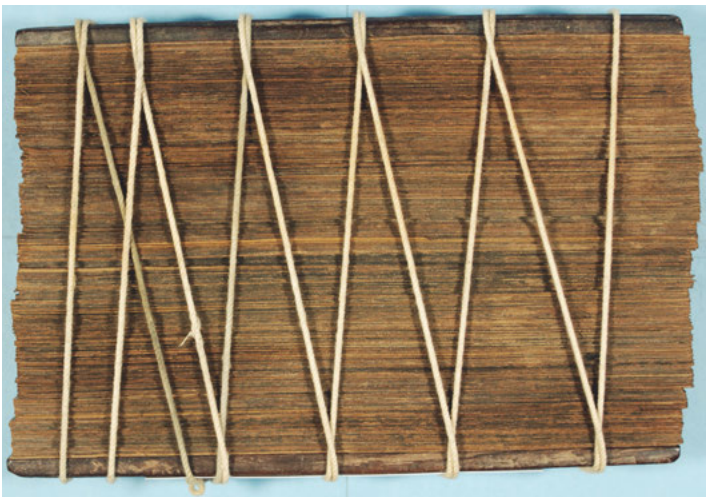

Fig. 2: Puducherry, IFP, RE22704; courtesy of the IFP.

Fig. 3: Luang Prabang, Vat Maha That Rasabovoravihan, DREAMSEA 0011 00369 (*Sab Kammavācā*); courtesy of the Buddhist Archives of Luang Prabang.

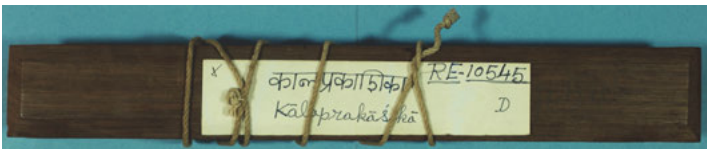

Fig. 4: Puducherry, IFP, RE10545; courtesy of the IFP.

Fig. 5: Various objects attached to thread: buttons (top left), metal peg (bottom left), beads (top right) and metal ornament in the shape of a bird (bottom right); photos by Dick van der Meij, from Dick van der Meij's private collection.

Intuitively, one might assume that the number of holes depends on the size of the leaf and the regional tradition. Small leaves would have only one hole; larger ones, two (Figs 6 and 7). However, there are many examples that disprove this assumption, and in any case, it would remain unclear where to draw the distinction between 'small leaves' and 'large leaves' – to my knowledge, no quantitative studies are yet available on this topic. Interestingly, palm-leaf pothis from Indonesia seem to consistently have three holes (Fig. 8), with the exception of Sundanese manuscripts.[10]

Fig. 6: Puducherry, IFP, RE11012 [fol. 1r]; courtesy of the IFP.

Fig. 7: Hamburg, CSMC, MS-1-2018 [fol. 1r]; photo by Karsten Helmholz.

Fig. 8: Hamburg, CSMC, MS-1-2014 [fol. 124r]; photo by Karsten Helmholz.

A further desideratum is a study of the position of the hole(s) with respect to the perimeter of the leaf.[11] That a specific geometric proportion is aimed at is apparent even to an untrained eye, and also emerges clearly, for example, from the following untraced Sanskrit verse:

> *āyāmena caturbhāgaṃ tribhāgaṃ punar eva ca |*
> *ubhayoḥ sūtramadhyena tathā kuryāc chidralakṣaṇam ||*[12]

10 Van der Meij 2017, 153.
11 A wish expressed also by van der Meij 2017, 153.
12 Quoted in Godakumbura 1980, il; and Sarma 2007, 59.

> [The leaf should be folded] lengthwise in four parts, [unfolded,] and folded again in three parts. The marks for the holes should be made in the middle of the two foldings.

All these considerations concerning holes and threads are also valid for pothis whose folios are made of other materials, such as birch bark (Fig. 9), agarwood-tree bark (Fig. 10), poplar wood (Fig. 11)[13] and even paper (Fig. 12). It should be noted, however, that though we can indeed observe holes, we have virtually no direct evidence of threads due to the circumstances through which manuscripts have reached us.[14]

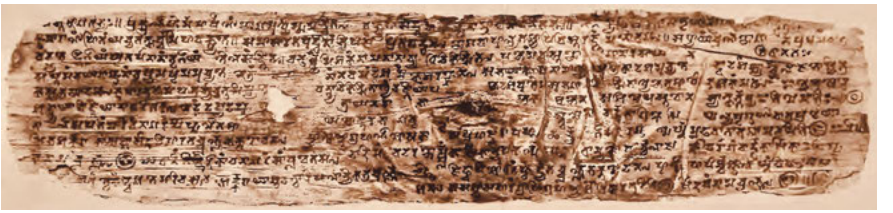

Fig. 9: A leaf of the Bower Manuscript, a birch-bark pothi from Kucha (Xinjiang, China), *c.* fifth to sixth century CE; Wikimedia Commons (https://www.wikiwand.com/en/Bower_Manuscript).

Fig. 10: London, BL, EAP 373/36/1 (*Phai Lung*, tentative title); courtesy of the BL (https://eap.bl.uk/archive-file/EAP373-36-1).

13 Nakatani 1987, pl. 5.

14 It may be the case that Assamese pothis made with agarwood-tree bark still have a thread, since they are relatively recent. However, at present I cannot find any confirmation of this.

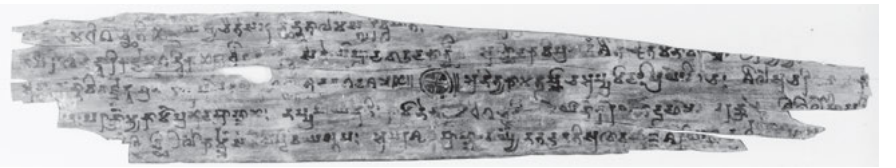

Fig. 11: Paris, BnF, R 46243 (*Udānavarga*), *c.* third century CE; courtesy of the BnF (https://gallica.bnf.fr/ark:/12148/btv1b100700571/f3.item.zoom).

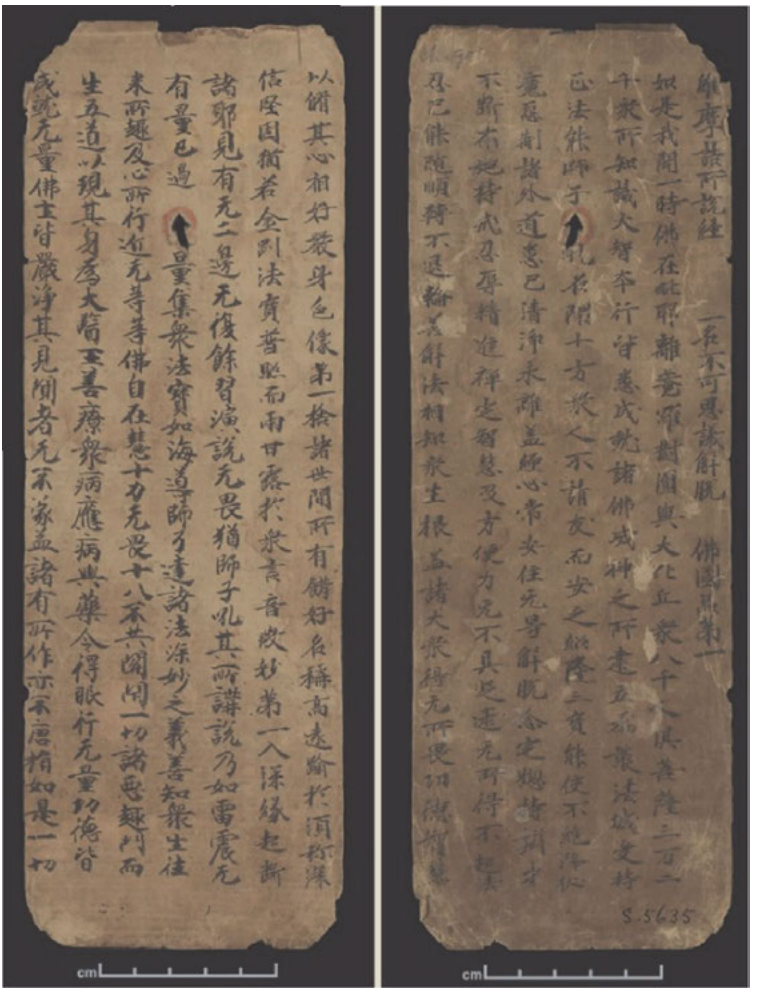

Fig. 12: London, BL, Or. 8210/S.5635 (*Vimalakīrtinirdeśasūtra*); courtesy of the BL (http://idp.bl.uk/database/institute.a4d?id=24).

A special case of leaves sporting a single hole pierced in the right-hand side is that of a type of Indonesian manuscript called *ĕmbat-ĕmbatan* in Balinese. This manuscript has no covers and its folios are made using an entire segment of a palm frond, including its midrib. The two sides of the segment are thus kept together and folded upon each other. As a consequence, writing takes place only on the outside of each segment side. These manuscripts are usually strung with a thread to which a hook is added to be able to hang the whole manuscript on a vertical support (Fig. 13).[15]

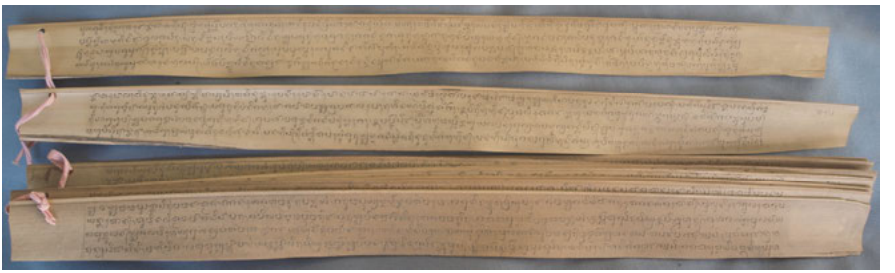

Fig. 13: Leiden, UBL, REM 16–569 (*Kakawin Bhāratayuddha*) from Bali; photo by Dick van der Meij, courtesy of the UBL.

2.1.2 More on threads

In case of two holes, it is unclear if and when they were both used. For example, currently it is usually only the hole on the left-hand side that is used in South Indian palm-leaf pothis (Fig. 14). However, European libraries do hold such manuscripts in which the thread runs through both sets of holes (Fig 15).

A rather unique case is that of Burmese *Kammavācā* manuscripts. Prepared on the occasion of the ordination of Buddhist monks, these pothis have folios that can be made of a variety of materials, such as palm leaves and cloth that is gilded and lacquered, metal and ivory sheets or plain palm leaves.[16] *Kammavācā* manuscripts are tied with bands of colourful cotton fabric, called

15 Van der Meij 2017, 193–194. For a similar way of working the leaves, see below, § 2.1.4.

16 See Isaacs 2014, 34 and Ward 2015, 72. For an image of a plain palm-leaf *Kammavācā*, see London, BL, Or. 16673, discussed by Jana Igunma in a 2019 blog post at https://southeastasianlibrarygroup.wordpress.com/2019/12/20/buddhist-manuscript-textiles-southeast-asia/ (accessed on 2 January 2023).

*sasigyo*s ('manuscript tying thread', also spelled *sarsekyo*). They are composed of three sections: a loop and a cord – both thickly woven – at the two extremities that can be used to tie the band after it has been wrapped around the manuscript, and a much longer, flat central section that is woven so as to form religious symbols and sentences, such as invocations, scribal (or rather weaver's) colophons, donor's colophons etc. (Fig. 16).[17]

Fig. 14: Hamburg, CSMC, MS-1-2018; photo by Giovanni Ciotti.

17 Isaacs 2014. Similarly, flat cloth belts – sometimes fastened with brass buckles – can be used in Tibet to secure the loose leaves of paper pothis (see Helman-Ważny and Kapstein forthcoming).

Fig. 15: Paris, BnF, indien 102; photo by Emmanuel Francis-Gonze; courtesy of the BnF (https://tst.hypotheses.org/2776).

Fig. 16: Hamburg, CSMC, Teijgeler 30 (manuscript) and Hamburg, CSMC, Teijgeler 24 (band); note that the two items do not originally belong together; photo by Giovanni Ciotti.

In Thailand and Laos, threads can also be used to divide discrete sections of the stack of leaves. The basic unit is called *phuk* (Thai ผก, Lao ຜົກ), i.e. a fascicle of leaves fastened together with a thread. If several fascicles are needed for copying lengthy texts (which, for whatever reason, the scribe decides not to split across physically separate *phuk*s), these can be fastened together with a cotton thread in a *sum* (Lao ຊຸ້ມ).[18] This can be done in a way that maintains the distinction among *phuk*s (Figs 17 and 18).[19]

Fig. 17: Luang Prabang, Vat Xiang Thong, 06.01.02.02.020.00; courtesy of the Buddhist Archives of Luang Prabang.

18 The term *sum* seems to be in use only in Laos, not in Thailand. I thank Volker Grabowsky for pointing this out to me in an email exchange dated 12 December 2022.
19 Grabowsky 2022, 232 and Schnake 2022, 215–216.

Fig. 18: Luang Prabang, Vat Xiang Thong, 06.01.02.02.043.00; courtesy of the Buddhist Archives of Luang Prabang.

In Indonesia, where, as noted above, palm leaves usually have three holes, the one on the left-hand side can at times be used to tie in small threads that take up the function of bookmarks. In a particular case described by Dick van der Meij, four threads of different materials and colours are used to mark specific sections of a particular text (Fig. 19). It seems clear that the owner of the manuscript could easily single out the desired section thanks to this device.[20]

Fig. 19: Manuscript of the *Kakawin Bhomāntaka* from Lombok; photo by Dick van der Meij, collection Toenggoel Siagian.

20 Van der Meij 2017, 193.

2.1.3 Pins and pegs

Sometimes, when the stack of pierced folios is particularly high, a wooden peg (more rarely a metal pin) is inserted through one set of holes in order to provide further stability, whereas the other set of holes is run through by a cotton thread, as usual (Fig. 20). This precaution is by no means taken regularly, though at times even small manuscripts are preserved with such a peg. This may be due to the fact that, as per my personal experience in South Indian manuscript libraries, the peg also comes in handy when binding a manuscript. It can in fact be used to push the thread through the holes of a manuscript, in particular through those of a few leaves at a time, instead of inserting the thread through each leaf individually, thus saving quite some time in the process.[21]

Fig. 20: Paris, BnF, indien 963; Photos by Emmanuel Francis-Gonze; courtesy of the BnF (https://didomena.ehess.fr/concern/data_sets/76537534n?locale=fr).

An interesting case comes from Maritime Southeast Asia, where two pegs are attached to the board so that they can pass through the side holes of the palm leaves, which, as mentioned above, usually have three holes in this particular region (Fig. 21).[22]

21 Burmese pegs made of bamboo, called *palindaing*, are mentioned in May and Igunma 2018, 16.
22 Van der Meij 2017, 299.

Fig. 21: Photo by Dick van der Meij, from Dick van der Meij's private collection.

2.1.4 More on covers

Covers can be extremely simple (Fig. 22) or engraved (Fig. 23). Further, they can be dyed, gilded, lacquered and inlaid with conch shells or gems, in particular in Mainland Southeast Asia (Fig. 24).[23] If painted, the covers are usually illuminated on the inside for better preservation of the images (Fig. 25).[24]

23 For a short yet informative series of examples, see May and Igunma 2018, 14–25.
24 For a richly illustrated series of examples from Nepal, see Pradhananga and Rimal 2016.

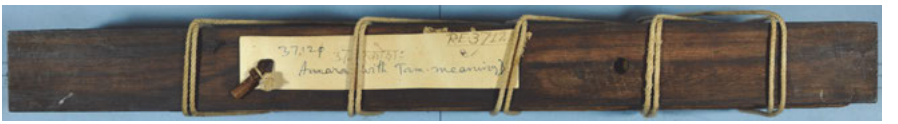

Fig. 22: Puducherry, IFP, RE37121; courtesy of the IFP.

Fig. 23: Hamburg, CSMC, MS-1-2017; photo by Giovanni Ciotti.

Fig. 24: London, BL, Or. 16114; courtesy of the BL (https://blogs.bl.uk/asian-and-african/2015/01/the-beauty-of-palm-leaf-manuscripts-2-northern-thai-lao-and-shan-traditions.html).

Fig. 25: Cambridge, CUL, Add. 1464, outer and inner (painted) sides of the cover (*Prajñāpāramitāstotra* and *Aṣṭasāhasrikā Prajñāpāramitā*), *c.* eleventh century; reproduced by kind permission of the Syndics of CUL (https://cudl.lib.cam.ac.uk/view/MS-ADD-01464).

In a case that, to my knowledge, has not yet been recorded in the literature and that I could observe only in South Indian palm-leaf pothis, a thick leaf seems – at a first glance – to be used as a cover. Upon closer examination, these covers are in fact produced with the same method used in the case of the *ĕmbat-ĕmbatan* discussed above.[25] Two sides of a palm-frond segment are kept intact and folded along their midrib. These are then worked together (e.g. boiled and polished) so that the end product appears like a single thick palm-leaf folio. At times, a folded segment can contain another leaf or even a whole other segment to make the cover extra strong (Fig. 26).

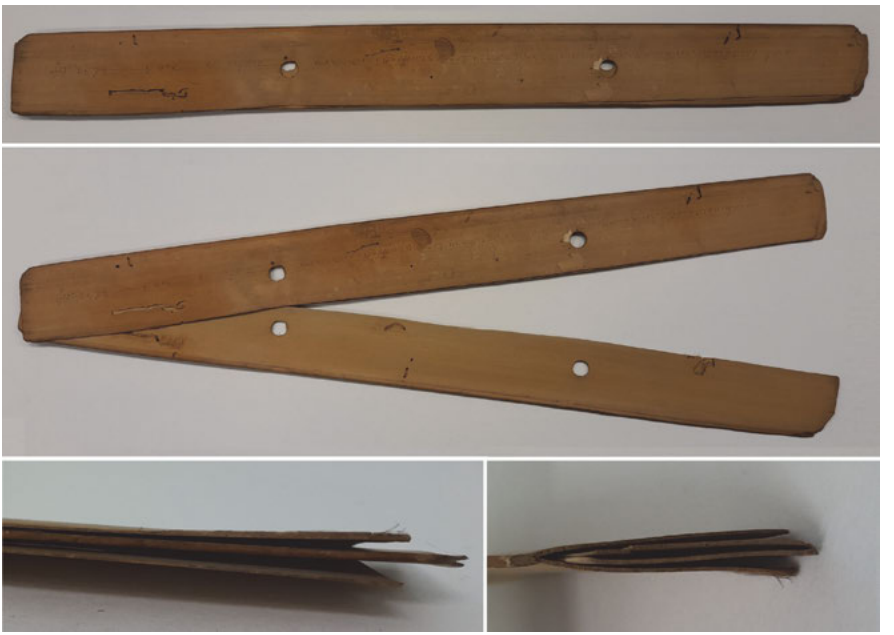

Fig. 26: Hamburg, SUB, 35.3009; photo by Giovanni Ciotti; courtesy of the SUB.

Finally, it must be kept in mind that many pothis have reached us without covers. This may be due to the accidents of history, but it may well be the case that some never had covers. We lack the statistics and evidence to project the current state of affairs backwards in time, but we can at least look at artistic renditions of pothis and observe that both manuscripts with and without covers seem to be

25 See § 2.1.1.

represented. Just to give two relatively clear examples, on the one hand, we can observe the statue of Śiva in his Dakṣiṇāmūrti form at Aṭṭahāseśvara Temple in Thiruttani/Tiruttaṇi (Tamil Nadu, India), dated to the ninth century: the folios of the manuscript he holds in his left hand are sagging at both ends, thus suggesting the absence of a cover (Fig. 27).

Fig. 27: Śiva Dakṣiṇāmūrti (Aṭṭahāseśvara Temple, Tiruttaṇi) and detail; photo by Dominic Goodall.

On the other hand, we have the case of a sculpture of Sarasvatī (the goddess of learning) from Mathura/Mathurā (Uttar Pradesh, India), dated to around the second century, where, even though the manuscript is represented in a vertical orientation, it maintains a proper upright position, most probably because it is equipped with covers – on which, incidentally, the loops of the thread seem to have been carved, too (Fig. 28).[26]

Fig. 28: Squatting Sarasvatī and detail (Lucknow, Uttar Pradesh, State Museum of Lucknow, Acc. No. J. 24); uncredited photo.

26 The statue of Dakṣiṇāmūrti at Aṭṭahāseśvara Temple is also discussed in Goodall 2017. The statue of Sarasvatī at Mathurā is reproduced at https://www.herenow4u.net/index.php?id=83001 (accessed on 2 January 2023). For more references to representations of manuscripts, see also Goswamy 2006, 13–69.

2.2 Unstrung pothis

To my knowledge, the vast majority of pothis from South Asia and Tibet that are made of paper are unpierced and unstrung (Fig. 29).[27] A placeholder where the hole could be pierced is sometimes marked (Fig. 30) – a convention, clearly inspired by palm-leaf pothis – but there are also cases in which there is no trace of such a convention (Fig. 31). Unstrung pothis may be equipped with covers (also left unpierced) and are usually wrapped in textiles. The latter aspect will however be discussed separately, given that strung pothis may be wrapped, too.[28]

Fig. 29: Kathmandu, ĀS, DPN 07252 (*Skandapurāṇa*), stack of paper folios; photo by Bidur Bhattarai.

Fig. 30: Cambridge, CUL, Add. 1766 [fol. 2ᵛ] (*Suvarṇaprabhāsottamasūtra*), 1790 CE; reproduced by kind permission of the Syndics of CUL (https://cudl.lib.cam.ac.uk/view/MS-ADD-01766/5).

27 Paper pothis from other areas of Central Asia do not conform to this pattern, e.g. some Tibetan and Chinese manuscripts from Dunhuang (see below) and some Tocharian manuscripts from Kucha and adjacent areas (examples of Tocharian pothis, both with and without holes, can be seen in 'Pelliot Koutchéen ancienne Série 1–10, 12, 19', available at https://gallica.bnf.fr/ark:/12148/btv1b6000197b, accessed on 23 January 2023).

28 See § 3.

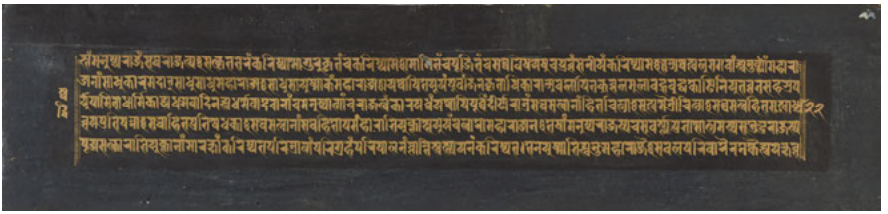

Fig. 31: Cambridge, CUL, Add. 875 (fol. 22r) (*Laghukṣetrasamāsa*), 1580 CE; reproduced by kind permission of the Syndics of CUL (https://cudl.lib.cam.ac.uk/view/MS-ADD-00875/46).

Unstrung paper pothis from North India may also be kept together inside paper sleeves (or envelopes). The CUL has a few such examples. Although these sleeves clearly come from India, in my opinion it remains unclear if the practice was precolonial or began only later on. For example, the sleeve of Cambridge, CUL, Add. 1766, reads '16–13–1637', meaning that the manuscript has 16 folios, 13 lines per page and is dated 1637 of the Vikrama era, which converts to 1580 CE (Fig. 32). One may be tempted to take this as evidence that the sleeve is as old as the manuscript, when in fact the hand that wrote those data was that of Bhagvāndās Kevaldās, the agent whom Georg Bühler employed to retrieve copies when working in India for the British and that he eventually sent to Cambridge in 1878.[29]

Notable exceptions to the unpierced-and-unstrung pattern among paper pothis containing Tibetan texts are those found in the caves of Dunhuang, which in many instances sport one or two holes,[30] and, as also already seen above, some Chinese paper pothis from the same place.[31] However, despite such a conspicuous feature, one should note that no threads have been found and that at times the holes are in pristine condition, not worn out by the friction of a potential thread.[32] We thus cannot exclude the possibility that some of these pothis were also left unstrung and perhaps bound with wrappers. Alternatively, some paper pothis may have been rolled up, in particular those of large dimen-

29 Balbir 2017, 48. I thank Nalini Balbir for further discussing this case in an email exchange dated 16 November 2022. The CUL collection contains other examples of such paper sleeves, such as those of Add. 1812, Add. 2406 and Add. 2286. I would like to thank Camillo A. Formigatti for directing my attention to these manuscripts.

30 See e.g. Vallée Poussin 1962, xv.

31 Galambos 2020, 25–27 and above § 2.1.1, Fig. 12.

32 Examples of both worn and unworn holes in Tibetan pothis from Dunhuang can be seen in Dotson and Helman-Ważny 2016, 35

sions. This is suggested, for example, by photographs of piles of manuscripts taken by Aurel Stein during his expeditions to Central Asia (Fig. 33).[33]

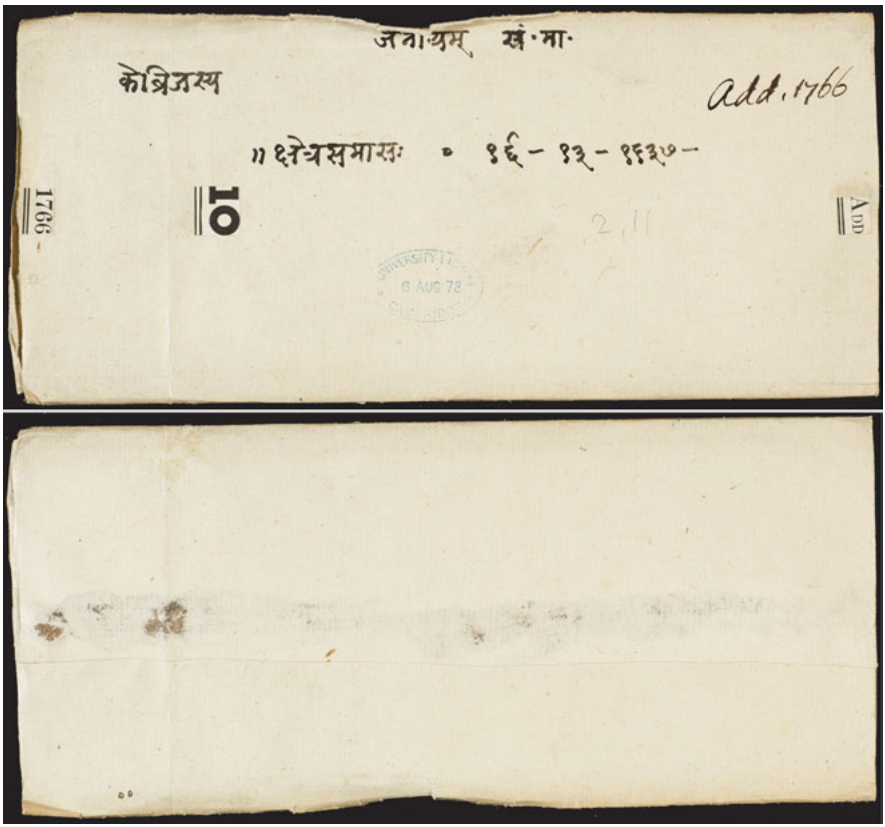

Fig. 32: Cambridge, CUL, Add. 1766, front and back of its paper sleeve (*Laghukṣetrasamāsa*); reproduced by kind permission of the Syndics of CUL (https://cudl.lib.cam.ac.uk/view/MS-ADD-01766/33).

33 This observation belongs to Imre Galambos; for example, see his online lecture 'Dunhuang at the Crossroads: The Manuscript Evidence', delivered for the Dunhuang Foundation on 6 October 2022 (https://www.youtube.com/watch?v=zOyulOfbmMU&feature=shares&t=978, accessed on 2 January 2023). I also thank him for discussing this issue with me in an email exchange dated 19 December 2022, and for directing my attention to a similar case described by Sam van Schaik in *IDP News*, issue no. 17 (http://idp.bl.uk/archives/news17/idpnews_17.a4d, accessed on 2 January 2023).

Fig. 33: London, BL, Photo 392/27(587) (1906–1908), manuscripts from the walled-up library found in the Thousand Buddha Caves of Dunhuang; courtesy of BL.

3 Wrappers, bags, satchels

Both strung and unstrung pothis can be wrapped in one or more purpose-made textiles of cotton or silk (Fig. 34). This practice is quite common in North India, Tibet and Mainland Southeast Asia.

Fig. 34: Kathmandu, ĀS, DPN 07252 (*Skandapurāṇa*), stack of paper folios; photo by Bidur Bhattarai.

Also common, particularly in Mainland Southeast Asia, is the case of recycled wrapping that was originally used for a different purpose, such as clothing. In 1924, George Cœdès, then director of the National Library of Thailand, wrote about this:

> It was an old custom in Siam for fine cloths formerly used as garments but worn out, or belonging to deceased persons, to be presented to the priests for use as wrappings for their manuscripts. A considerable number of the manuscripts in the National Library are wrapped in old and beautiful cloths of every description; some delicately embroidered, some made of Indian or Siamese brocade, and others of a special kind of cotton, printed in India with Siamese designs.[34]

An interesting example of this kind of repurposed clothing is a Lao tube skirt in three parts, used to keep together a small collection of fascicles (Fig. 35). Such a wrapped ensemble of either independent *phuk*s or *sum*s is called *mat* (Thai มัด, Lao ມັດ).[35]

A striking feature of Tibetan paper pothis is that they are first wrapped in textiles and then placed between two wooden covers (Fig. 36).[36] This practice is motivated by the fact that some monastic libraries are made of beams only, without shelves providing a horizontal surface. Therefore, the wooden cover takes up the function of the shelf. Other times, large numbers of manuscripts are piled one upon the other, and external covers provide much-needed stability.[37]

In Mainland Southeast Asia, it is also possible to come across other solutions for wrapping pothis. One can use custom-made bags of cotton or silk, which sport colourful decorative patterns (Fig. 37).[38]

Furthermore, one can also use satchels made of bamboo strips and woven with textiles (Fig. 38).[39] Alternatively, a probably rarer option is also that of a

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34 Cœdès 1924, 17, already discussed in Jana Igunma's 2019 blog post at https://southeastasianlibrarygroup.wordpress.com/2019/12/20/buddhist-manuscript-textiles-southeast-asia/ (last accessed 2 January 2023). The same blog post offers a very informative overview of repurposed textiles used in Mainland Southeast Asia (Thailand, Laos and Burma, in particular) used to wrap manuscripts, including the one reproduced in Fig. 35 here.

35 Grabowsky 2022, 232; and Schnake 2022, 215–216.

36 Helman-Ważny 2014, 53.

37 I would like to thank Agnieszka Helman-Ważny for kindly pointing this out to me in personal communication.

38 An informative overview of such kinds of items can be found in Jana Igunma's 2019 blog post at https://southeastasianlibrarygroup.wordpress.com/2019/12/20/buddhist-manuscript-textiles-southeast-asia/ (accessed on 2 January 2023).

39 Already discussed in Jana Igunma's 2019 blog post at https://southeastasianlibrarygroup.wordpress.com/2019/12/20/buddhist-manuscript-textiles-southeast-asia/ (accessed on 2 January 2023).

wrapper made of evenly distanced bamboo (or other wooden) strips connected with textile bands (Fig. 39).[40]

Fig. 35: London, BL, Or. 16886; courtesy of the BL.

40 I would like to thank Jana Igunma for kindly pointing out to me the existence of this object and generously sharing its image. Personally, I would tentatively not exclude the possibility that this is an early stage of a satchel that was not completed.

Fig. 36: Monastic library in western Tibet; photo by Agnieszka Helman-Ważny.

Fig. 37: London, BL, Or. 15885 (bag); photo by Jana Igunma; courtesy of BL.

Fig. 38: London, BL, Or. 12010 (satchel); courtesy of BL.

Fig. 39: London, BL, Add. MS 11552 (wrapper); photo by Jana Igunma; courtesy of BL.

I am inclined to draw a line here between binding and storing; hence we are not going to discuss the practice of placing manuscripts in boxes of various sizes and manufactures, either alone or in groups. Such a distinction remains artificial, of course, and its purpose is solely that of facilitating comparisons between different cultures that made use of pothis as well as across manuscript cultures at large as per the theme of the present volume.

4 A few premodern sources on binding pothis

Premodern indigenous sources that describe the appearance of pothis in detail and, in particular, the way in which they are bound are relatively scarce, though not non-existent. As far as Sanskrit sources are concerned, Florinda De Simini has collected the most important passages that describe the production of manuscripts and the copying of texts.[41] The following two passages are particularly informative: one from the *Devīpurāṇa* (late second half of the first millennium), the other from an available fragment of the lost *Nandipurāṇa* quoted in the chapter entitled 'Dānakāṇḍa' in Lakṣmīdhara's *Kṛtyakalpataru* (twelfth century).

> *śrītāḍipatrake saṃce same tatra susaṃcite* |
> *vicitrapaṭṭikāpārśve carmaṇā saṃpuṭīkṛte* || 37
> *raktena vātha kṛṣṇena mṛdunā raṅgitena vā* |
> *dṛḍhasūtranibaddhena evaṃ vidhikṛtena ca* || 38

41 De Simini 2016.

> The person who, having available a uniform and well assembled stack (*saṃce*) of *śrītāḍi* [= talipot] leaves, on whose side are variegated [wooden] tablets [and] that is covered with red or black leather, (37) Either soft or embossed, strongly tied with a thread, and [therefore] made in the proper manner (38).[42]

> *tatra vidyāṃ vinihitāṃ kuryāt pustakasaṃsthitām* |
> *kuryāc ca pustakaṃ* [...] || 112
> *karpāsasūtragrathitaṃ nānāgandhādhivāsitam* || 113
> *pītaraktakaṣāyair vā sunibaddhaṃ sucitritam* |
> *ramyaṃ laghu suvistīrṇaṃ nirgranthi granthisaṃyutam* || 116

> [One] should give knowledge laid there (scil. on the 'knowledge-holder', *vidyādhāra*) the shape of a manuscript and should assemble the manuscript. [...] (112) [...] held together by a cotton thread, perfumed with various fragrances. (113) Or it [= the manuscript] should be well wrapped in yellow, red, or ochre, nicely embellished, beautiful, light but of imposing size, with or without knots [on its cord]. (116)[43]

To this we can add a brief description that comes from belletristic literature, namely Dhanapāla's Sanskrit prose poem (*gadyakāvya*) entitled *Tilakamañjarī* (eleventh century):

> *ubhayato veṇukarparāvaraṇakṛtarakṣeṣv asaṃkīrṇakharatāḍaparṇakotkīrṇakarṇāṭādilipiṣu pustakeṣu* [...] *prabandhāni*

> Texts [...] in manuscripts (*pustakeṣu*) whose protection was ensured by covering them on both sides with bamboo boards (*karpara*) and in which scripts such as Karṇāṭa (i.e. Kannada) were scratched on well-ordered (*asaṃkīrṇa*) and durable (*khara*) leaves of palmyra (*tāḍa*).[44]

Aditia Gunawan has discussed some textual sources in Old Sundanese and Old Javanese that also present pertinent terminology.[45] Among them, a particularly pleasing passage is from the West Javanese version of the *Bhīmaswarga* (a prose poem in Old Javanese), where the components of the manuscript are associated with four of the five Pāṇḍawa (Pāṇḍava in Sanskrit) brothers, i.e. the heroes of the *Mahabharata* (*Mahābhārata* in Sanskrit) epos:

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42 *Devīpurāṇa* 91.37–38, edited and translated by De Simini 2016, 90.
43 *Nandipurāṇa* = *Dānakāṇḍa* 12.112ab, 113cd, 116, edited and translated by De Simini 2016, 91.
44 Note that in his modern commentary, Sūri 1953, 286 glosses *asaṃkīrṇa* with *vistṛta* ('strewn'), an interpretation that diverges from mine, and *khara* with *tīkṣṇa* or *kaṭhina* ('harsh', 'hard'), which I am inclined to interpret as a positive quality attributed to the leaves, hence my translation. I would like to thank Csaba Dezső for drawing my attention to this passage and discussing its interpretation with me in an email exchange dated 19 December 2022.
45 Gunawan 2015, 259–266.

> *manih bima, yudistira pinakagədbaṅ, arjuna pinakatali, sakula sadewa pinakapapan, tulis iṅ pustaka, saṅ hyaṅ darmaraja, kaṅ asəḍahan pustaka, hyaṅ bagawan citragotra*
>
> And further, o Bhīma, Yudhiṣṭhira serves as the Gebang leaf, Arjuna as the cord, [the twins] Sakula [i.e. Nakula] and Sahadewa as the cover boards, the writing in the book [is] Saṅ Hyaṅ Dharmarāja [that is Yama, the god of death], the one responsible for writing the book is Bhagawān Citragotra [i.e. Citragupta, Yama's assistant].[46]

Further investigations will most probably bring to light pertinent descriptions in texts composed in the various other languages of the many cultures that have made use of pothis.

A premodern and self-proclaimed outsider's look into the way manuscripts are bound in South Asia is offered by Al-Bīrūnī (973–*c*.1052). His *Tārīkh al-Hind* ('History of India'), which collects the observations Al-Bīrūnī made during his travels to India in 1007, includes a succinct report on the 'writing of the Hindus'. In two short passages, he first describes palm-leaf manuscripts as follows:

> The Hindus have in the south of their country a slender tree like the date and cocoa-nut palms, bearing edible fruits and leaves of the length of one yard, and as broad as three fingers one put beside the other. They call these leaves *târî*, and write on them. They bind a book of these leaves together by a cord on which they are arranged, the cord going through all the leaves by a hole in the middle of each.[47]

Then he describes birch-bark manuscripts in brief by saying:

> In Central and Northern India people use the bark of the *tûz* tree, one kind of which is used as a cover for bows. It is called *bhûrja*. [...] The whole book is wrapped up in a piece of cloth and fastened between two tablets of the same size. Such a book is called *pûthî*.[48]

More rarely, the artefacts themselves contain terminology relevant to binding. Just to give one example related to wrappers, while describing a group of manuscripts that were originally kept together in a box, Nalini Balbir resolves the abbreviations found on them, stating that '"Po" is the usual abbreviation for *poṭalī* "bundle" and "pra" for *prati* "manuscript". "Po" normally refers to the larger container (cotton envelope) in which several "pra" could be put together'.[49]

46 Edited and translated by Gunawan 2015, 261. I have slightly modified the translation to make it more understandable without further explanations.

47 Translated by Sachau 1910, 171.

48 Translated by Sachau 1910, 171.

49 Balbir 2017, 70–71.

5 Consequences of the 'loose' nature of pothi binding: A few cases from Tamil Nadu

Whether strung or unstrung, pothis are characterized by bindings that can be easily and speedily undone. As a consequence, folios can be intentionally or mistakenly rearranged within the same manuscript at any time, or they can be temporarily or permanently removed from the manuscript with no effort, for example in order to copy their content somewhere else.

Furthermore, additional folios can be conveniently added. On the one hand, this implies that damaged and lost folios or folios whose texts were copied with too many mistakes can quickly be replaced by the scribe as well as by later users.[50] On the other hand, it is quite common to come across composite manuscripts, i.e. manuscripts made of folios that belong to two or more different manuscripts that were presumably not supposed to be assembled together when produced. In this respect, let us take two rather straightforward examples from the collection of palm-leaf manuscripts held at the Institut français de Pondichéry (Puducherry, India), namely Puducherry, IFP, RE10859 (Fig. 40) and RE10900 (Fig. 41). In both cases, the profile of the two stacks clearly reveals that leaves of different lengths that were not – at least originally – supposed to belong together are now part of the same object. This is further confirmed by the fact that each section has its own pagination and bears the ductus of a different scribe. Furthermore, some sections are made of leaves with one hole and others of leaves with two.[51]

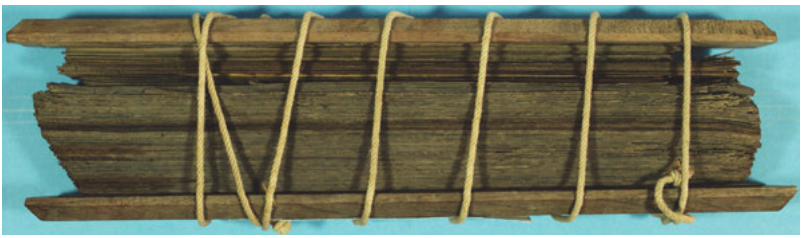

Fig. 40: Puducherry, IFP, RE10859; courtesy of the IFP.

50 This represents quite an obstacle for approaches to textual criticism that are sensitive to the material aspects of manuscripts ('material evidence'; see, for example, Reeve 1989).

51 See also descriptions in Varadachari 1987, 205–207 and 285–299, respectively. According to Varadachari, Puducherry, IFP, RE10859 contains (fragments of) five texts, and Puducherry, IFP, RE10900 of thirty-seven texts.

Fig. 41: Puducherry, IFP, RE10900; courtesy of the IFP.

A further implication concerning manuscript production is shown by the case of Puducherry, IFP, RE04209, which – though incomplete – contains eighteen texts copied by the same scribe, one Citamparavattiyāṉ, grandson of Rāmaṇātavattiyār (Fig. 42). Two of these texts include colophons that indicate the end of copying: the *Pratiṣṭhānukramaṇī* (also referred to as *Pratiṣṭhai Aṭṭavaṉai* in the manuscript itself) on 1 March 1827,[52] and the *Dīkṣā*[*dividhi*]*paddhati* on 15 March 1827.[53] Given that the foliation in the manuscript is continuous, one would expect the *Pratiṣṭhānukramaṇī* to precede the *Dīkṣāpaddhati*. However, they respectively occupy the third and second position in the sequence of texts: the *Pratiṣṭhānukramaṇī* occupies fols 151^{r}–181^{v}, and the *Dīkṣā*[*dividhi*]*paddhati* fols 132^{r}–150^{r}. It can be argued that the most plausible explanation is that the foliation was added only after the various texts had been separately copied and the leaves assembled in the stack.[54]

52 [fol. 181^{v}4, column 2] *1002* ⟨symbol for Kollam year⟩ *māci m°m 20* ⟨symbol for day⟩ *eḻuti mukintitu* | ('It is fully copied in Kollam year 1002, month of Māci, 20th day'). Date conversion courtesy of Marco Franceschini.

53 [fol. 150^{r}3–5] 1002 ⟨symbol for Kollam year⟩ *paṅkuṉi m°m* 4 ⟨symbol for day⟩ *viyāḻakiḻamai aṉṟu hastanakṣatrattil eḻuti mukintitu* || – *itu āru kaippaṭṭa akṣaram eṉṟāl rāmaṇātavattiyār peraṉ citamparavattiyāṉ eḻuttu* | ('Kollam year 1002, month of Paṅkuṉi, 4th day, Thursday – on that day, it is fully copied under the constellation of Hasta. If one asks whose (*āṟu*) handwritten characters (*akṣaram*) are these, [the answer is that it is] the script (*eḻuttu*) of Citamparavattiyāṉ, grandson of Rāmaṇātavattiyār'). Date conversion courtesy of Marco Franceschini.

54 The same is proposed in the catalogue of the IFP collection (Varadachari 1986, 116).

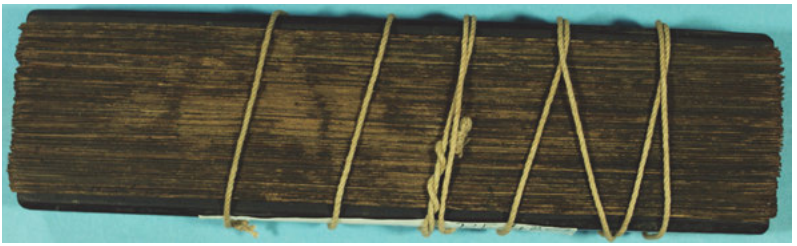

Fig. 42: Puducherry, IFP, RE04209; courtesy of the IFP.

A further case is that of a pothi that was split into several different independent manuscripts. For example, Chennai, GOML, 5549 to 5552 were originally one manuscript made of a single codicological unit (same leaves, same hand, continuous foliation). At an undefinable point in time, however, they were split into four different manuscripts, each of which is preserved today with its own set of covers. We could say that this is the case of a multiple-text manuscript turned into a multi-volume manuscript.[55]

6 Conclusions and desiderata

This succinct survey has hopefully shown the extent to which it is possible and meaningful to look at the pothi form across the various regions and traditions that made use of it, beyond the usual disciplinary boundaries. This is the case not simply because the pothi is one of the most widespread forms of manuscript to exist, but also because the features that characterize pothis in one culture can definitely be better appreciated when we look at what other cultures made of it – how they adopted and adapted this specific manuscript form to different artisanal, scribal and archival customs.[56]

Much remains to be done, however, to go beyond impressionistic reports that are based on personal observations and unsystematic descriptions. A sound quantitative approach is a clear desideratum. The outcome of such an approach would of course need to be carefully contextualized given that, in many cases, we do not have evidence to prove that what we can now observe also reflects past practices. In this respect, the fact that in the Indian subconti-

55 For a more detailed codicological description, see Ciotti 2021b, 338.

56 For a recent attempt at pursuing this agenda in relation to colophons, see Balbir and Ciotti 2022.

nent, for example, most pothis are kept in libraries that were founded during or after the colonial period may have had a significant impact on the way these artefacts appear to us today, an impact yet to be investigated.

A further desideratum would be that of systematically collecting indigenous terminology in the several dozen languages of the cultures that used pothis, which in turn would give us a fresh and sounder angle from which to look at these written artefacts and how they were perceived in the past.

Acknowledgements

This article was funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) under Germany's Excellence Strategy – EXC 2176 'Understanding Written Artefacts: Material, Interaction and Transmission in Manuscript Cultures', project no. 390893796. Research was conducted within the scope of (1) the Centre for the Study of Manuscript Cultures (CSMC) at Universität Hamburg, in particular the Palm-Leaf Manuscript Profiling Initiative, and (2) the project 'Texts Surrounding Texts (TST) – Satellite Stanzas, Prefaces and Colophons in South-Indian Manuscripts' (collections of the Paris BnF and Hamburg SUB), funded by ANR & DFG (2019–2023).

Heartfelt thanks go to Nalini Balbir, Bidur Bhattarai, Khamvone Boulyaphonh, Florinda De Simini, Csaba Dezső, Camillo A. Formigatti, Marco Franceschini, Emmanuel Francis-Gonze, Imre Galambos, Dominic Goodall, Volker Grabowsky, Agnieszka Helman-Ważny, Jana Igunma and Dick van der Meij, who so generously shared with me their images, expertise and philological insights.

While writing this article, the news reached me of the demise of Erberto Lo Bue, who first introduced me to everything beautiful that is in the Himalayas and Tibet. I dedicate it to his knowledge and wisdom.

Abbreviations

ĀS = Āśā Saphūkuthi / Āśā Archives (Kathmandu)
BL = British Library (London)
BnF = Bibliothèque nationale de France (Paris)
CSMC = Centre for the Study of Manuscript Cultures (Hamburg)
CUL = Cambridge University Library (Cambridge)
GOML = Government Oriental Manuscript Library (Chennai)
IFP = Institut français de Pondichéry (Puducherry)
SUB = Staats- und Universitätsbibliothek (Hamburg)
UBL = Universiteitsbibliotheek Leiden (Leiden)

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Amélie Couvrat Desvergnes

Guṭakās from North-Western India: An Introduction to their Structures and Materials

Abstract: *Guṭakās* are pocket manuscripts that comprise collections of devotional texts dedicated to a specific Hindu deity. They are products of the eighteenth and nineteenth centuries from the north-western regions of India. Their various forms reflect the interconnections between the Hindu pothi, made of unbound leaves and protected by a cloth wrapper, and the Islamic codex, reminiscent of the western book tradition. The present article aims to provide an introduction to the characteristics of their binding as well as their materials and decorative elements.

1 Introduction

The term *guṭakā* or *guṭkā*, गुटका in Hindi, means manual or handbook but also relates to a small selection or collection of various texts. Nalini Balbir provides the most complete description related to the *guṭakās* in the Jain context:

> A guṭakā is a format comparable to a western pocket-book or note-book. It may have originally been bound, but in most cases the folded sheets are placed inside a cover without binding. A guṭakā is generally made of several individual texts, which may have something in common [...]. They can be written all by the same hand, or by different hands [...]. The object is one, but it can be ornamented in different ways in different places (different margins, different types of blank space in the middle, etc.). [...] In most cases of this type, there are on the one hand full-fledged texts which have been copied neatly and properly, as any other manuscript, and, on the other hand, some sorts of notes in cursive script (accounts, recipes) which are rather meant for personal use than for others to read. The analysis of such manuscripts is problematic.[1]

However, *guṭakās* are not only found in Jain contexts but also in Hindu ones. They usually include a single text or a compilation of devotional texts, often dedicated to Śiva, Viṣṇu or Devī, sometimes mixed together, and are used on

1 Balbir 2006, 60.

https://doi.org/10.1515/9783111292069-007

various occasions, such as personal reading, worship or puja, and meditations.[2] These are eighteenth- and nineteenth-century products from north-western India, in the regions of Kashmir, Punjab and Rajasthan, and evoke a portable book of approximately a landscape postcard format that can be easily carried in a pocket or bag and read outside during a trip, for example, in a place of pilgrimage.[3] They are mainly written in Devanāgarī, a script widely used in northern India to write, for example, Sanskrit or Hindi. In Kashmir, the text can also be written in the local Śarada script. *Guṭakās* are also used in Sikh communities and contain compendiums of Sikh religious scriptures, such as the *Pañj Granthī*, which contains a selection of five texts from the *Guru Granth Sāhib*. The latter, the sacred book of Sikhism, is copied in large and heavy volumes and can be enthroned for recitation only in the prescribed ritualistic manner and opened in the *gurdwaras* or in a special room dedicated to that purpose.[4] Small anthologies were prepared in the form of *guṭakās* in order to facilitate private recitation or study.

Depending on the production context, the means of the devotee, and the skill of the scribe or the painter and the tools at his disposal, the text can be more or less elaborately illuminated and illustrated. A rich palette and the use of gold or silver paint are usually the apanage of skilled and accomplished artists and wealthy clients.[5] Similarly, the bindings feature a wide variety of covering materials, from simple cotton fabric to sari and brocade silk.

The codicological study of *guṭakās* is in its infancy. The most extensive research project, the results of which have been compiled in a book by Heike Oberlin and Frank Köhler,[6] takes an in-depth look at two *guṭakās* preserved at the University of Tübingen in Germany through various scholarly essays.[7] In

2 Balbir mentions that Jain *guṭakās* are private prayer manuals 'which are meant to include everything which is useful in the context of daily ritual and religious life for any pious layman, from textbooks on the doctrine [...] to narrative texts, hymns and vidhis' (Balbir 2006, 112).

3 Formigatti 2020, 70; K. Goswamy 1989, 19.

4 In Sikh shrines called *gurdwaras* (which means in Punjabi 'doorway to the Guru'), the *Guru Granth Sāhib*, the sacred scripture of Sikhism, is worshipped as the spiritual embodiment of the Guru. The large and heavy copy is safely opened on a cushioned stand called *manjī*, protected by a canopy. In addition, every Sikh family endeavours to set aside one room of the house for the reading of the *Adi Granth*, and that room is also called a *gurdwara*.

5 Karuna Goswamy gives a brief overview of their decorative repertoire in *The Glory of the Great Goddess*, K. Goswamy 1989, 19–21.

6 Oberlin and Kohler 2020; Singh Dhillon 2021, 252.

7 Tübingen, TUB, Cod. Ma I 893 contains three texts from the Vaiṣṇava tradition and Cod. Ma I 894 eleven texts, of which the first eight are excerpts from larger Vaiṣṇava texts, while the last three belong to the Śaiva tradition. The texts dedicated to Viṣṇu are the *Bhagavadgītāmālāman-*

addition, the conservation of these volumes was the occasion to deeply observe and record their structure.[8] A Master's thesis by Madeline Helland explores two *guṭakās* found incidentally in the basement at the Denison Library at Scripps College (Claremont, CA).[9] Helland recounts her journey through the understanding of the socio-historical context as well as the construction and content of these books that were totally unknown to her.[10] Nina Cavazos's dissertation will not be further discussed here, many aspects of which have been questioned by Camillo Formigatti.[11] All of this is to say that *guṭakās*, although fairly simple in format, as will be discussed later in this article, may have been overlooked because of the lack of understanding resulting from the 'obscure' iconography and the illegibility of the text to the uninitiated. Other reasons for this lack of interest or research opportunity may be that the relatively small number of scattered copies, the lack of a coherent corpus in western collections, the difficulty of accurately identifying the content of the texts, and the great variety of materials and structures are the main obstacles preventing the collection of sufficient data for analysis and interpretation. The examination of several *guṭakās* from European institutions (in France, Switzerland, the United Kingdom and the Netherlands) has made it possible to highlight certain characteristics of their structures independently of their textual meaning (see Appendix). Therefore, the article aims to provide an introduction to the materiality of these books, while exploring the various binding structures of a few manuscripts from Kashmir to Rajasthan. A particular emphasis will also be placed on the materials used to prepare the text block and cover the book.

2 The form and use of the *guṭakās*

It is plausible to think that a *guṭakā* is a hybrid book form inherited from the long horizontal palm-leaf manuscript or pothi together with the Islamic codex.[12] Although it is not entirely clear how the manuscript took its final form of a

tra, 'Garland Mantra of the *Bhagavadgītā*' and a form of *Viṣṇusahasranāma* or 'Thousand Names of Viṣṇu'. See Formigatti 2020.

8 Dipper 2020.

9 Helland 2018.

10 The first book contains a copy of the *Bhagavadgītā* written in Devanāgarī and the second a compilation of Vaiṣṇava texts copied in Śarada.

11 Formigatti 2020, 71; Cavazos 2016.

12 The term pothi ultimately derives from the Sanskrit word *pustikā or pustakā*.

small, compact and oblong handbook, it is probable that the format gradually derived from both of the models above through the course of the eighteenth century. When fully opened, the *guṭakā* is reminiscent of the long horizontal palm leaves of the pothi, albeit in a stitched form (Fig. 1). An interesting manuscript, London, BL, Or. 13682, might be a noteworthy example of the structural evolution of the book towards a more compact and intimate format (Fig. 2). The volume does not contain devotional texts but a copy of the *Madhumālatīvārtā* (the love story of Madhu and Mālatī) included in a collection with four other Rajasthani poems. The date of the copy is given as Samvat 1829–1832, which is equivalent to 1772–1775 CE, and the location is assigned to south-eastern Rajasthan because the illustrations are in the Mewar style.[13] The volume is of a square and small format and the text block measures 120 mm in height and 125 mm in width. It consists of a single and thick section of folded bifolios that are held together by a string that passes through two holes pierced in the middle of the section. The string forms a knot in a third hole, in the middle of the height, on the spine, to hold the whole structure together. It comes out of the spine and serves as a tie that is wrapped around the volume to keep it closed. In addition, three pieces of leather at the sewing holes protect the paper from the friction of the cord (Fig. 3). The limp cover is made of four repurposed pieces of brown leather assembled together with a saddle stitch. It has a flap which sits on the lower board when the book is closed. The leather protrudes at the top and bottom to protect the edges of the text block. Although the type of sewing described above was rarely used for Indic manuscripts, it is, nonetheless, a quick and inexpensive method that requires no special skills or tools other than a needle and thread and can, therefore, be done on site. During my research, I only came across one similar sewing but for a small and thin manuscript containing several religious texts.[14] The British Library manuscript contains many illustrations painted with a bold palette and, therefore, may reflect a certain standard of its patron. All of these features, including the use of a leather wrapper with a flap, may suggest that this book is part of a tradition of small books intended for a local and private readership, as were the *guṭakās*.

13 The text was composed by the Rajasthani poet Caturbhuj Dās but the present British Library copy was written in Rajasthani or Braj Bhasha. The author thanks Marina Chellini for providing the bibliographic information. See also Losty 1982, 130–131.

14 Leiden, UBL, Or. 27.616, containing texts written in Devanāgarī and dated to the nineteenth century.

Fig. 1: Open *guṭakā*, collection of texts related to Viṣṇu's worship, Kashmir, *c*. 1777; Cologny, FMB, Cod. Bodmer 709. © Fondation Martin Bodmer

Fig. 2: Closed copy of the *Madhumālatīvārtā*, 1772–1775 CE, Rajasthan (Mewar); London, BL, Or. 13682 (binding); © British Library Board.

Fig. 3: Open copy of the *Madhumālatīvārtā,* 1772–1775 CE, Rajasthan (Mewar); London, BL, Or. 13682 (middle of the book); © British Library Board.

Returning to the sewing structure, most of the *guṭakās* in this study are composed of multiple quires that are bound along their short vertical edges (see Appendix). Nevertheless, there is a variant to this format. As illustrated in a copy of the *Jvālāmukhīsahasranāma*, Paris, BnF, sanscrit 434, the folios are still assembled in quires, but these are sewn along their long horizontal edges (Fig. 4). Therefore, the page-turning is done upwards and not sideways. This format is again reminiscent of the pothi manuscript, but in a stitched form in order to prevent scattering and loss. The text is here read vertically and continuously from the upper to the lower folio. According to Pranita Ranade, who studied seventeenth-century unbound books written in Devanāgarī from Maharashtra, this conventional system of page orientation is dictated by the form, function and use of the book and the position of the reader.[15] The vertical format allows for smooth and uninterrupted reading, as well as an ergonomic handling of the folios, made possible by the size of the page, the ratio of width to height and the collocation of the text within the folios.

15 Ranade 2015, 2–12.

Fig. 4: Open manuscript of the *Jvālāmukhīsahasranāma* showing the sewing made along the long horizontal edge; Paris, BnF, sanscrit 434; photo by Amélie Couvrat Desvergnes.

Two interesting photographs illustrate the use of both book forms. Fig. 5 shows a devotee from Rajasthan performing a puja. The *tripuṇḍra*, three horizontal lines and a dot on his forehead, as well as other marks on his body drawn with sacred ash, indicate that he is a disciple of Śiva. The *mala* or rosary he is holding in this right hand is hidden in a prayer sock or *gomukhī*.[16] The cultic objects necessary for the rituals are arranged around him: a *thali* tray filled with offerings, pestle and mortar, oil lamps, candlesticks, various pots and jugs, and a miniature shrine, probably containing the image of a deity adorned with fresh flowers. The manuscript made of unbound leaves, which are flipped upward, is opened flat on the low table. Similarly, Fig. 6 presents a Brahmin from Gokarna

16 There are several reasons for such a practice: to ensure the sanctity of the *mala* and, therefore, of the practice, to protect the *mala* from impurities and dirt and to keet it out of reach of strangers. By preventing prying eyes, the devotion and prayers are protected and remain private and personal.

reading a horizontal book, laid flat on a small stool.[17] Both books have a similar format, except that the second one is sewn and bound along the long horizontal edge. In both cases, the worshippers sit cross-legged on the floor with the book lying flat on a small table or low stool in front of them. By contrast, a photograph taken by William Johnson between 1855 and 1862 shows two Smarth Brahmins performing puja (Fig. 7). The devotee on the left is reading a *guṭakā* sewn along the short and vertical edge held in his left hand. Another *guṭakā* with an envelope flap sits on a larger volume wrapped in a decorative textile, itself placed on a low table in front of the second devotee on the right. Naturally, bound and oblong *guṭakās* could be simply handled and read as one would with paperbacks.

Fig. 5: An Indian devotee squatting in front of a small table on which is a shrine, perhaps in a temple; photo *c.* 1900, Wellcome Collection; public domain.

17 Gokarna in western Karnataka is a popular place of pilgrimage. It is home to a number of scholars and pundits who pass on their knowledge from generation to generation. The main temple is dedicated to Śiva in the form of Mahābaleśvara.

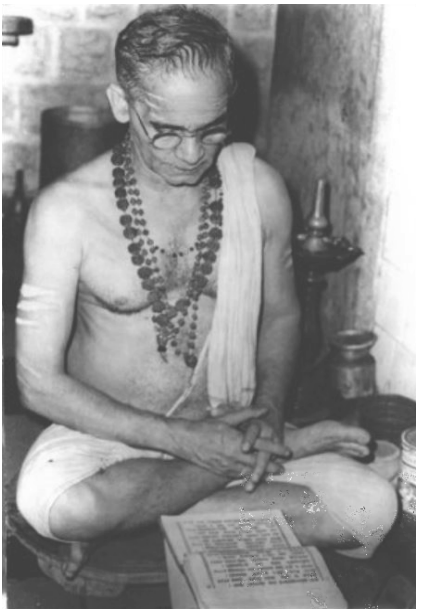

Fig. 6: A Brahmin from Gorkana; courtesy of Kamat's Potpourri.

Fig. 7: Smarth Brahmins; photos of western India, William Johnson, *c*. 1855–1862, albumen print; Dallas, TX, Southern Methodist University, DeGolyer Library, Ag2002.1407; © DeGolyer Library.

3 The binding structures of the *guṭakās*

After the bifolios of the future book are prepared, it appears that, in most cases, the ruling is carried out before writing the text. A photograph taken around 1895 by a British traveller in Kashmir shows three pandits or Brahmins copying a text, possibly in a street shop. Although the scene appears to have been staged, it provides a rare image of what the process of writing the sacred scriptures might have looked like (Fig. 8). While two scholars write on bifolios placed on their knees, a third pandit probably dictates the text to be copied or checks the completed folios. The bifolios on which the scribes are writing show that the ruled lines had already been drawn previously. Some books confirm this observation: it is not uncommon to find a series of blank lined sheets without text at the end. The manuscript Paris, BnF, sanscrit 337, for example, containing some texts dedicated to Viṣṇu finishes with three blank ruled folios (Fig. 9).

Fig. 8: Book writers, Kashmir, 1895; © British Library Board. All Rights Reserved/Bridgeman Images.

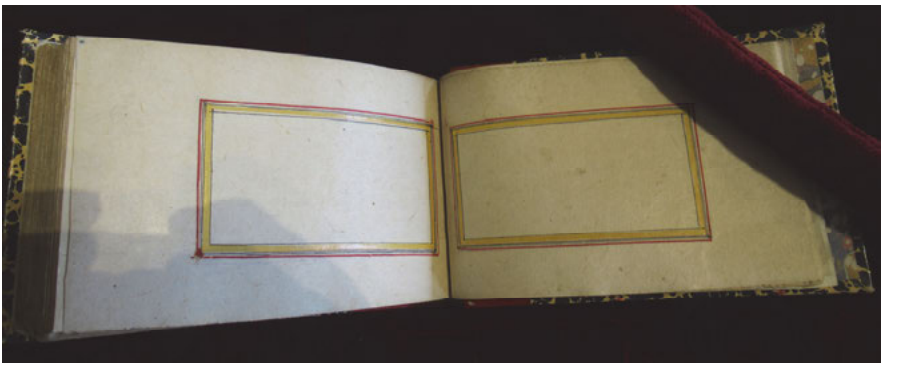

Fig. 9: Blank ruled folios at the end of the manuscript of the *Bhagavadgītā* and *Viṣṇusahasranāma*; Paris, BnF, sanscrit 337; photo by Amélie Couvrat Desvergnes.

After the text is written, the bifolios are usually assembled into quires and the text block is sewn on two, three or sometimes four sewing stations (Fig. 10). The sewing is unsupported, which means that the quires are bound to each other with link-stitch sewing, similar to that of Islamic manuscripts.[18] An examination of several books reveals that, most of the time, the quires are quinions, that is, five bifolios or ten folios. Two dashes drawn in charcoal and situated at one of the corners of the left and right folios indicate the middle of the quires and serve as aids to facilitate the sewing operation for the bookbinder (Fig. 11). In addition to the predominance of unsupported sewing, supported sewing has also been reported. Helland, for instance, notices a book being sewn on one or two strips of leather.[19] Similar supported sewing on leather was also implemented for Islamic manuscripts during the nineteenth century and might be reminiscent of western binding sewn on ribbons.[20]

18 Scheper 2015, 35–41.
19 Helland 2018, 22.
20 Scheper 2015, 43–45, 152.

Fig. 10: Sewing on four stations, compilation of texts related to Viṣṇu's worship; Paris, BnF, sanscrit 1875; photo by Amélie Couvrat Desvergnes.

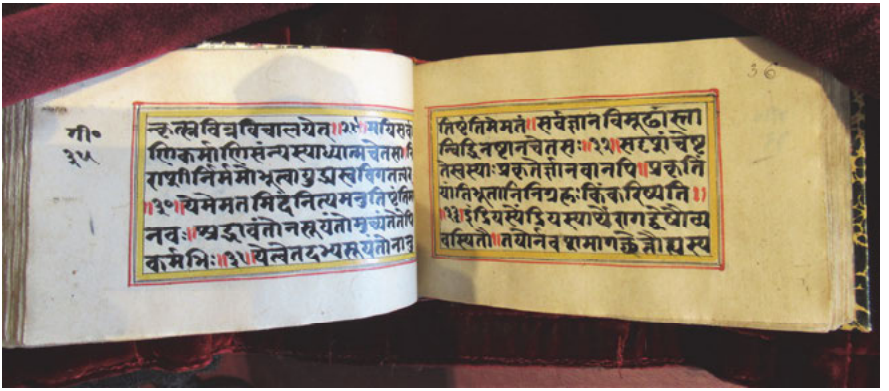

Fig. 11: Centre of a quire marked by two charcoal dashes, compilation of texts related to Viṣṇu's worship; Paris, BnF, sanscrit 337, fols 35^{v}–36^{r}; photo by Amélie Couvrat Desvergnes.

In some cases, the books have no quires but simply consist of a stack of loose folios which are connected together with stab sewing on three or four stations (Fig. 12). Stab sewing became popular in the second part of the nineteenth century as a fast binding method with the influence of lithography and the development of commercial books which required cheap binding.[21] In addition, this sewing structure was also used as a repair operation for damaged books in which the gutters are torn, the quires dismantled and the folios loose. Similar sewing is, however, not only found in Islamic manuscripts but also in ledgers or registers called *bahi khattas*. This kind of stationery limp bindings was used by bookkeepers and genealogists to record, respectively, accountancy and genealogy, deeds and contracts in a village or community (Fig. 13a). The use of merchants' account books is reported at least as far back as the seventeenth century. John Ovington, who travelled in the western part of India around 1680, gave the following description:

> the paper-books in vulgar use among the Inhabitants of India, on which they write, are long Schrowls of Paper, sometimes Ten Foot in length, and a Foot broad, sewed together at the upper end, as many long sheets as the occasion of the Writing requires.[22]

The long and oblong format of the leaves often corresponds to the dimensions of a long sheet of paper. The leaves are simply accordion folded, with the folds used for column layout to note numbers and calculation. The pile of leaves to which are added two covers made of thin leather, usually red, is held together by a rope that passes through holes punched along the short edge. Thick paper or leather washers are placed over the holes to prevent wear and shearing (Fig. 13b). The volume is folded in half lengthwise and a cord wrapped around it keeps it closed for storage (Fig. 13c). This binding technique is a fast, cheap and efficient way of making registers that were obviously sturdy enough to have survived to this day. Such books are still manufactured today, although the covers are now made of embroidered cotton fabric as a substitute for red leather.

21 Singh Dhillon 2021, 249. For more details on stab sewing structures in Islamic manuscripts, see Scheper 2015, 41–42.

22 Ovington 1696, 148. John Ovington (1653–1731) was an English priest who was hired as a chaplain by the East India Company. He settled in Surat where he lived for two and a half years.

Fig. 12: Stab sewing, *Bhagavadgītā* and other devotional texts related to Viṣṇu's worship; Paris, BnF, sanscrit 341; photo by Amélie Couvrat Desvergnes.


a


b


c

Fig. 13a–c: Ledgers or *bahi khatta* from Udaipur, Rajasthan (a); paper or leather washers, *bahi khatta* from Udaipur; courtesy of Emma Fraser (b); piles of *bahi khattas* folded for storage; courtesy of Hussayn Family, Sanganer, Rajasthan (c).

Returning to the *guṭakās*, the endbands are either non-existent, an imitation of Islamic endbands or an original creation of the bookbinder (Figs 14a–f).

Fig. 14a–f: Woven endbands made of red silk threads, collection of texts related to Viṣṇu's worship; Cologny, FMB, Cod. Bodmer 709; © Fondation Martin Bodmer (a); absence of endbands, *Bhagavadgītā* and subsidiary texts; Cologny, FMB, Cod. Bodmer 704; © Fondation Martin Bodmer (b); endbands made of twisted pieces of coarse cloth sewed on the tail and head, *Viṣṇusahasranāma* and other devotional texts related to the worship of Viṣṇu; Leiden, UBL, Or. 25.464; photo by Amélie Couvrat Desvergnes (c); endband made of a rope rolled up in a piece of purple and white striped fabric directly glued to the tail and head, *Bhagavadgīta*, *Viṣṇusahasranāma* and other excerpts related to Viṣṇu's worship; Paris, BnF, sanscrit 1875; photo by Amélie Couvrat Desvergnes (d); endbands featuring the Islamic chevron woven pattern made of pink and white threads, *Pañj Granthī*; Paris, BnF, indien 693; photo by Amélie Couvrat Desvergnes (e); absence of endbands, *Bhagavadgītā* and other devotional texts related to Viṣṇu's worship; Paris, BnF, sanscrit 341; photo by Amélie Couvrat Desvergnes (f).

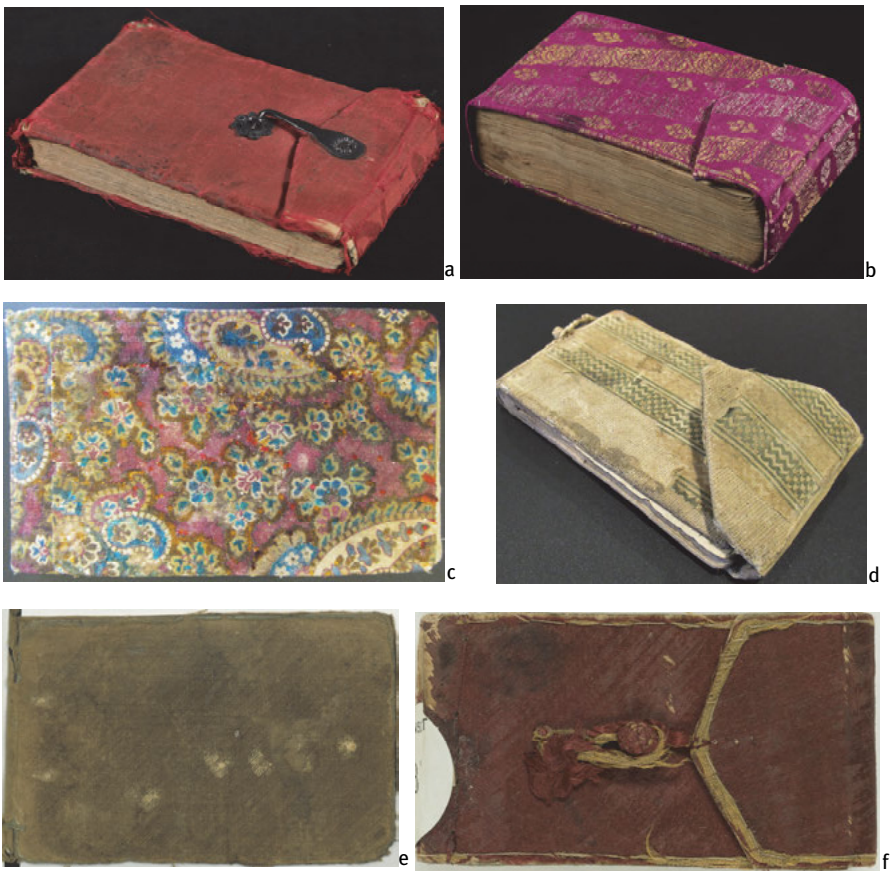

Fig. 15a–b: Red silk with a metal clasp, *Bhagavadgītā* and subsidiary texts; Cologny, FMB, Cod. Bodmer 704; © Fondation Martin Bodmer (a); purple sari with gold thread embroidery, collection of texts related to Viṣṇu's worship; Cologny, FMB, Cod. Bodmer 709; © Fondation Martin Bodmer (b); block-printed cotton cloth, history of Kṛṣṇa; Leiden, UBL, Or. 25.463; photo by Amélie Couvrat Desvergnes (c); two layers of textile: a coarse cotton cloth and a coloured woven fabric, compendium of Sanskrit texts; Leiden, UBL, Or. 27.616; photo by Amélie Couvrat Desvergnes (d); brown woven cotton cloth, *Bhagavadgītā* and *Viṣṇusahasranāma*; Paris, BnF, sanscrit 1875; photo by Amélie Couvrat Desvergnes (e); red silk and yellow textile with knot and tie, *Bhagavadgītā* and other devotional texts related to Viṣṇu's worship; Paris, BnF, sanscrit 341; photo by Amélie Couvrat Desvergnes (f).

However, it seems that the Islamic type of endbands featuring a woven chevron pattern is rarely reproduced as they require some skill and practice from the craftsman.[23] The text block is protected by two pasteboards made of repurposed pieces of paper. If the binding was supplied with an envelope flap, the latter is connected to the lower board situated on the right, because the reading was done from left to right, unlike the Islamic books, which were read from right to left. Dissimilar from Islamic binding, the envelope flap sits above the upper board and not below (Figs 15a–f).

4 The covering of the *guṭakās*

The volumes studied for this article are all covered with fabric (except for London, BL, Or. 13682). Observation of a larger number of books would be necessary to determine whether this aspect is a general characteristic dictated by religious principles or by the convenience and availability of textile material. From a technical standpoint, it is easier, cheaper and less time-consuming to cover a book with a piece of repurposed textile than with leather, which must be considerably prepared before being used as a covering material.[24] Nevertheless, the boards of Hindu *guṭakā* are covered with a large range of fabrics depending on what the artisan had at hand and on the budget of the patron: fine or coarse woven cotton cloth, mixed cotton and silk fabric called *mashru*, satin, silk, velvet, a recycled piece of sari or shawl, waxcloth, woodblock-printed cotton fabric, etc. (Figs 15a–e).[25] Naturally, the large array of fabrics encountered reflect the rich and diverse tradition of textiles in South Asia. While some designs and techniques are characteristic of a specific region, it should be borne in mind that the trade was well-established and, therefore, the textile used to cover a

23 A variation of Islamic type of endband is found in a *guṭakā* from Kashmir examined by Helland 2018, 22.

24 According to Dominik Wujastyk and Brijinder Nath Goswamy, the observance of the *ahiṃsā*, the brahman concept of vegetarianism and harmlessness for living creatures in which the use of any animal material is banned, prevents the bookbinder from using leather; Wujastyk 2014, 166; B.N. Goswamy 2008, 22. It is interesting to mention that Sikh *guṭakās* and larger volumes, such as *Guru Granth Sāhib*, are equally bound with leather and textile.

25 *Mashru* is a handwoven fabric made of silk and cotton. It has a glossy and silky appearance and the soft comfort of cotton. It is often striped in two or three colours. It was very popular during the nineteenth century, and the fabric was produced across the country in different forms, from Deccan to Lucknow to Bengal. As a result, it was often used as covering materials for nineteenth-century *guṭakās*.

guṭakā might not always be considered as a geographic marker. The fabric is most often constituted of a single and long piece which connects the boards to the spine and, thus, serves as a board attachment. The binding for some of the manuscripts studied, such as Leiden, UBL, Or. 18.060 and Paris, BnF, sanscrit 1875, is a sort of wrapper prepared separately from the text block by pasting the textile to the boards and the flap. The fabric is not pasted along the spine, but the binding is simply connected to the text block by the doublures of cloth which extend onto the first endleaf (Fig. 16). Nevertheless, other books, such as Leiden, UBL, Or. 25.463 and Or. 25.464, show that the spine was lined with a cotton cloth, more or less coarse, which extended onto the inner sides of both boards to ensure a reliable connection between the text block and the boards (Fig. 17).

Different types of fabric were sometimes put together in the same binding or parts from other books were reused. The outer sides of the boards may be covered with a red silk fabric, as seen on the binding of a *Bhagavadgītā guṭakā*, Coligny, FMB, Cod. Bodmer 704. The same fabric was used on the inner side of the envelope flap, but it seems that the bookbinder had run out of material and used a striped red and blue *mashru* to complete the covering operation (Fig. 18).[26] This again underlines the limited availability or recycling of supplies to which the artisan could have access. Similarly, decorative elements borrowed from other objects can be added, depending on what the craftsman has on hand. The flap and the front board of the same aforementioned *guṭakā*, for example, are supplied with a metal clasp which seems to have come from a piece of furniture (Fig. 15a).

Fig. 16: Doublure of the front board and first endleaf; Leiden, UBL, Or. 18.060; photo by Amélie Couvrat Desvergnes.

26 Helland 2018, 21.

Fig. 17: Spine lining, compilation of texts on the history of Kṛṣṇa; Leiden, UBL, Or. 25463; photo by Amélie Couvrat Desvergnes.

Fig. 18: Inner side of the envelope flap covered with red silk and a piece of *mashru* textile, *Bhagavadgītā* and subsidiary texts to Viṣṇu's worship; Cologny, FMB, Cod. Bodmer 704; © Fondation Martin Bodmer.

Another aspect is the originality and creativity of the bookbinder in using various supplies to produce a kind of personalised book. The *Bhagavadgītā* Paris, BnF, sanscrit 341, for example, was covered with red velvet, while the edges of the boards were lined with strips of yellow textile. A kind of knot and tie made of the same fabric were added to the flap and in the middle of the upper board to allow the book to be closed properly (Figs 15–16).

Another key feature is the layered structure of the repairs found in these books, which sometimes makes it difficult to observe the original materials against later additions. If a textile used for the cover was too worn, then another fabric was simply pasted over it.[27] It, therefore, seems difficult to distinguish whether the secondary cover was indeed a repair, an esthetical addition or a cloth wrapper used by the devotee to protect his or her precious manuscript. Three books illustrate the different function of these additions. First, the *Pañj Granthī* Paris, BnF, indien 693 was covered with a coarse cloth that was itself covered with a second red fabric decorated with coloured painted patterns; the purpose of the second cover probably being more decorative than functional (Fig. 19). Second, the *guṭakā* Cambridge, CUL, MS Or. 2031 shows three different fabrics laid on the boards. While a white cloth with small blue flowers was pasted along the spine, the boards were lined with two layers of cotton, woodblock-printed with large purple and red floral patterns, the top layer being very worn and dirty.[28] It seems more likely that these are later repairs given the deterioration of the covering materials.

The third case illustrates the importance of book preservation and the confection of cloth wrapper to protect codices. The small volume Oslo, SC, MS 2099, for instance, which comprises a collection of texts from the *Pañcaratnagītā* and the *Bhagavadgītā*, is covered with a wrapper made of plain fabric decorated with block-printed floral motives. An extension along the fore-edge allows the book to be enclosed in order to keep dirt, insects and other intruders away (Fig. 20). The seam is sewn manually and may have been done by the owner him/herself. Similar cloth wrappers supplied with extended tabs to protect the text block edges are also used to enclose Sikh manuscripts.[29]

27 Helland 2018, 22.

28 Cambridge, CUL, MS Or. 2031 contains two devotional texts: the *Bhagavadgītā* and a Śaiva hymn called *Mahimnastotra*, by Puṣpadanta in Formigatti 2020, 72. The manuscript was observed via its digital version available at https://cudl.lib.cam.ac.uk/view/MS-OR-02031/1 (accessed on 6 February 2023).

29 Singh Dhillon 2021, 250–251.

Fig. 19: Edges of a copy of the *Panj Granthi*, Punjab; Paris, BnF, indien 693; photo by Amélie Couvrat Desvergnes.

Fig. 20: Open *guṭakā* showing the cloth wrapper, collection of texts from the *Pañcaratnagītā* and the *Bhagavadgītā*; Oslo, SC, MS 2099; © The Schøyen Collection.

5 The context of production

Very little is known about the scribes, illuminators, bookbinders and their practices in the context of the making of Indic manuscripts and *guṭakās*. Some nineteenth-century images illustrate bookbinders at work, but they are Muslim and in the process of making *kitāb*, the Islamic codex. A well-known illustration belonging to an album of trades and occupations in Kashmir dated 1850–1860 (British Library) depicts a Muslim bookbinder (*jeld sāz*) and his tools for the

bookbinding operation (*jeld sāzi)*. In the upper register, the artisan is trimming the edges of a text block held in a press with a blade as long as a sword (Fig. 21). On the left side, there is a slab and a weight (painted in grey), described by the caption as a unit for preparing the pasteboards. In the lower register of the image are his tools with corresponding captions written in Persian and Urdu: scissors, scrapers, various awls and knives, a ruler, a piece of leather, a pot of paste, a needle and a spool of thread for sewing the text block and a binder's press in which the book is pressed to proceed with the making of the endbands. Another depiction from Bengal shows a bookbinder sitting on the floor in the process of shaping a leather cover. Although this representation is more realistic than the first, the easily identifiable tools are the same as those represented in the image from Kashmir.[30] However, to the best of my knowledge, there is no representation of an artisan in the process of binding a Hindu *guṭakā*.

Several Sanskrit treatises, such as the *Silpaśāstra* were compiled during the medieval period and served as technical and spiritual aids to scribes and painters in the observance of canonical proportions and figures, the use of tools and implements, and the symbolism in the use of colours.[31] The act of accurately copying a book (*pustaka*) was described in Ballālasena's *Dānasāgara*, or 'Ocean of gift-giving', a twelfth-century Sanskrit compendium on religious gift etiquette. The text focuses on the quality of the materials, the copying procedure and the principles of textual correction.[32] Naturally, no information is given on

30 A depiction of a north-Indian bookbinder and his tools, illustration from the Wellesley Album, Bengal, *c*. 1798–1804, London, BL, Add. Or. 1111.

31 Nardi 2007.

32 Each step in the process of having the manuscript copied should be done at an auspicious time and in an auspicious place. Adheesh Sathaye mentions that: 'First, the donor should select the appropriate text to be copied and gather together the right kind of paper (pure white, with a black or red border), pots of good black ink, gilded pens, and well-made wooden book covers. The *Dānasāgara* advocates the use of a special device for the copying process, called a *sarayantra* (spreading device) or *vidyādhara* (knowledge carrier). What this artifact looked like is unknown, but it was probably a kind of book stand, fashioned from gold, silver, ivory, or wood, that could simultaneously hold both the exemplar and the new copy in place. The scribe is instructed to face east; wear white garlands and clothing, a golden armband, and finger caps; and have at hand a set of pens and a nail cutter (for sharpening the pen). Then, as string music plays in the background, a sample of five or ten verses is to be copied and thoroughly scrutinized for writing mistakes as well as to check the content, consistency, and subject matter. In subsequent sessions, the copying is to proceed in this same, deliberate manner, and, upon completion, the manuscript should be nicely decorated, perfumed, tied, and wrapped in cloth, and if it was going to be donated to a temple, ceremoniously taken by palanquin, elephant, horse, or chariot to a temple, and offered to the presiding deity' (Sathaye 2017, 62–63).

the binding, for the simple reason that, at the time, pothis were, strictly speaking, not bound but protected by wooden boards and wrapped in cloth. Furthermore, the text is a detailed and idealised account of the copying of a book, thus it also focuses on the ritual of the gift. Some books were copied during the medieval period to be given by a devotee to a temple, a guru or a Brahmin for the purpose of acquiring merit. In return, the recipient would arrange for a public reading of the book by a competent reader as well as a guru to teach its contents to the general public.[33] The *Dānasāgara* points out that books in premodern times were hardly the property of private disciples but belonged to the clergy and nobility, the transmission of religious knowledge and principles among the common people still being largely oral.

Fig. 21: Bookbinder and his tools, volume depicting trades and occupations in Kashmir, *c.* 1850–1860, opaque watercolour and inks on paper; London, BL, Add. Or. 1700, fol. 41^{r}; © British Library Board. All Rights Reserved/Bridgeman Images.

33 For more on this aspect, see Heim 2015, 124–127.

During the modern period, some courtly workshops or *kārkhānās* had sections dedicated to the fabrication of Indic manuscripts, such as the Amber and Jaipur palaces in Rajasthan.[34] Indeed, Jeremiah P. Losty mentions that *guṭakās* were brought to perfection with fine writing and luxury illuminations in the late eighteenth century and mainly produced in the workshop of the Jaipur Royal Library.[35] The *kārkhānās* were supported by the rulers and rajas and maintained by the nobles and merchants, so the production was controlled to match the tastes of the patrons. The functioning was hierarchical, based on the system of cast, and apprenticeship was made from father to son or from teacher to student. Their activities were recorded in registers which were studied by Sumbul Haleem Khan, who describes the different workshops and their management.[36] Among others, she details the organisation of the *pothīkhānā*, an atelier which specialised in the preparation of pothis and books.[37] She notes the production of religious and literary works in Sanskrit and provides a brief account on bookbinding: the design of the cover was done in accordance with the value of the book: 'Persian and Sanskrit literature were leather-bound and other manuscripts were covered with velvet, striped silk material and pure silk from the Atlas silk moth'.[38] Here, we can hypothesise that volumes of importance were bound with leather and others were covered with textile, leather being more expensive to purchase and shape into books. She also adds that 'hides were processed with laxatives and spices [reference to the tanning process] and were then shaped, coloured and stretched over a pasteboard'. The following description of the doublure is unclear but it seems that coloured leather was pasted onto the pasteboards. Interestingly, she mentions that blank books (*kora kagad*) were passed to scribes and painters for the writing of the text and the execution of illustrations and illuminations. Finally, she lists the variety of cloth and fabrics utilised for making book wrappers or dustcovers and bags and their origins, such as *mashru* from Bharuch in Gujarat.[39] The striking diversity and quality of embroidered and gilded textiles reflect the wealth of the rajas as well as the vast

34 The word *kārkhānā* literally means manufactory.

35 Losty 1982, 145. He refers to a beautiful copy of the *Pañcaratna* written by Ghāsi Mahātmā for Maharaja Prithvi Singh of Jaipur (1767–1778).

36 Khan 2015. In her volume, she describes the organisation of the painting, cartography, textile, arsenal and gun foundry, palanquins and carriages, harness and bridles workshops and manufactures, from various archives dated 1643 to 1843 reporting income and expenditures, lists of supplies and materials, orders and purchases, staffs, etc.

37 Khan 2015, 45–63.

38 Khan 2015, 53.

39 Khan 2015, 57.

fabric trade network in India. In addition, *kārkhānās* produced wooden boxes and cane baskets cushioned with velvet and wooden stands to ensure the safe transport and reading of the books.[40] However, it must be remembered that this description refers to a royal context in which the best supplies were available and the most skilled craftsmen worked to produce objects of the highest quality. The *guṭakās*, similar to those examined in this study, correspond rather to utilitarian productions made for the market, the local clientele, or the clergy and pandits.[41] However, given the diversity of materials and techniques, the hypothesis of domestic production of the binding cannot be ruled out. It is plausible to think that the person who commissioned the book, once he had received the written text, proceeded to bind it himself or one of his relatives who had special manual skills.

At the beginning of the twentieth century, professional itinerant groups of Kashmiri Muslim scribes, sometimes accompanied by painters, would wander about in the countryside of the Punjab and Kashmir, looking for commissions among the local audience of priests and worshipers. Karuna Goswamy interviewed Pandit Sthanu Dutt, a renowned Sanskrit scholar, who saw, during his childhood, groups of itinerant scribes visiting Kurukshetra, his native village located in the Haryana state.[42] They would walk until the edge of the village and shout '*kātib, kātib*', meaning 'scribes', to announce that the scribes were available for executing any commission of copying manuscripts. When a painter was in the group, the scribe would shout '*kātib mai musavvir!*' meaning 'painter among scribes'. When a client wished a work to be copied either from his or her own or a neighbour's collection, after negotiating the price, the scribes would copy the text. The manuscript was taken to a *serai* or inn at the edge of the village where the group stayed. All the members of the group were trained so that they often wrote through the night, and brought out the folios they had copied in the morning. Pandit Sthanu Dutt recalled seeing a quantity of oil for burning the lamps, by the light of which the scribes kept working into the night. The scribes carried all the necessary writing implements and materials with them, pens and rulers as well as inks and colours, and paper.[43] The copy could be more or less elaborate depending on the materials they had and their skills.

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40 Khan 2015, 59.

41 Karuna Goswamy mentions that production was 'non-elitist' in Kashmir and catered to the popular and middle-class readership rather than royalty as well as the priests, astrologers and physicians; K. Goswamy 1998, 59; K. Goswamy 1989, 21.

42 K. Goswamy 1998, 54–55.

43 K. Goswamy 1989, 22–23. Karuna Goswamy also provides interesting information on the payment of the scribes.

However, Pandit Sthanu Dutt does not provide any information about the binding of these books, their format and their materials. Was the binding made by the scribe himself? Was it made later by another craftsman? Since these manuscripts were not bound in leather, it is assumed that no leather craftsman was involved. However, the block of text still had to be sewn and bound to a cover, no matter how rudimentary or elaborate. The operations involved the use of a needle and thread, as well as paste to assemble the various elements of the binding, such as the spine lining , the endpapers and the textile to the boards, all of which required manual and technological skills. However, the technical simplicity of the majority of the copies and their small size may indicate that this small and oblong book format may have been favoured by the scribes because of the ease and speed of execution. In addition, Karuna Goswamy highlights that the tradition of itinerant writers explains the large dissemination of Kashmiri copies in northern India.[44] Indeed, the scribes were proficient in the copy of several scripts, such as Śāradā, Devanāgarī, Gurmukhī and Gujarātī, to meet the demands of a local readership from one region to another.[45] Therefore, we can assume that these scribes, in addition to producing books with Kashmiri characteristics, were also responsible for the spread of this specific book form throughout the north-western part of the subcontinent. Furthermore, many *guṭakās* bear the traits of the Kashmiri style in the illustrations and illuminations as well as in the bold palette (Fig. 22). But, while the scribe may indeed be of Kashmiri origin, the pictorial style cannot be considered a sufficient geographical marker to determine the place of production of a manuscript and the origin of the patron.[46]

44 K. Goswamy 1998, 56.

45 Brijinder Nath Goswamy mentions that many scribes were illiterate; if they were so, they did not necessarily know the different languages but were able to copy them word for word; B.N. Goswamy 2008, 56. In Hinduism, sacred texts were transmitted mainly based on orality, recitation and memorisation using elaborate mnemonic techniques. While the clergy could read the sacred scriptures, the majority of the population was illiterate. During the nineteenth century, with the British occupation, education was gradually emphasised, although it took some time larger segments of the population to become literate. However, Karuna Goswamy points out that while some scribes knew a wide range of scripts and languages, others, who were simply good copyists, were able to reproduce an entire text, word by word; K. Goswamy 1989, 21–24.

46 For other *guṭakās* with Kashmiri types of illustrations, see Cologny, FMB, Cod. Bodmer 709; Philadelphia, University of Pennsylvania Libraries, Ms. Indic 27 (Collection of Sostras); Tübingen, TUB, Cod. Ma I 893 and Cod. Ma I 894 (see Ditter 2002); Cambridge, CUL, MS Or. 2031 (see Formigatti 2020; and K. Goswamy 1998, 84–91).

Fig. 22: Representation of Viśvarūpa or the divine revelation of Viṣṇu (or Kṛṣṇa) to Arjuna. Devotional manual of diverse Vaiṣṇava texts; Paris, BnF, sanscrit 1875; photo by Amélie Couvrat Desvergnes.

6 The function of the *guṭakās*

As mentioned in the introduction and exemplified by the photographs above, the *guṭakās* were not only used for private recitation and reading, but also for meditation and worship through the images and representations they convey. This aspect prevails mainly for popular texts, such as the *Bhāgavatapurāṇa* ('The story of the God [Viṣṇu]'), *Devīmāhātmya* ('The glory of the Great Goddess'), *Bhagavadgītā* (a moral dialogue between the Paṇḍava Prince Arjuna and his guide and charioteer Kṛṣṇa) and *Rāmāyaṇa* (the life of Rāma and his combat to deliver his wife Sītā from the grip of Rāvaṇa, the fierce king of Laṅkā).

While some manuscripts remain in perfect condition today and appear to have been barely read and handled, others show clear signs of use and the passage of time. Brijinder Nath Goswamy recounts that on specific days, the manuscripts were taken out of the wooden boxes and displayed for veneration in the freshly cleaned and plastered courtyard of a family estate. The texts were not read, but the books were simply displayed to celebrate knowledge. Elders recited mantras and performed rituals associated with prayers. At the end of the celebration, each book was passed from hand to hand and *tilak* marks were applied to them, which merged with countless others.[47] The *Devīmāhātmya*

47 B.N. Goswamy 2008, 58. *Tilak* marks, generally made on the forehead with ash from a sacrificial fire, sandalwood paste, turmeric, cow dung, clay, charcoal, or red lead, indicate a

Paris, BnF, sanscrit 1854 illustrates this aspect, perhaps to the extreme. The initial manuscript was of a horizontal and small format and contains several depictions of the various manifestations of the goddess. The extent of the damage and the rubbing of the images indicate that the book has been touched and handled a great deal (Fig. 23a). Some images are so deteriorated that the scenes and the gods depicted can no longer be seen or identified. The corners and edges of the folios show recognisable smudges and fingerprints, the results of extensive reading. The manuscript has lost its original binding and the detached folios are now held between two wooden boards salvaged from a piece of furniture or architecture, one board showing remnants of red thread and the other a perforation (Fig. 23b). All of these details lead us to believe that the book was highly valued and the deterioration of the binding and folios was the result of the intense devotion of its owner.

a

b

Fig. 23a–b: Depiction of the goddess on her tiger mount (a); piece of repurposed furniture for the cover, Devīmāhātmya; Paris, BnF, sanscrit 1824; photo by Amélie Couvrat Desvergnes (b).

person's sectarian affiliation. They were also applied to sacred images, such as sculptures in temples and shrines and representations of gods and goddesses.

A close examination of *guṭakā* Leiden, UBL, Or. 18.060, its text and illustrations shows that the present volume has been reassembled with some passages from at least three other books. Some paintings illustrating various episodes from different texts (e.g. Kṛṣṇa and the Gopīs, Viṣṇu Gajendra Mokṣa, the goddesses Durgā and Sarasvatī, Rāma and Sītā with Hanuman and Balarama, and the *oṃ* sign) were cut out, rearranged and pasted on the folios, whereas entire quires coming from older books were rebound in the extant binding (Fig. 24). Some of the paintings are very damaged and could come from old books that could no longer serve their purpose due to the extent of their deterioration. We can, therefore, assume that a devotee who owned several damaged books would ask a copyist and a bookbinder to reuse them by compiling a new volume. In the end, the text block was eventually enclosed in a new binding wrapper.[48] Arguably, any used books or remnants of books were still valuable to their owner and kept and reused as precious relics.

Fig. 24: Compilation of various devotional texts, Kṛṣṇa and the Gopīs; Leiden, UBL, Or. 18.060; photo by Amélie Couvrat Desvergnes.

48 In addition, the presence of quires, together with single folios assembled together by a stab sewing, partially visible in some places along the gutter, indicate that the present binding may be a repair structure.

Fig. 25: Guru Arjan Dev reading from a bound volume of scriptures, family workshop of Nainsukh of Guler, Punjab Hills, *c*. 1790; © London, Toor Collection.

7 Conclusion

All of the information above on the structure and function of the *guṭakās* is gathered in the miniature depicting Guru Arjan Dev (Toor Collection) (Fig. 25).[49] The fifth Sikh guru reads a bound volume of scripture as a group of disciples carrying dishes filled with offerings arrive in the courtyard, prostrating before him. The fully opened *guṭakā*, with an envelope flap and a cover of orange and red striped *mashru*, rests on a flat bolster in front of him.

While *guṭakās* echo the formal syncretism inherited from the pothi format with a strong reminiscence of Islamic binding, they represent a book form in their own right. What is also prevalent in the covers of the *guṭakās* is the diversity of materials and the personalisation of each book. Despite some predominant binding characteristics, the examples above highlight the uniqueness of each book, whether in its materials or its decorative details. This leads us to believe that each book was made on-demand, by a particular person and in a specific context. Perhaps we can see the intervention of the client who wanted to personalise the manual he or she ordered according to his or her tastes and the materials he or she brought or, simply, the creative imagination of the craftsman and the scribe. However, the general impression is that this diversity was related primarily to the availability of supplies and the skills of the craftsmen. Furthermore, the *guṭakās* reflect, in some ways, the 'democratisation' of book consumption which took place throughout the nineteenth century. While books were still reserved for a literate and wealthy readership who could afford on-demand production for personal use, *guṭakās*, nonetheless, embody the progressive development of book ownership made possible by small scale and cheap materials. The use of recycled materials, such as paper and textiles, the simple structure of the binding, the often limited palette and the modest but present illustrations arguably respond to a demand from a readership eager to read but also to possess books with which they can pray and meditate.

However, more studies need to be conducted using cross-cultural comparisons, textual analyses and the examination of large corpora to further contextualize and understand these features and to define the choices made by scribes and bookbinders regarding supplies and production methods better.

49 Guru Arjan (1563–1606) wrote the *Ādi Granth*, the first compilation of religious texts, a reference book for the Sikhs. He built the Harimandir Sahib, the Golden Temple, in Amritsar and made the city a central place for the entire Sikh community.

Acknowledgements

The author is indebted to Davinder Toor, owner of the Toor Collection; Marina Chellini, curator for the north Indian language collections at the British Library; Anna Jolly, curator at the Abegg-Stiftung; Jenina Bas at The Schøyen Collection; the Foundation Martin Bodmer (Cologny); the DeGolyer Library, Southern Methodist University (Dallas, TX); Jérôme Petit, curator for the South and South-East Asian collections at the Bibliothèque nationale de France; Emma Fraser, book conservator in Dundee (Scotland); Karin Scheper, senior book conservator at the Leiden Universiteitsbibliotheek; Caroline Macé and Giovanni Ciotti for editing and advice.

Abbreviations

BL = British Library
BnF = Bibliothèque nationale de France
CUL = Cambridge University Library
FMB = Fondation Martin Bodmer
SC = The Schøyen Collection
TUB = Universitätsbibliothek, Tübingen
UBL = Universiteitsbibliotheek Leiden

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Appendix: List of the *guṭakās* physically or digitally examined

Cambridge, CUL, MS Or. 2031

Contents: Bhagavadgītā and *Mahimnastotra*, a Śaiva hymn called by Puṣpadanta

Format: horizontal *guṭakā* without flap

Covering material:

Outside: white cloth with small blue flowers, two layers of cotton, woodblock-printed with large purple and red floral patterns

Inside: western paper

Dimensions: 100 × 155 mm

Dating: 1917 Vikrama / 1859–1860 CE

Cologny, FMB, Cod. Bodmer 704

Contents: Bhagavadgītā and subsidiary texts to the worship of Viṣṇu: *Prayāgatīrthasnānasaṃkalpa*, *Apadoddhāraṇastotra*, *Pañcavaktrahanumatkavaca*, *Stavarāja*

Format: horizontal *guṭakā* with flap

Covering material:

Outside: red silk damask

Inside: ditto and striped *mashru*; repurposed metal clasps

Dimensions: 75 × 125 mm

Dating: first half of the eighteenth century.

Other information: A partly readable note dated 29 August 1781 identifies the manuscript as a 'prayer book of a bramin [i.e. Brahmin]' given to the unidentified possessor of the manuscript 'on his departure from India'.

Cologny, FMB, Cod. Bodmer 709

Contents: Bhagavadgītā and other short excerpts related to the worship of Viṣṇu: *Śāntiparvan*, *Pāñcarātrika Sanatkumārasaṃhitā*, *Pāṇḍavagītāstotra*, *Gopālapaṭala*, *Gopālalaghupaddhati*, etc.

Format: horizontal *guṭakā* with flap

Covering material:

Outside: purple sari of brocade silk

Inside: modern addition craft paper and buckram

Dimensions: 93 × 145 mm

Dating / Origin: Written in Kashmir, in a monastery called Ahalyamath, in Saṃvat 1833 (1776 or 1777 CE) by a person called Gaṇeśa [bhaṭṭa?] Nandarāma

Leiden, UBL, Or. 18.060

Contents: compilation of texts dedicated to the worship of Viṣṇu and Kṛṣṇa
Format: horizontal *guṭakā* with flap
Covering material:
Outside: tapestry weave cotton with repetitive motives of a hand holding a small bouquet, umbrella and paisley
Inside: resist dyed block-printed plain weaved cotton with a repetitive motif of stylised flowers
Dimensions: 150 × 105 mm
Origin: Kashmir?

Leiden, UBL, Or. 25.463

Contents: compilation of texts on the history of Kṛṣṇa
Format: horizontal *guṭakā* without flap
Covering material:
Outside: woodblock-printed cotton with paisley patterns Inside: Indian paper
Dimensions: 91 × 53 mm

Leiden, UBL, Or. 25.464

Contents: Viṣṇusahasranāma and other excerpts related to the worship of Viṣṇu.
Format: horizontal *guṭakā* without flap
Covering material:
Outside: pink and purple woodblock-printed cotton
Inside: Indian paper
Dimensions: 125 × 82 mm
Origin: Kashmir

Leiden, UBL, Or. 27.616

Contents: compilation of unidentified religious texts
Format: horizontal *guṭakā* with flap
Covering material (outside and inside): coarse cotton cloth + woven cotton fabric with bands of zigzag patterns in red and black
Dimensions: 125 × 73 mm

London, BL, Or. 13682

Contents: Madhumālatīvārtā and a miscellany of four others Rajasthani poems
Format: horizontal *guṭakā* with flap and closing string
Covering material: limp cover made of four pieces of brown leather stitched together
Dimensions: 120 × 125 mm
Dating / Origin: Saṃvat 1829–1832 / 1772–1775 CE, north-eastern Rajasthan (Mewar?)

Oslo, SC, MS 2099

Contents: Pañcaratnagītā and the *Bhagavadgītā* with accompanying texts
Format: horizontal *guṭakā* with flap
Covering material:
Outside: yellow silk
Inside: woodblock-printed cotton
Dimensions: 100 × 150 mm
Origin: Kashmir

Paris, BnF, sanscrit 337

Contents: Bhagavadgītā, *Viṣṇusahasranāma*
Format: horizontal *guṭakā*
Covering material: modern western binding
Dimensions: 80 × 120 mm

Paris, BnF, sanscrit 338

Contents: Bhagavadgītā, *Viṣṇusahasranāma Stavarāja*, *Anusmṛti*, *Gajendramokṣaṇa*
Format: horizontal *guṭakā*
Covering material: modern western binding
Dimensions: 95 ×111 mm

Paris, BnF, sanscrit 341

Contents: Bhagavadgītā, *Viṣṇusahasranāma*
Format: horizontal *guṭakā* with flap
Covering material: probably a restoration
Outside: red silk
Inside: green silk
Dimensions: 95 × 111 mm

Paris, BnF, sanscrit 434

Contents: Jvālāmukhīsahasranāma
Format: vertical
Covering material: modern western binding (twentieth century)
Dimensions: 145 × 75 mm

Paris, BnF, indien 693

Contents: Pañj Granthī
Format: horizontal *guṭakā* with flap
Covering material (outside and inside): plain cotton cloth, pink fabric with hand-painted geometrical motives
Dimensions: 100 × 145 mm
Origin: Punjab

Paris, BnF, sanscrit 1824

Contents: short excerpts to the glory of the goddess Devī: *Devīkavaca*, *Argalastuti*, *Kīlaka*, *Devīmāhātmya*, *Prādhānikarahasya*, *Vaikṛtikarahasya*, *Mūrtirahasya*
Format: unknown (dismantled)
Covering material: repurposed wooden boards
Dimensions: 130 × 70 mm

Paris, BnF, sanscrit 1875

Contents: Bhagavadgītā, *Viṣṇusahasranāma* and other excerpts related to the worship of Viṣṇu
Format: horizontal *guṭakā* without flap
Covering material:
Outside: plain cotton cloth
Inside: modern addition, western marbled paper
Dimensions: 155 × 100 mm
Origin: Kashmir

Features of Binding

Francesca Maltomini

Papyrus Rolls as Archives: The *tomoi sunkollēsimoi*

Abstract: The most common filing practice used in Graeco-Roman Egypt consisted of pasting documents written on single sheets, so as to form a roll that keeps them together. This article explores the different typologies of these composite rolls, with a special focus on their material features and use.

1 Some preliminary information

This article addresses the most widespread method of keeping documents together in Graeco-Roman Egypt, as attested in the papyrological documentation. Therefore, a preliminary recap of some of the basic papyrological notions implied in this topic would prove useful.

1.1 The structure and use of the papyrus roll

The papyrus roll (χάρτης, *chartēs*) was made of sheets of the same dimensions (the Greek word for 'sheet' is κόλλημα, *kollēma* – pl. κολλήματα, *kollēmata*) pasted one after the other. The overlapping part of two pasted sheets is called κόλλησις (*kollēsis* – pl. κολλήσεις *kollēseis*).[1] Rolls were probably of standard lengths,[2] while their height was more variable.[3] The roll was a modular item,

1 On the fabrication of papyrus sheets and rolls, see Lewis 1974, 34–83; Turner 1978, 6–13; Lewis 1989, 15–35; Schram 2021, 28–38.

2 Plinius the Elder (our only ancient source on the production of papyrus sheets and rolls) seems to state that the standard roll was made of twenty *kollēmata* (*Naturalis historia*, 13, 77). The passage is somehow ambiguous (for a new interpretation of it, cf. Delattre 2019, 140–141), but some supporting evidence has been found: for an overall discussion, cf. Lewis 1974, 54–55; Lewis 1989, 26; Dorandi 2017. Still, the mention, in P.Oxy. LXXV 5063, ll. 19–20 (late third century CE), of 'rolls of 20 *kollēmata*' seems to imply that other lengths were also commonly available. A much older list of various items includes 'rolls of fifty *kollēmata*' (P.Cair.Zen. I 59054, l. 56; 257 BCE).

3 The average heights range from 15 to 40 cm, with a concentration between 19 and 25 cm during the Ptolemaic period, and between 25 and 33 during the Roman era (cf. Johnson 2014, 141–143 with further bibliography).

https://doi.org/10.1515/9783111292069-008

readily adjustable to the length and format of the text you needed to write: it was easy to cut and to extend by pasting it with another roll or pieces of a roll. It is important to note that *kollēmata*, once merged into a roll, basically ceased to be perceived as self-standing items, so that when the roll had to be cut, little attention was paid to its original parts.[4] The word *kollēma* was also used to refer to a piece cut from a roll.[5]

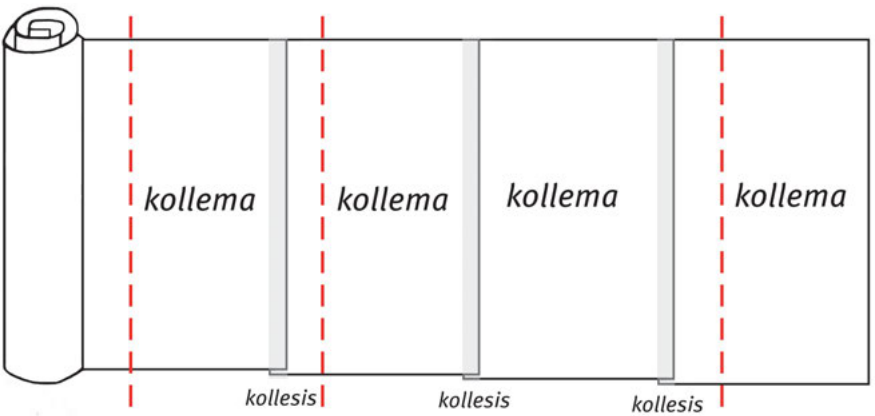

Fig. 1: A papyrus roll with its production units (*kollēmata*) and overlappings (*kollēseis*, in gray). The red lines show how cutting a part of a roll for writing short texts did not normally consider the placement of *kollēseis*.

The roll (or pieces cut from it) was intended (and prepared, by smoothing its surface and *kollēseis*) to be written on one side, called *recto* in modern terminology, and meant to stay protected on the inside of the roll, the other one (the *verso*) remaining blank. However, cases of an intensive exploitation of papyrus, with the same text covering both sides or, much more often, with a papyrus roll already used on the *recto* being reused on the *verso* for another, different text, are frequent.

4 The variable position of *kollēseis* in pieces cut from a roll makes it clear that, in most cases, the cuts did not consider the dimensions or the boundaries of the original *kollēmata*.

5 O.Claud. II 240, O.Strasb. I 795, P.Ryl. IV 629, ll. 63, 121, 157 and 268 refer to pieces of a roll and not to individual 'fabrication sheets', as demonstrated by the fact that in these texts *kollēmata* is always complemented by χάρτου, *khartou* ('of a roll') or diminutives of the same word.

1.2 The notion of 'archive' in papyrology

The word 'archive' has been used in different ways in the various fields of scholarship.[6] I will stick here to the broad definition generally (even if not unanimously) accepted by papyrologists: an archive is a group of documents 'which in Antiquity had been brought together for some purpose'.[7] To that, we can add, whenever possible and without considering them indispensable,[8] two more, very welcome but still subsidiary, criteria: the presence of a filing principle and a selection operated by the person(s) who kept the documents together.[9] Archives are sometimes formed by documents of the same kind, and sometimes by documents of different kinds connected by a link (such as their relevance to the same person, matter or procedure). Archives are largely attested both in public and private contexts.[10]

2 *Tomoi sunkollēsimoi*: An overall picture

Tomoi sunkollēsimoi (τόμοι συγκολλήσιμοι,[11] 'pasted rolls') consisted of single and originally independent documents written on different sheets, pasted one after the other proceeding from left to right, so as to form a longer strip very similar to an actual roll. Very similar (and not identical) because the pasted sheets would not have been all of the same dimensions: their heights would depend on that of the rolls from which they were cut, and their length would vary according to the content of each text, its layout and the preference of each scribe. Moreover, the *tomoi sunkollēsimoi* present both some 'fabrication *kollēseis*' (those of the original rolls from which the single pieces were cut) and 'secondary *kollēseis*' (deriving from pasting the pieces together, and coarser than

6 For useful, wide-range overviews on archives, see Brosius 2003; Bausi et al. 2018.

7 Pestman 1994, 51. Also cf. the definition by Bagnall 1995, 40 ('collections of papers around an individual, a family or an office'). For a partially different approach, insisting primarily on the find circumstances of the papyri to be recognised as an archive cf. also Jördens 2001.

8 Cf. the equilibrate position of Van Beek 2007, 1033–1037.

9 The first criterion was proposed by Martin 1994, the second one by Orrieux 1985, 41 (and adopted by Martin 1994).

10 For a survey, see Vandorpe 2009.

11 For the expression, standard in papyrology, to indicate this kind of rolls, see e.g. M.Chr. 183 (discussed below p. 237). Other documents call them succinctly *sunkollēsimoi* (see e.g. P.Vet.Aelii 5). *Sunkollēsimon* as noun adjective indicates properly the document pasted with others (cf. Montevecchi 1990).

fabrication *kollēseis*). The pasted documents were aligned at the bottom, and the upper, uneven margin was usually left like that (Fig. 2).[12] The *tomoi sunkollēsimoi* were convenient to keep documents in a permanent and secure order, and to easily scroll through them as through any roll.[13] As such, depending on the contexts, they can be a useful archiving method or themselves represent an archive. In any case, their production altered the material aspect of the filed documents and was not meant to be reversible.[14]

Fig. 2: P. Graux. III 30: receipts addressed to the public bank of Arsinoe (P.Sorb. inv. 2008 recto , cols 9–14; 155 CE); © Paris, École Pratique des Hautes Études.

12 Uneven upper margins are well visible, for example, in P.Graux III 30 + P.Berl. Frisk 1 + P.Col. II 1 recto 4 + BGU XIII 2270 + 2271 + SB XVI 13060 (seventy-four receipts addressed to the public bank of Arsinoe, 155 CE; TM Arch id: 370; overall description and reconstruction in P.Graux III; partially reproduced here in Fig. 2) and P.Oxy. XLVI 3276–3284 (nine applications for the admission in the gymnasial class; Oxyrhynchus, 148/149 CE). Some *tomoi sunkollēsimoi* with a trimmed upper margin have actually been reused on the *verso* for a different text (see below § 4), so that it is possible that the trimming belongs to this reuse stage.

13 To the best of my knowledge, there are only two cases of *tomoi sunkollēsimoi* built in a somehow different way: in SB XII 10788 (a private *tomos sunkollēsimos* gathering documents on the properties of a man; Oxyrhynchus?, 60–64 CE) and in PSI Congr.XX 10 (another private exemplar, gathering documents concerning a marriage; Oxyrhynchus, 173/174 CE) the sheets are pasted one under the other (with the top of the second document under the bottom of the first, and so on). The result is still a strip similar to an actual roll, but it had to be used 'vertically', rotated 90 degrees.

14 The same is not true for the other method attested by the papyrological evidence (for private archives): keeping sheets and rolls together by wrapping them in another piece of papyrus or in a piece of cloth and/or (both or just one of these strategies can be used) putting them inside something (e.g. a pouch, a jar, a box, a niche in a building; for some examples see Vandorpe 2009, 219–220). In these archives, documents were protected and somehow bound but, from a material point of view, they remained self-standing and could be easily separated from the others.

The reference work for the *tomoi sunkollēsimoi* is an article by Willy Clarysse published in 2003.[15] Clarysse also produced a very useful list of 263 *tomoi sunkollēsimoi* in the early 2000s, available online.[16] It was a working list, and some items admittedly had still to be checked, revised, etc. An updated list, excluding items that are not actual *tomoi sunkollēsimoi* and including items published in the last twenty years, would probably reach close to three hundred *tomoi sunkollēsimoi*. These papyri are in a very uneven state of conservation: a few of them are long strips made of several pasted documents, but the largest part consists of the (sometimes meagre) remains of only a couple of joined sheets.

We can draw the following assumptions from the overall evidence:

– *Tomoi sunkollēsimoi* were already occasionally produced in the Ptolemaic era, but we have very few samples of them.[17] Their use in some public offices was certainly already regulated by the middle of the first century BCE and seems to have been generalised in the public administration of Egypt under Roman rule:[18] from the first century CE onwards, the number of *tomoi sunkollēsimoi* increases tremendously, and the documentation is abundant until the middle of the fourth century (the last attested exemplar, W.Chr. 446 [= P.Oxy. I 87], dates to 342 CE).
– Only about 7 % of the *tomoi sunkollēsimoi* published belong or may belong to private individuals or householdings (the actual nature of some of them

15 Some of the information and examples already given by Clarysse 2003 are mentioned here with updates and a few corrections.

16 Clarysse's Excel file listing the *tomoi sunkollēsimoi* with basic information on each of them is downloadable here: http://www.trismegistos.org/arch/tomos.xls.

17 The only known examples of Ptolemaic *tomoi sunkollēsimoi* are P.Freib. III 12–33 (TM Arch id: 246, contracts registered in a village office; Philadelpheia, 179/178 BCE), P.Rev. I and II (Arsinoites, 259/258 BCE, each of them with at least five documents on the same matters – laws and ordinances on tender – pasted together), P.Oxy. IV 836 (loan contracts; Oxyrhynchus, 66/65 or 15/14 BCE), BGU VIII 1743, 1745, 1751, 1753 and 1754 (TM Arch id: 156, several *tomoi sunkollēsimoi* of documents belonging to different officials of the Heracleopolite district, 63 BCE). The identification of P.Berl.Salmen. 16 (P.Berol. inv. 25844) with a *tomos sunkollēsimos*, announced in Clarysse 2003, 356, n. 38 (when the papyrus was still unpublished) has not be confirmed in its edition.

18 In this respect interesting evidence is provided by extra-Egyptian Latin documents: findings at Dura Europos include several *tomoi sunkollēsimoi* of official letters (*libri epistularum*; cf. Cicero, *In Verrem*, 2, 3, 71 (167)) related to the activities of the *cohors XX Palmyrenorum* at the beginning of the third century CE (P.Dura 66 is a quite impressive, even if much damaged, exemplar containing about fifty letters dated to 216 CE; on this and the other *tomoi sunkollēsimoi* from Dura see Iovine 2019). Information about the use of *tomoi sunkollēsimoi* in Rome is nearly inexistent, but a passage in Cicero (*Ad Atticum*, 9, 10, 4) seems to refer to a private *tomos sunkollēsimos* gathering Atticus's letters: *evolvi volumen epistularum tuarum quod ego <sub> signo habeo servoque diligentissime*. On the matter see Büchner 1939, 1211 and Shackleton Bailey 1965, 60.

remaining uncertain). Since their chronology overlaps with that of the official *tomoi sunkollēsimoi*, the private use of *tomoi sunkollēsimoi* seems to be the result of the influence of the public practice.
– *Tomoi sunkollēsimoi* were mostly used to keep together documents of the same typology (this is the norm in official *tomoi sunkollēsimoi*). But sometimes, and especially in private contexts, they gather documents of different kinds regarding the same matter.
– Similar to any other roll, the length of a *tomos sunkollēsimos* could vary widely in accordance with its contents: private *tomoi sunkollēsimoi* often consisted of just a few documents, while public *tomoi sunkollēsimoi* could reach several hundreds of sheets.[19]

3 Use of *tomoi sunkollēsimoi* in the administrative procedure

During the Roman era, there is enough evidence for the presence of *tomoi sunkollēsimoi* in offices at all levels of administration of Egypt, from the village offices to the archives of the districts (νομοί, *nomoi*, sg. *nomos*) and of the capital Alexandria. The production of *tomoi sunkollēsimoi* was, in all probability, the standard procedure for all those documents presented on single sheets that needed to be kept together in public archives, pertaining to both private (contracts) and public law (with declarations – of census, of death, of cattle, of un-

19 The *tomos sunkollēsimos* of receipts already mentioned in n. 12, now split into several non-contiguous fragments kept in different collections, contains a total of seventy-four documents. The longest continuous strip of a *tomos sunkollēsimos* is P.Brux. I 3–18, with sixteen census declarations pasted together (cf. the end of this article for more information). However, the numbering of *kollēmata* in official *tomoi sunkollēsimoi* (see below p. § 3.2) allows us to reconstruct the (minimum) length of several other exemplars, and verify that *tomoi sunkollēsimoi* with more than one hundred documents were common. The highest number preserved in a certain *tomos sunkollēsimos* (P.Oslo III 98) is 392. The reading of the number 433 on a *libellus* (certificate of sacrifice) of the Decian persecution (W.Chr. 125) is not entirely certain, and this document is peculiar because none of the other forty-six *libelli* preserved bears numbers or any other evidence that could point to a *tomos sunkollēsimos*: however, the presence (pointed out in the *editio princeps*) of a *kollēsis* on the right of this sheet could suggest actual pasting with other documents. P.Oxy. XLIV 3205.5 probably mentions a *tomos sunkollēsimos* with 437 *kollēmata*. Numbers referring to *tomoi sunkollēsimoi* of petitions (see below p. 238) are often quite high (the highest being 1804, cf. Haensch 1994, 487), but for these cases we should consider multiple *tomoi sunkollēsimoi* with a continuous numbering.

watered land – and reports being the most attested documents filed in *tomoi sunkollēsimoi*). Following the traces of *tomoi sunkollēsimoi* means going through the administrative structure of Roman Egypt.

3.1 Administrative procedures involving *tomoi sunkollēsimoi*

Many *tomoi sunkollēsimoi* started their journey through the government structure of Egypt in the smallest administrative entity, the villages (κῶμαι, *kōmai*), where some offices produced and collected documents pertaining to private and public law.

We have extant evidence about how the handling of contracts was regulated in the village record office: the γραφεῖον (*grapheion*).[20] In M.Chr. 183 (= P.Grenf. II 41; 46 CE), a man called Tesenouphis writes to the contractor of the *grapheion* of Soknopaiou Nesos to bid for its sublease. Tesenouphis commits himself to submit to the addressee, every four months, the *tomoi sunkollēsimoi* of the deeds drawn, a register of their abstracts (εἰρόμενον, *eiromenon*) and a list of them consisting of just their title (ἀναγραφή, *anagraphē*). These documents were probably required by the state, and the accomplishment of these instructions is witnessed, many years later and in another *nomos*, by M.Chr. 184 (= P.Flor. III 357; 208 CE), the final part of a *tomos sunkollēsimos* produced in the *grapheion* of the Western Toparchy of the Oxyrhynchite: Apollonios, the head of the *grapheion*, records that he has deposited the *tomos sunkollēsimos* together with an *eiromenon* and an *anagraphē*; here, the documents are deposited on a monthly basis instead of each four months as established in M.Chr. 183. The 'submission' of *tomoi sunkollēsimoi* produced in the *grapheion* to the superior levels seems to imply that they were physically moved from one office to the other. This would agree with the absence of *tomoi sunkollēsimoi* in the documents coming from the *grapheia* of Tebtunis and Soknopaiou Nesos. The administrative travel of these documents changed along the centuries, as a consequence of the creation of various offices at the *nomos* and central levels. It seems that, from the second half of the first century onwards, two identical *tomoi sunkollēsimoi* were produced in the *grapheion*: one was transmitted to the βιβλιοθήκη ἐγκτήσεων (*bibliothēkē enktēseōn*, Archive of the real property), first attested in 72 CE and situated in the μητρόπολις (*mētropolis*, the capital of the *nomos*), and the other to Alexandria, in the archive called καταλογεῖον (*katalogei-*

20 For this office (certainly attested from 145 BCE until the second half of the third century CE) and its tasks, cf. Wolff 1978, 46–56, 222–255; Cockle 1984; Burkhalter 1990; Claytor 2014, 58–62; Langellotti 2020.

on); here, *tomoi sunkollēsimoi* were checked by officers called εἰκονισταί (*eikonistai*) and then deposited elsewhere: in 127 CE, the role of the main archive (where originals were kept) was assigned to the newly established βιβλιοθήκη Ἁδριανή (*bibliothēkē Hadrianē*), while a copy was brought to the Ναναῖον (*Nanaion*), which had already existed since the Augustan age.[21]

The evidence regarding public documents is somehow different, as we do not have extant regulations on the matter. For a specific kind of document (census declaration), we know that several copies of the same document were produced by the registrant to be transmitted (and kept) in different offices at various levels of the administration. The collections of Berlin and Oxford hold six copies (on six independent sheets) of the same census declaration (dated to 161 CE), prepared and addressed to various officers but in all probability never presented to them.[22] It is therefore possible that registrants would have to produce all the necessary copies for the administrative procedure. We do not have information about the path of census declarations beyond the *nomos* level, but a complete process for other public documents has been sketched: in each local office, the documents were filed in *tomoi sunkollēsimoi*, and a copy of them (deposited by the στρατηγός [*strategos*] and the βασιλικὸς γραμματεῦς [*basilikos grammateus*]) was kept in the βιβλιοθήκη δημοσία (*bibliothēkē dēmosia*, Archive of the public documents) in the *mētropolis* of the *nomos*, while the original was transmitted to Alexandria, in the archive called *Patrika*. The report of a lawsuit against the record keepers of the *bibliothēkē dēmosia* in Ptolemais Euergetis for their mismanagement (P.Fam.Tebt. 15, ll. 75–98; 98 CE) provides important evidence about the actual functioning of this archive. The description of the problems highlighted includes, *inter alia*, sheets piled up and left without proper classification for many years. P.Oxy. II 237, col. 8, ll. 27–43 (89 CE) relates on similar problems in the *bibliothēkē enktēseōn* of Oxyrhynchus.

Besides these paths starting from the bottom and 'climbing' the administrative hierarchy, there is a lot of evidence attesting the direct production of *tomoi sunkollēsimoi* at the highest official levels and involving a specific kind of document: petitions (appeals to the authorities for justice). The petitioners submitted their requests, and the authorities responded by giving instructions to solve the problem. A procedure followed over a long period was to paste the documents in *tomoi sunkollēsimoi* and to affix them in a public space in the same

21 For these offices and the others mentioned below, cf. Burkhalter 1990; Cockle 1984; Kruse 2014.

22 The six exemplars are BGU I 90, 224, 225; BGU II 410, 539; P.Grenf. II 55. On the treatment of census declaration, cf. Bagnall and Frier 1994, 19–20 and Hombert and Préaux 1952, 84–93 and 129–135.

cities where they were presented, together with the answer from the authorities. At a first stage, *tomoi sunkollēsimoi* were made of documents that required the same answer, prefixed just one time to the whole *tomos sunkollēsimos*; later, each answer was written at the bottom of each document, on the same sheet; in this same phase, the *tomoi sunkollēsimoi* and the documents within them were numbered. After a period of display (during which the people who received their response had time to copy and authenticate it), the *tomoi sunkollēsimoi* were archived.[23] In these cases, thus, the production of *tomoi sunkollēsimoi* fulfilled the double purpose of display and filing.[24] We know less about what happened to the petitions addressed to officers at the district or local levels, but there is some evidence of them being pasted in *tomoi sunkollēsimoi* for filing.[25]

3.2 Production

The production of a *tomos sunkollēsimos* in an administrative office involved, in principle, three operations: the ordering of the single documents according to a criterion, their pasting together, and their individual numbering.

The documents were usually filed in progressive chronological order, and sometimes a geographical criterion is also present.[26]

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23 This system was used (from Hadrian onwards) for petitions addressed to (and answered by) the emperor and posted in Alexandria, and during the second half of the second century was also adopted by the prefect and other high authorities. On the processing of petitions in the Roman era, cf. Haensch 1994, esp. 492–511 ('Phasen' III and IV) and Mascellari 2021, esp. 1021–1024.

24 The number of the *tomos* and that of the *kollēma* were noted in the copies of the petitions and used whenever a reference to the document itself had to be made (cf. e.g. SB XIV 11980, l. 14).

25 Cf. e.g. SB XVIII 13087, SB XIV 11274, SB XVIII 13088 and SB XX 14086, petitions to the ἐπιστάτης φυλακίτων (*epistatēs phulakitōn*, the chief of the police) belonging to the same *tomos sunkollēsimos* (Arsinoites, 4 BCE); among petitions addressed to the *stratēgos*, cf. e.g. SB XIV 11381 (*c*. 115–117 CE), BGU II 491, col. 2 (145–149 CE) and BGU II 663 (*c*. 203 CE).

26 Some exceptions: a reverse chronological order seems to be attested in P.Vars. 10 (mortgages; Ptolemais Drymou, 156 CE), with two documents having the same date and the following one dated three days before, and in PSI IX 1064 (death declarations; Ptolemais Euergetis, 129 CE), with the second document authenticated ten days before the first. A partially mixed chronological order is attested in P.Bodl. I 17 (census declarations; Soknopaiou Nesos, 133 CE) and PSI I 53 (census declarations; Oxyrhynchus, 132/133 CE). In P.Mil.Vogl. 193 + 194 (census declarations; 146/147 CE; on this *tomos sunkollēsimos* cf. also below, n. 33), the first document is dated after the second, while the exact date of the other two is unknown. To a *tomos sunkollēsimos* with a reverse chronological order might point, according to the readings and reconstruction of its editor, also P.Oxy. LX 4060. These cases might result from slips in the

We cannot say whether pasting was performed in a single moment (when it was time to file the accumulated documents) or if documents were glued together gradually as they came into the office. The lawsuits against the negligent record keepers of the Arsinoite and the Oxyrhynchite *nomoi* mentioned above shows that unbound single sheets could be left like that for many years.

As for the progressive numbers of the documents forming a *tomos sunkollēsimos*, in the surviving evidence they are always inserted in the upper margin and always by one hand: in all probability, then, the numbering was carried out in one and the same moment (before or after the pasting).[27] The total number of sheets pasted in a *tomos sunkollēsimos* was one of the data to be registered when they were deposited in the central archives at Alexandria (M.Chr. 188, I 17–II 1). The *tomoi sunkollēsimoi* themselves were provided with a title and an identifying number if more than one contained the same kind of documents and/or referred to the same time span. They could be further gathered in a τεῦχος (*teuchos* – pl. *teuchē*; lit. 'case') bearing a title (and sometimes a number) as well.[28] References to a single filed document were, therefore, made by mentioning the *teuchos* (if it existed), the *tomos sunkollēsimos* and the individual number of the document (indicated by the word *kollēma*) within it.[29] This procedure seems to be standard for those documents that needed to be checked even after they had been archived, as it assured their quick retrieval, while other *tomoi sunkollēsimoi* were (or could be) left unnumbered.

Some problematic cases question the complete uniformity of the operations performed and their relative order within this general picture:

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filing operations, or from an order based on the actual arrival of documents and not on their internal date, or from a deliberate 'inverse composition'.

27 In one case (P.Berl.Sarisch. 10), the number is preceded by the abbreviated word *kol(lēma)*; the partial superposing of the number to the word shows that *kol(lēma)* was written at an earlier and different time. BGU IV 1052, 1053, 1055, 1057, 1101–1104 and several other documents from the so-called 'Alexandrian scribal office' (TM Arch id: 430) are separated sheets with the word *kol(lēma)* in the upper margin, without numbers: these documents were possibly intended to be pasted in a *tomos sunkollēsimos*, but apparently they never had been: cf. Van Minnen 2016, 144. The indication *kol(lēma)* (admitting that the solution of the abbreviation is right) looks unnecessary and presently remains unexplained.

28 On the meaning of *teuchos* as 'container of multiple *tomoi*' and the related administrative practice, cf. Sänger 2007.

29 The best example is provided by P.Ryl. II 220 (Thmuis?, between 134/135 and 138 CE), an official list of people containing references to several census declarations filed in *tomoi sunkollēsimoi* and sometimes also in *teuchē* (see ll. 69–84 *passim*); a similar reference can be found in SB XVI 13067, l. 3 (Ptolemais Euergetis, 175–188 CE).

- Some typologies of documents usually filed in *tomoi sunkollēsimoi* also survive on single, numbered sheets that do not seem to show any trace of pasting.[30] Leaving aside an intentional operation of detaching a document from an already fabricated *tomos sunkollēsimos*, which seems highly unlikely (in principle, there would not be any administrative reason for separating filed documents meant to be kept in an office), several explanations are possible: (1) the sheets have come unstuck over time, or during modern restoration, and their separation would therefore be irrelevant;[31] (2) the editors failed to recognise that what appears to be a single sheet is in fact a piece of a *tomos sunkollēsimos* cut from it to be reused (for reuse of *tomoi sunkollēsimoi*, see below); (3) these documents witness an incomplete filing procedure, with numbering already inserted on still separate sheets, but no pasting done; or (4) these documents witness an alternative filing procedure, consisting of numbering the documents without pasting them in *tomoi sunkollēsimoi*.
- A group of papyri belonging to the archive of Apollonios, *stratēgos* of the Apollinopolite Heptakomia *nomos* (TM Arch id: 19), includes the same kind of documents both in single sheets and in *tomoi sunkollēsimoi*. It is formed by P.Giss. 4, 5, 6 and 7, W.Chr. 352 (= P.Brem. 36), P.Lips. II 136 and 137, P.Ryl. II 96 and P.Alex.Giss. 26, all of them containing offers for the lease of public land. None of the documents whose upper margin is preserved appears to be numbered. P.Giss. 6 is a part of a *tomos sunkollēsimos* containing three documents ordered chronologically: the first one is dated between 27 November and 26 December 117 CE, the second one 1 December 117, and the third one 15 January 118. P.Giss. 7 is a portion of a *tomos sunkollēsimos* as well: the meagre remains of the first document do not preserve a date, while the second document is dated to September–October 117 CE. The other seven documents of the group appear to be on loose sheets: W.Chr. 352 dates to 28 December 117 CE; P.Giss. 5 to 29 December 117, P.Lips. II 136 to 9 January 118; P.Giss. 4 to 10 January 118; we only know the year (117/118) for P.Lips. II 137, while the dates of P.Alex.Giss. 26 and P.Ryl. II 96 are lost. Since all these documents were presented to the same office, why have W.Chr. 352, P.Giss. 5, P.Lips. II 136 and P.Giss. 4 not been inserted in the *tomos sunkollēsimos* partially preserved by P.Giss. 6, at their chrono-

30 Cf. e.g. P.Köln II 86 (cattle declaration), P.Oxy. II 245 (cattle declaration), BGU XV 2471 (official letter), PSI X 1136 (census declaration) and P.Flor. I 5 (census declaration).

31 Cutting or separating single columns of longer rolls was relatively common in the restoration practice of the first decades of the past century. For example, SB XII 10788 (the 'vertical' *tomos sunkollēsimos* mentioned above in n. 13) and the register from Karanis mentioned below in n. 34 underwent this kind of operation.

logical spot between the second and the third *kollēma*? Perhaps the loose sheets were meant to be added to the *tomos sunkollēsimos* later (cf. n. 26 above for possible similar cases), or, as Clarysse thinks, all the documents were actually part of the same *tomos sunkollēsimos* but some of them came off.[32] Both hypotheses imply that the date of arrival of the documents at the office (and not the date in the documents themselves) determined the 'pasting order' in this *tomos sunkollēsimos*. The first hypothesis implies an ongoing and progressive production of the *tomos sunkollēsimos*, while the second one could suggest a unified operation of pasting.

– Among extant *tomoi sunkollēsimoi* gathering the same kind of documents, some are numbered and others (a minority) are not. Among the nineteen *tomoi sunkollēsimoi* containing census declarations and preserving the upper margin, for example, sixteen have numbers, while the numbering in two of them is certainly lacking, and one more shows a somewhat ambiguous situation.[33] Here, again, more than one explanation is possible: (1) these *tomoi sunkollēsimoi* witness an incomplete procedure; or (2) different offices adopted different procedures (some inserted the numbering and some others not, thus giving up the possibility of a quick reference to, and retrieval of, documents). Note that the first explanation would imply a relative order between numbering and pasting opposite to that implied in hypothesis (3) for the single sheets discussed above.

The inconsistencies mentioned so far might just derive from different internal procedures of different offices, and a certain degree of variability should perhaps be expected. The constantly increasing documentation, together with a careful reanalysis of the material published already, will possibly shed some light on the reasons for this lack of complete uniformity. A careful observation of the material features of *tomoi sunkollēsimoi* and of loose sheets, in particular, seems indispensable to understand their nature better and how they were used.

32 Clarysse 2003, 348.

33 P.Berl.Leihg. 16 and P.Oxy. VIII 1111 have no numbers (for the second one, I rely on the edition, since I was unable to check photos); P.Mil.Vogl. 193 + 194 (already mentioned in n. 26) has no numbering in three out of four declarations, while a number was inserted in an odd position (between ll. 2 and 3) in the last one.

4 *Tomoi sunkollēsimoi* and other rolls

Finally, a few words about how some of the features of *tomoi sunkollēsimoi* may affect the possibility of distinguishing them from other kinds of artefacts.

1. *Tomoi sunkollēsimoi* were not the only rolls with internal numbering: the numbering of columns was also used in registers written continuously on 'normal' rolls. A fragment consisting of just a part of a numbered column cannot, therefore, be automatically attributed to a *tomos sunkollēsimos*: material features and contents should be carefully inspected.
2. Once fabricated, a *tomos sunkollēsimos* was treated exactly like any other roll, and could, therefore, be reused by writing on its back. This could be done by simply turning the *tomos sunkollēsimos* and reusing it as a whole, or by cutting parts of it and reusing them for writing short documents. This last case produces another stage in a long back-and-forward process from sheets to rolls. P.Flor. II 119 + 159, for example, is a part of a *tomos sunkollēsimos* of letters addressed to the same person around the middle of the third century CE, cut and reused on the back to write another letter (Fig. 3).

A *tomos sunkollēsimos* reused on the back can look very similar to another well attested kind of roll, fabricated with several sheets (or pieces of rolls) already written on one side, with the purpose of using it on the (blank) back.[34] These rolls are sometimes called 'pasted' or 'composite' rolls – both insufficient expressions, since they can also describe *tomoi sunkollēsimoi*. The content of the already written side was completely irrelevant regarding both reused *tomoi sunkollēsimoi* and 'composite rolls', and if the pasted parts had uneven height, a trimming to obtain regular margins could be made disregarding the eventual loss of text.[35]

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34 There are several well-known and -preserved examples of this kind of roll. Among those known for a long time, the most famous are probably P.Oxy. II 237 (*recto*)/223 (*verso*), P.Oxy. VI 986 (*recto*)/853 (*verso*) and P.Marm., all of them reused for literary texts on the *verso*. Among the more recently studied, a prominent place is held by P.Mich. inv. 4382–4387 and 4390–4391, a long register from Karanis written on the back of six pasted documents of different kinds (for a list of them, cf. Claytor 2014, 89). P.Lond. inv. 604 (P.Lond. III, pp. 70–87) is made of two different documents (a list and a register) pasted with the top in opposite directions and reused for a literary text in Demotic on the *verso*. A large part of the Demotic literary texts found in the 'deposit' of the Tebtunis Temple Library are written on the back of already used rolls, sometimes pasted between them to obtain a longer surface to write on: cf. Ryholt 2018.

35 The pasted roll from Karanis mentioned in the previous note has an untrimmed upper margin. As for reused *tomoi sunkollēsimoi*, the long exemplar of receipts from Arsinoe mentioned above in n. 12 and 19 was reused on the back to write a register without trimming its upper margin.

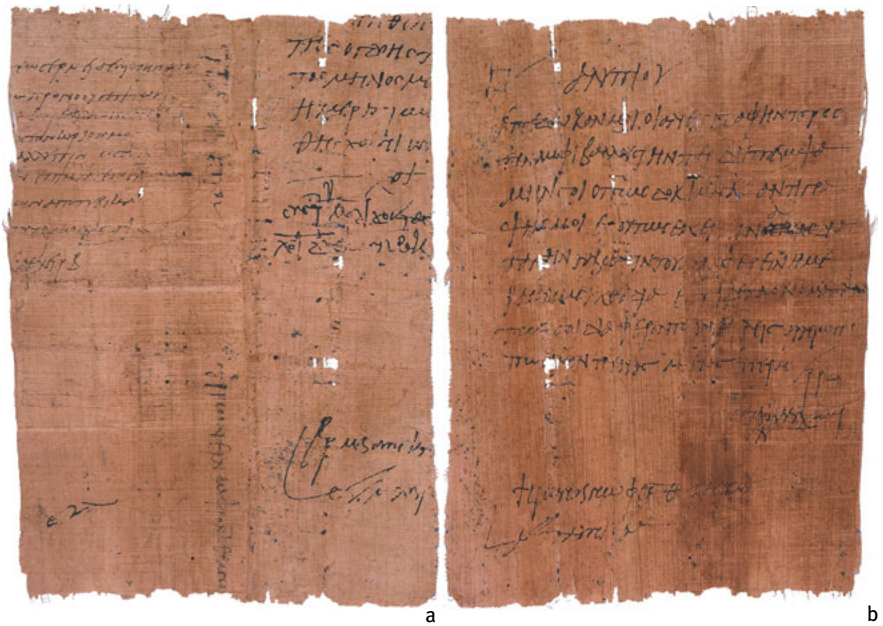


Fig. 3a–b: P.Flor. II 119 + 159 *recto* (a) and *verso* (b): a *tomos sunkollēsimos* of letters cut and reused on the back for another letter; © Florence, Biblioteca Medicea Laurenziana.

A reused *tomos sunkollēsimos* and a pasted roll will both *certainly* have secondary *kollēseis*, and they both *might* have different handwritings on the *recto* of the pasted sheets and a trimmed upper margin.

It is usually simple to distinguish between a reused *tomos sunkollēsimos* and a pasted roll if you have a large enough portion to observe the contents of the pasted parts: if the pasted parts are numbered and/or contain documents of the same kind (or on the same matter), this will point to a *tomos sunkollēsimos*; unrelated texts, or sheets pasted regardless to the full preservation of the texts[36] will, instead, point to a pasted roll. Smaller fragments will, of course, produce more uncertainty.[37]

36 See, for example, Ch.L.A XLIII 1241 (P.Vindob. L 1; TM 70033), considered for many years a *tomos sunkollēsimos* of letters, but correctly recognised as a pasted roll including different and unrelated documents: the first extant sheet, superposed to the following one, covers the beginning of its lines (as shown in Fig. 4; cf. Kramer 1991, 144, n. 18 and Ch.L.A XLIII, p. 5).

37 Cf. e.g. PSI VII 731 + P.Col. inv. 134 (TM 17644), with a clear join between two documents: the first one is a declaration of *epikrisis* (ἐπίκρισις, inscription to the gymnasium), while the contents of

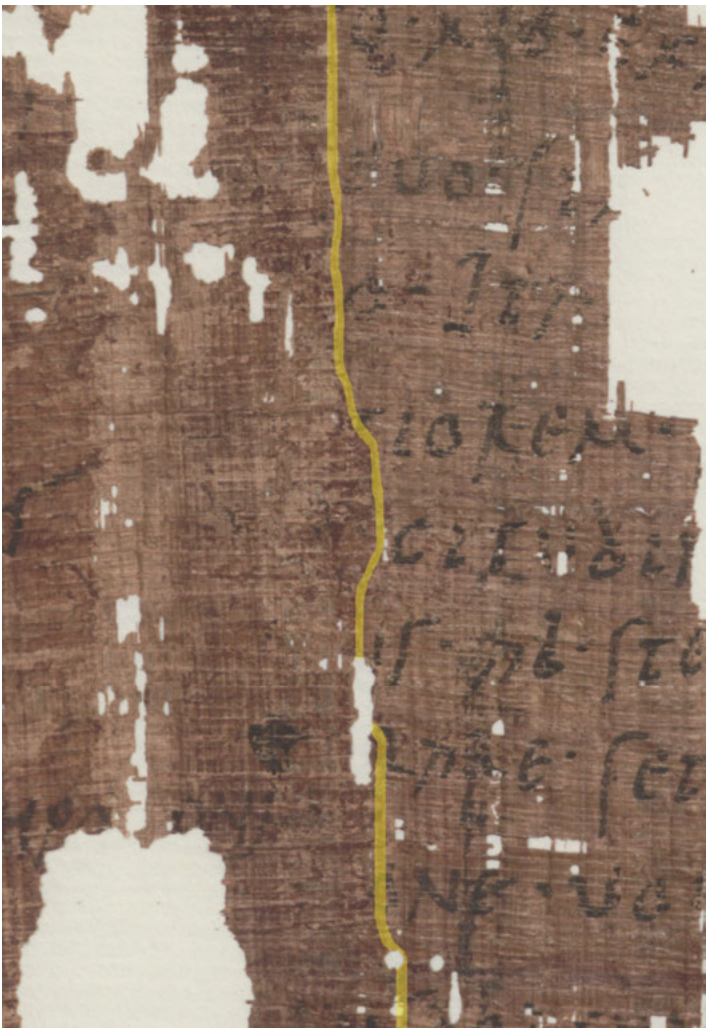


Fig. 4: P.Vindob. L 1 (Ch.L.A XLIII 1241): the image shows a detail of the join between the first and the second sheet, with an overlapping covering the text on the left handside of the second document: since the pasting was made only to use the obtained strip on its *verso*, there was no interest in preserving the texts on the *recto*; © Wien, Österreichische Nationalbibliothek, Papyrussammlung.

the second document (almost completely lost) are not ascertainable: are we looking at a *tomos sunkollēsimos* of *epikriseis*, or at two independent documents pasted together to write the register on their back?

Some complex artefacts show an accumulation of many of the processes described above: an excellent example is the well-known (and already mentioned in n. 19) P.Brux. I 1–18. Two (parts of) *tomoi sunkollēsimoi* of census declarations from two villages of the Prosopite *nomos*[38] were pasted together to write a register of documents related to liturgies (P.Brux. 21) with numbered columns on their back (Fig. 5).[39] Another already mentioned papyrus (P.Marm.)[40] shows that three different scraps of rolls coming from offices of the Marmarica (one of them consisting in two parts already pasted in the office where they were used: therefore, a *tomos sunkollēsimos*) were pasted together to write on their back a literary work by Favorinus; the layout of the columns and the analysis of the *kollēseis* shows that the text on the *verso* was copied before the pasting.[41]

5 Desiderata

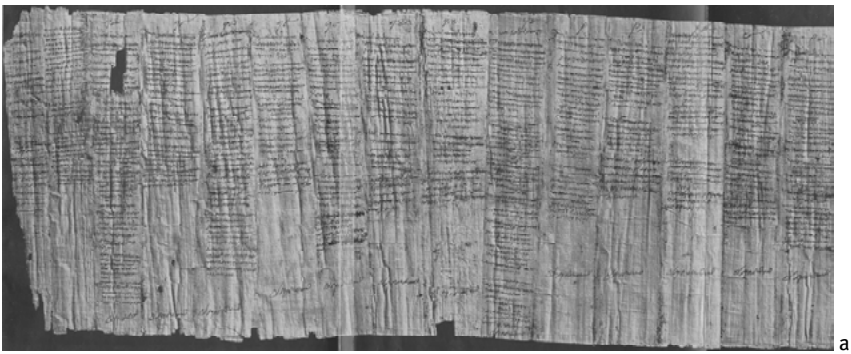
An overall and systematic study of *tomoi sunkollēsimoi* might contribute to cast more light on some of the administrative procedures in which they played a fundamental role, on the degree of uniformity of archival practices in different offices, and on the use of filing systems in private households. This survey should start from a careful material analysis of the fragments (and especially of the smaller ones), in order to identify them with certainty and to distinguish *tomoi sunkollēsimoi* from other kinds of rolls.

38 P.Brux. I 1–2 (with two receipts numbered 98 and 99) was produced at Theresis in June 174 CE, while P.Brux. I 3–18 (16 receipts numbered 92–107) was produced at Thelbonthon Siphtha in the July of the same year.

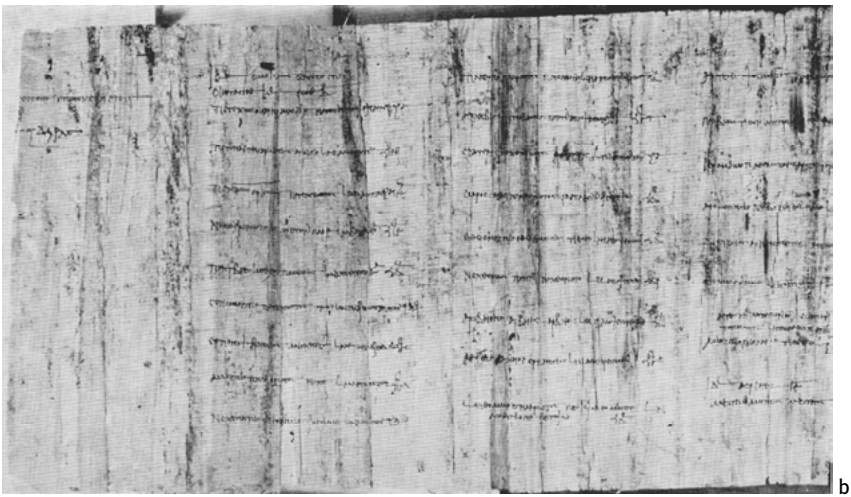
39 For a thorough analysis of this roll, cf. Hombert and Préaux 1952.

40 See n. 34.

41 For the material analysis of this roll, cf. Bastianini 2011.



a



b

Fig. 5a–b: P.Brux. I 1–18 (partial) and P.Brux. I 21 (partial): two *tomoi sunkollēsimoi* pasted together to be reused on the back for writing several documents related to liturgies, in numbered columns (P.Brux. inv. 7616: *recto* (a), cols 1–15, Prosopite *nomos*, 174 CE; *verso* (b), cols 1–4; Prosopite *nomos*, 175/176 or 207/208 CE); © Brussels, Musées Royaux d'Art et d'Histoire, Fondation Égyptologique Reine Élisabeth.

Abbreviations

Sigla of papyri follow the 'Checklist of Editions of Greek, Latin, Demotic, and Coptic Papyri, Ostraca, and Tablets', <https://papyri.info/docs/checklist>.

References to 'TM Arch id' are to the Archives section of the Trismegistos online database, <https://www.trismegistos.org/arch/index.php>.

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Eliana Dal Sasso

Ethiopian and Coptic Sewing Techniques in Comparison

Abstract: This article addresses the problem of Ethiopian sewing wrongly being referred to as 'Coptic'. Indeed, the technical jargon has solidified an outdated idea of similarity between Ethiopian and Coptic binding traditions. Therefore, to distinguish their respective fields of relevance, the article discusses the definitions of Coptic and Ethiopian bookbinding and evaluates the probable origins of the terminological misunderstanding. Although exploratory and open to reconsideration, the last section of the article compares Ethiopian and Coptic sewing techniques to identify their similarities and differences. Based on the comparison, the modern Ethiopian binding technique can be seen to differ from the ancient Coptic one; therefore, 'Coptic chain-stitch' can be considered a misleading term for the Ethiopian technique.

1 Introduction

In common understanding, the distinction between Coptic and Ethiopian bookbinding is blurred, and confusing terminology is used for the Ethiopian structures. As a simple web search for 'Ethiopian bookbinding' shows, the term 'Ethiopian' is often equated with the term 'Coptic', thus giving the impression that the two binding techniques are identical. Online tutorials describing how to construct a 'Coptic/Ethiopian binding' or 'Ethiopian (Coptic) binding' model are significant examples.[1] On the other hand, a search for 'Coptic bookbinding'

1 Among the first ten results of a search for 'Ethiopian bookbinding' – based on a Google search performed from Hamburg, Germany, on 30 August 2022 – a video tutorial and a post on a blog provide two fitting examples. The tutorial is titled *Coptic/Ethiopian Binding Part 1* and was uploaded to YouTube on 5 December 2019 (Part 2 has not yet appeared). In the video, the author shows 'how to make Coptic bookbinding', drilling holes for the attachment of the boards and the endbands in the upper and lower wooden boards. The tutorial shows the combination and re-elaboration of features of historical Ethiopian bookbinding (the board attachment) and historical Coptic bookbinding (the attachment of the endband). The result is a hybrid structure. See https://youtu.be/ZKtuBn8vfZU (accessed on 28 February 2023). As regards the post, it appeared on the *Work of the Hand* blog, which is meant to share some of the author's 'experiences during graduate school at the University of North Carolina at Chapel Hill and through the bookbinding program at the North

https://doi.org/10.1515/9783111292069-009

returns images of either modern book structures or models of historical Ethiopian book structures.[2]

The misleading use of the terms stems from the technical jargon having assimilated an outdated idea of the similarity between Coptic and Ethiopian binding, which also persists to some extent in literature.[3] A survey of publications related to the description of Ethiopic manuscripts that have appeared in the last two decades,[4] online cataloguing projects, and digitisation initiatives with some

Bennet Street School in Boston, MA'. The post is titled 'Ethiopian/Coptic Bindings' and dated 29 September 2010, but it stimulated a discussion that was active until 25 July 2022. The author presents a model of a Coptic-style binding described as 'one of the oldest known forms of the codex'. However, the images show the model of a historical Ethiopian binding. See https://henryhebert.net/2010/09/29/ethiopiancoptic-bindings/ (accessed on 28 February 2023).

2 I find it symptomatic of this terminological confusion that the photograph used to describe a 'simple Coptic binding (model)' in Wikipedia represents a historical Ethiopian binding model. See https://en.wikipedia.org/wiki/Coptic_binding (accessed on 28 February 2023).

3 For example, a book presenting extensive research on the three manuscripts of the Four Gospels preserved in the monastery of Ǝndä Abba Gärima states the continuity between the Coptic and Ethiopian binding traditions. It affirms: 'Coptic binding was used on the earliest codices (bound books) in Egypt and continues to be used in Ethiopia' (McKenzie and Watson 2016, 43). Along the same lines, one of the conservators who worked on the gospels, talking about the Ethiopic gospels and other books kept in the treasury of the monastery, affirmed that they were all 'made in the same Coptic style of binding' (Capon 2008, 4). The conservation treatment of the gospels entailed rebinding them by repeating the sewing according to the 'Coptic twin method' (a less common expression to identify the two-needle/double-needle Coptic sewing); see Winstanley 2007, 8. Furthermore, Winslow 2015, 124, referring to Ethiopian book structures, uses the expression '"Coptic stitch" bound books', and in Gnisci et al. 2019, 24, he affirms that 'the relatively simple "Coptic" form of binding still in evidence in Ethiopian manuscripts became the basis of Islamic bookbinding'. However, the use of inverted commas serves as a caveat. Miller 2018, 649, adds 'Ethiopian Christians had an ancient binding tradition, corresponding with the Coptic Christians in Egypt, and binding practices were shared between the two cultures'. A broader terminological problem is present in Brown 2006, 73, as he affirms that the vast family of unsupported chain-stitch sewing techniques, as a whole, 'is known as "Coptic sewing" although it was widely practised in eastern Mediterranean lands and is still employed in Ethiopia'. In general, it seems that the misunderstanding is based on the widespread opinion reported in Tomaszewski and Gervers 2015, 120, according to which 'it is believed that the simple structure of Ethiopian binding is very similar to that of early Coptic codices'.

4 The survey of publications is based on the reference list provided in the text of the presentation given by Alessandro Bausi at the conference Manuscript Cataloguing in a Comparative Perspective: State of the Art, Common Challenges, Future Directions organised by the Centre for the Study of Manuscript Cultures and held in Hamburg on 7 – 10 May 2018. The text by Alessandro Bausi (and Denis Nosnitsin) is available at https://www.csmc.uni-hamburg.de/written-artefacts/workinggroups/permanent-seminar/conference-contributions.html (accessed on 28 February 2023).

metadata[5] has shown increased attention toward codicological features. As regards binding in specific, it is possible to note that:

– the sewing structure (sewing type, number of sewing stations, etc.) is not systematically recorded in these sources;
– the Ethiopian sewing technique, when encountered, is often referred to as 'Coptic'.[6]

It must be acknowledged that not always the Ethiopian sewing is described as 'Coptic'. In these cases, the sewing structure is described by noting the sewing technique (chain-stitch)[7] and the number of sewing stations (or pairs of sewing stations).[8] However, given the continued use of such confusing terminology, it

5 The online resources surveyed include entries in *Beta maṣāḥəft: Manuscripts of Ethiopia and Eritrea* (Bm), which 'aims at creating a virtual research environment that shall manage complex data related to the predominantly Christian manuscript tradition of the Ethiopian and Eritrean Highlands' (https://betamasaheft.eu, accessed on 28 February 2023); the *Catalogo Nazionale dei Manoscritti Etiopici Italiani* (CaNaMEI), which aims to digitise, catalogue, and publish online Italian collections of Ethiopian manuscripts (https://www.ipocan.it/index.php/it/canamei-2, accessed on 28 February 2023); the Endangered Archives Programme (EAP), which 'facilitates the digitisation of archives around the world that are in danger of destruction, neglect or physical deterioration' (https://eap.bl.uk, accessed on 28 February 2023); and Hill Museum & Manuscript Library Reading Room (HMML), which 'offers resources for the study of manuscripts and currently features manuscript cultures from Europe, Africa, the Middle East, South Asia, and Southeast Asia' (https://www.vhmml.org, accessed on 28 February 2023).

6 The formula 'Coptic chain-stitch' appears in the catalogues of the Ethiopian Manuscript Imaging Project (EMIP) (Getatchew Haile et al. 2009; Melaku Terefe et al. 2011; Six et al. 2011) as well as in the companion volumes that I surveyed (Delamarter and Melaku Terefe 2009, 27 and Delamarter et al. 2014, 21). Thus, the manuscript descriptions imported from the EMIP project into the Bm online catalogue use the same wording. The formula also appears in Delamarter and Demeke Berhane 2007 and Meley Mulugetta 2016, which use the template of the EMIP catalogue. In reviewing Meley Mulugetta's catalogue, Denis Nosnitsin has already questioned using the term 'Coptic' to describe the Ethiopian sewing technique. However, he also affirmed that 'it is a known fact that "Ethiopian" link-stitch sewing resembles that of later Coptic manuscripts'; see Nosnitsin 2017a, 294.

7 For a definition of 'chain-stitch', see *The Language of Binding Thesaurus* (LoB), http://w3id.org/lob/concept/1249.

8 For example, Ewa Balicka-Witakowska prefers to describe the Ethiopian sewing technique as 'two independent pairs of link-stitches join[ing] the quires together'; see Balicka-Witakowska 2007, 750. The expression 'pairs of sewing stations' is used when the sewing is described in Nosnitsin 2017b; Nosnitsin and Bulakh 2014; Nosnitsin and Reule 2021; and Tomaszewski and Gervers 2015. In the reports of the CaNaMEI project, the terms *doppia catenella* (double chain-stitch) or *catenella a due fili* (two-thread chain-stitch) are used (see Lusini et al. 2020; Lusini et al. 2021; Lusini et al. 2022) and the sewing pattern is identified according to the system codified

seems worthwhile to compare Coptic and Ethiopian sewing techniques to demonstrate that, despite their similarities, they are fundamentally different traditions. Therefore, the term 'Coptic' does not seem appropriate, but is misleading for describing the Ethiopian sewing technique.

Though exploratory and open to reconsideration, what I set out in the article is based on my own autoptic examinations.[9] Therefore, I hope my contribution will be useful especially from this point of view, as it introduces first-hand data for studying the relationship between Coptic and Ethiopian bookbinding techniques. This article aims to discuss (1) the definitions of Coptic and Ethiopian bookbinding; (2) how the terminological confusion between them arose; and (3) the difference between Ethiopian and Coptic sewing technique based also on the evidence that has emerged from my first-hand observations.

2 Defining Ethiopian and Coptic bookbinding

When discussing historical book structures, the term 'Ethiopian bookbinding' refers to the traditional technique used to bind Ethiopic manuscripts, that is, manuscripts written in the Ethiopic language. In contrast, 'Coptic bookbinding'

in Bozzacchi 2001. As a side note, in Report 2, where the sewing is described as being on 'quattro coppie di fori' ('four pairs of holes'), is clear from the images that the pairs are two and, therefore, the sewing stations are four in number (see Lusini et al. 2021, 12, 15, 17, 19, 24). Further exceptions are the entries in Bm that are not imported from EMIP catalogues and describe the sewing. Generally, Bm entries record the number of sewing stations, and, occasionally, the sewing pattern is identified according to Bozzacchi 2001. See, for example, the bindings of the Ethiopic manuscripts in the Exarchic Greek Abbey of St Mary of Grottaferrata (https://betamasaheft.eu/INS0414Abbey_of_St_Mary_of_Grottaferrata, accessed on 28 February 2023) and the Staats- und Universitätsbibliothek Hamburg Carl von Ossietzky (https://betamasaheft.eu/INS0387State_and_University_Library_Hamburg_, accessed on 28 February 2023).

9 As part of my doctoral project, from 2020 to 2022, I had the chance to examine Coptic bindings first-hand at the Arxiu Històric de la Companya de Jesús de Catalunya, the Bibliothèque nationale de France, the British Library, the Chester Beatty Library, the Kölner Papyrussammlung Institut für Altertumskunde, the Museo Egizio in Turin, the Österreichische Nationalbibliothek, the Rijksmuseum van Oudheden, and the Staats- und Universitätsbibliothek Hamburg Carl von Ossietzky. Further, as part of the 'Torno Subito 2017' Operational Programme of the Regione Lazio, I could examine the bindings of the Ethiopic manuscripts kept in the Staats- und Universitätsbibliothek Hamburg Carl von Ossietzky, in the Angelica, Casanatense, Giovardiana, and Nazionale Centrale Vittorio Emanuele II libraries, in the Casamari abbey, in the Grottaferrata abbey, and few specimens in the library of the Accademia Nazionale dei Lincei e Corsiniana.

is commonly used to refer to the binding techniques prevalent in Egypt in the late antique and early medieval eras. However, some clarifications are necessary to precisely delineate these fields of enquiry.

The expression 'Ethiopian bookbinding' identifies a set of structural features shared by the bindings of Christian manuscripts produced in Ethiopia and Eritrea. These include chain-stitch sewing (mostly) on paired sewing stations, slit-braid endbands,[10] and wooden boards, which may be covered with leather and lined with colourful textiles. In Ethiopic manuscripts, the writing support is usually parchment, produced without making use of lime baths.[11] While this is the general rule, one should note that not all Ethiopic manuscripts have an Ethiopian binding or are written on parchment. Indeed, manuscripts made outside Ethiopia and Eritrea often use materials, techniques, and decorations distinctive to the place where they were produced.[12]

Furthermore, Christian and Islamic traditions coexist in the Horn of Africa, but the two differ in the shape of their books.[13] Indeed, the Islamic texts are written on paper in Arabic script and bound with a technique that falls under the category of Islamic bookbinding. It has been rightly suggested that the possibility of differentiating Christian and Islamic traditions through the form of their books raises 'issues of identities' that could be investigated at an anthropological level.[14]

In reference to historical book structures, 'Coptic bookbinding' is a historical expression, deeply rooted in the literature, which refers to the binding tradi-

10 For a definition of slit-braid endband and a line drawing of its construction, see Szirmai 1999, 49 and Fig. 4.3.

11 For an introduction to the traditional method of parchment making and further bibliography, see Balicka-Witakowska et al. 2015, 154–155; also with beautiful photographs, see Winslow 2015, 69–112.

12 See, for example, Rome, Biblioteca Casanatense, ms. 2206, written on paper (Zarzeczny 2015). Furthermore, Ethiopic manuscripts with an originally Ethiopian binding may have been rebound using a different technique, also as a result of conservation interventions. See, for example, manuscripts Grottaferrata, Biblioteca statale del Monumento Nazionale di Grottaferrata, Crypt. Aet. 2, Crypt. Aet. 4, and Crypt. Aet. 9.

13 After being long neglected, studies on Islamic written heritage in the Horn of Africa have been revitalised by initiatives such as the EMIP (see Gori et al. 2014) and the ERC project 'IslHornAfr: Islam in the Horn of Africa, A Comparative Literary Approach' (PI Alessandro Gori); see http://www.islhornafr.eu (accessed on 28 February 2023).

14 Regourd et al. 2014, xci. Anne Regourd gives a detailed account of Ethiopian Islamic bindings found on manuscripts kept at the Institute of Ethiopian Studies (IES) in Addis Ababa that have been digitised by EMIP; see Regourd et al. 2014, lxx–ccii and Regourd 2019. For the binding technique in the city of Harar, see also Pankhurst 1992.

tion prevalent in Egypt during the late antique and early medieval periods. Coptic book structures vary, and include single quires attached directly to the leather cover using tackets;[15] multi-quire codices sewn with chain-stitch and furnished with wooden boards, or laminated papyrus boards with leather covers.[16] However, the use of the term 'Coptic' requires some caution, since it is fundamentally inappropriate when applied outside of a very specific context: it alludes to a link with Christianity and to a specific language that the bound codices may never have had.

The term 'Coptic' derives from the term *qubṭ*/*qibṭ*-, from the Greek αἰγύπτιος, used after the Arab conquest of Egypt (639–641 CE) to designate the indigenous population. Therefore, it initially had no religious connotation. However, with time, the term 'Coptic' came to be used as a general term to denote the Christian minority as distinct from the vast Muslim majority. However, it is necessary to recall that after the Council of Chalcedon (451 CE), Egyptian Christianity was divided between the Copts, opponents of the Chalcedonian choices, and the Melkites, who remained in communion with the Patriarchate of Constantinople. Therefore, the term 'Coptic' cannot be considered a general term for Egyptian Christianity, but refers only to its anti-Chalcedonian component. Likewise, the term is appropriately applied to the literature and language specifically created for this religious sphere.[17]

Furthermore, the Egyptian religious landscape in the first centuries of Christianity was uneven: the Christian faith was mixed with traditional cults, and different Christian theologies were present, such as Manichaeism and Gnosticism. For example, the bindings of the Nag Hammadi codices contain Gnostic texts, and recently three wooden boards belonging to the bindings of Manichaean codices were found at the Chester Beatty Library (henceforth CBL).[18] 'Coptic' is an inappropriate term for such bookbinding because it is associated with the idea of a canonised Christianity that was not present in the early centuries; it would thus be improper to trace the production of bindings of this period to the same Christian context.

Moreover, the term 'Coptic' is misleading because it links the tradition to a specific language. Therefore, the expression 'Coptic bookbinding' could be

15 For a definition of 'tackets', see the LoB, http://w3id.org/lob/concept/1657.

16 The presence of vegetal fibres, mud-like fillers, leather, parchment, and paper fragments in the boards has also been observed.

17 For an introduction to the correct use of the term 'Coptic' and a discussion of the cultural traits of Christian Egypt from its origins to modern times, see Buzi 2014.

18 These are Dublin, CBL, Cpt 824, Cpt 825, and Cpt 826.

interpreted as the technique used to bind Egyptian codices in the Coptic language. However, in the period under consideration, Egypt was a bilingual country, and codices written in Greek and Coptic in Egypt were bound according to the same technique. The similarity between the bindings of Greek and Coptic Egyptian manuscripts has already been noted by the bookbinder and book historian Berthe van Regemorter,[19] who in a published posthumously study on Byzantine binding, affirmed:

> Rien ne différencie les reliures des livres grecs trouvés en Égypte de celles des livres coptes, aussi devons-nous considérer ce type primitif comme caractéristique de l'Égypte et non point comme propre au livre copte.[20]

Therefore, the same technique was adopted to bind all manuscripts produced in the same cultural context, regardless of language and content.[21]

Improper as it may be, since the term 'Coptic' is also commonly associated with other artistic manifestations of the period and has a long history in the scientific literature, it is reasonable to retain the expression 'Coptic bookbinding' to denote the set of characteristic features common to all late antique and early medieval Egyptian bindings.

However, in reference to modern book structures, the meaning of 'Coptic bookbinding' is different still. Indeed, Julia Miller informs us that the term is nowadays applied to 'any book with unsupported link sewing where the boards are sewn simultaneously with the text'.[22] Hence the misunderstanding: although Ethiopian and Coptic are distinct bookbinding traditions, since Ethiopian bindings have structural characteristics that fall within the modern definition of 'Coptic bookbinding', they are sometimes referred to as 'Coptic'.

19 For her biography, see Irigoin 1966.

20 'There is no difference between the bindings of the Greek books found in Egypt and those of the Coptic books, so we must consider this primitive type as characteristic of Egypt and not as specific to the Coptic book' (van Regemorter 1967, 102; translation mine).

21 For instance, we find the same technique in the binding of the Greek gospel known as the codex Washingtonianus (Washington, DC, Smithsonian Institution, Freer Gallery of Art, 06.274), the binding of the papyrus codex containing the Acts and the Catholic Epistles in Greek (Cologny, Fondation Martin Bodmer, P.Bodmer XVII), but also in the binding of a Greek grammar and Graeco–Latin lexicon (Dublin, CBL, BP XXI); see Rose-Beers 2023.

22 Miller 2010, 425. Note that 'link sewing' is an alternative label for 'chain-stitch sewing'.

3 The basis of the terminological misunderstanding

How did the expression 'Coptic binding' come to be associated with the Ethiopian binding tradition? One reason might be related to the history of the Ethiopian Church, which, until the middle of the twentieth century, was formally dependent on the Coptic Church.[23] The other is most probably rooted in the early literature on Ethiopian bookbinding that used to emphasise its similarity to the Coptic tradition.[24]

Thanks to the increasing number of digitisation projects, researchers can now base their observations on a broader range of manuscripts. Some established beliefs have thus proven to be generalisations and are now obsolete.[25] The studies of Theodore C. Petersen, Berthe van Regemorter, and Janos Szirmai on Coptic and Ethiopian bookbinding will be discussed first because of the significant impact they had on the development of studies in the field.

Ethiopian bookbinding was considered closely related to the Coptic, particularly in terms of sewing technique. Theodore C. Petersen, the author of the most extensive and detailed monograph on Coptic bookbinding to date, supported this theory. Although the catalogue, completed in 1951 after more than twenty years' effort, has never been sent to print, the typescript served as a reference for many book historians. It was finally published posthumously in 2021.[26] Petersen based his observations on the bindings of the Coptic manuscripts from Hamuli kept at the Morgan Library and Museum and on additional Coptic bindings in institutions scattered worldwide. He offers no information, however, on the provenance of the Ethiopian manuscripts he studied.[27] In the monograph, he notes that in many late antique Coptic codices, double stitches[28]

23 Störk and Müller 2003, 799a.

24 Without the intention of providing a complete list, see Cockerell 1977, 8; Bosch et al. 1981, 23; Bull 1987, 44b; Greenfield 1991, 183; and Greenfield 1998, 83.

25 This article is not intended to discredit those scholars who laid the foundations of the study of bookbinding as a discipline in its own right; their studies on understanding bookbinding techniques remain fundamental.

26 Edited by Francisco H. Trujillo for the Legacy Press. For details regarding the history of the manuscript collection and the edition of the catalogue, see Trujillo 2021.

27 Petersen includes three drawings of Ethiopian structures (Petersen 2021, Figs 11a–c).

28 The expression 'double stitches' in this article refers to two thread lengths along the fold between sewing stations.

are found in the centre of the quires, and he observes the similarity of this sewing method with the Ethiopian one. He affirms:

> In many [Coptic] parchment codices, both early and later, the sewing stitches placed in the folds of the quires are found to be of double threads indicating that the sewing operation was executed either with two separate threads and needles or with a thread with a needle at either end, in a manner similar to that used by Ethiopic bookbinders until comparatively recent times.[29]

Therefore, according to Petersen, the Coptic sewing technique is often similar to the Ethiopian one, still in use in recent times, due to the presence of double stitches in the fold of the quires.

Later, Berthe van Regemorter, who was among the first to dedicate a study exclusively to Ethiopian bookbinding, considered the similarity of the sewing a sign of Ethiopian binding's descent from the Coptic. According to van Regemorter, the similarity derives from an additional feature of the sewing structure, that is, its periodic fold pattern.[30] In the 1962 article 'Ethiopian Bookbinding', after translating the description of the Ethiopian bookmaking technique that the French explorer Antoine d'Abbadie provides in his catalogue,[31] she writes:

> I want to add a detail about the technique of the Ethiopian binder, which probably did not strike the French explorer but which is quite characteristic of the Coptic origin of the Ethiopian bookbinder's craft. An Ethiopian book is never sewn with one thread beginning at the tail of a quire and going up to the head before entering the next quire. The centre of the quires always have [*sic*] an even number of holes. A thread will be passed through number 1 and then go through number 2. Another thread will go through number 3 and number 4, and so on.[32]

According to van Regemorter, then, the Ethiopian codices always present an even number of sewing stations and a periodic fold pattern, which is considered proof of their Coptic origin. It follows that Coptic codices were considered to have the same characteristics. However, van Regemorter's statement is not always true. Petersen had already discovered that Coptic and Ethiopian bindings

29 Petersen 2021, 25.

30 The fold pattern is defined as the 'the sequence of stitches visible in the fold of the innermost folio of a section' and 'periodic fold patterns have intervals between some of the stations'; see Spitzmueller 1982, 45.

31 D'Abbadie 1859, xii–xiii.

32 van Regemorter 1962, 87.

could be sewn on three sewing stations,[33] and Theodore Lamacraft, the conservator who worked on the codices from the monastery of Apa Jeremiah now kept at the CBL, noted that the codex Dublin, CBL, Cpt 814 (CLM 65)[34] was sewn all-along, continuously, on four sewing stations.[35]

Another common opinion was that Ethiopian bookbinding had remained almost unchanged for centuries. Indeed, modern Ethiopian bindings seem outwardly similar to the ancient ones, which would confirm the stability of the Ethiopian binding technique. Not surprisingly, Janos Szirmai, in his book *The Archaeology of Medieval Bookbinding* – one of the most influential volumes on bookbinding history – shares this theory, affirming that Ethiopic manuscripts are 'bound in a very simple codex form, which has in fact remained almost unchanged until the present day'.[36] However, codicological research on Ethiopian manuscripts is in its infancy; by recording some previously unknown characteristics of Ethiopian bookbinding,[37] recent studies have revealed how limited our knowledge of Ethiopian codex manufacture is.[38] However, many aspects still deserve dedicated research to be fully understood. For example, as regards the sewing technique, Giampiero Bozzacchi has examined fifty-six Ethiopic codices kept at the library of the Accademia Nazionale dei Lincei e Corsiniana in Rome, and was able to identify and describe twelve variation patterns within the general typology of Ethiopian sewing.[39] Further research may verify whether the variations are related to temporal or geographical factors.[40] As a preliminary remark, it can be argued that the technical and aesthetic variations in Ethiopian bookbinding are concentrated on detail, as Richard Pankhurst had already noted with respect to their decoration.[41]

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33 For an early analytical drawing of an Ethiopian structure sewn on three sewing stations, see Petersen 2021, Fig. 11b.

34 CLM stands for Coptic Literary Manuscript and is the stable ID attributed to each codicological unit by the project 'PAThs: Tracking Papyrus and Parchment Paths. An Archaeological Atlas of Coptic Literature. Literary Texts in Their Original Context. Production, Copying, Usage, Dissemination and Storage' (PI Paola Buzi) (http://paths.uniroma1.it and https://atlas.paths-erc.eu, accessed on 28 February 2023). This article indicates the CLM stable ID in brackets.

35 Lamacraft 1939, 227.

36 Szirmai 1999, 45.

37 Di Bella and Sarris 2014; Nosnitsin 2016.

38 For an overview of the development of Ethiopian manuscript studies with a focus on codicological aspects and further bibliography, see Nosnitsin 2012.

39 Bozzacchi 2000; Bozzacchi 2001.

40 For a summary of the possible variations in Ethiopian bookbinding and relevant bibliography, see Dal Sasso 2022.

41 Pankhurst 1984, 209.

Lastly, the idea of the similarity between Coptic and Ethiopian bindings combined with the latter's stability over time gave rise to the assumption that the Ethiopian bookbinding craft, to a lesser extent still practised today, preserved Coptic techniques and passed them on to us. In fact, van Regemorter wrote about how the Ethiopians preserved the ancient Coptic binding technique until the nineteenth century:

> Les reliures éthiopiennes présentent une technique de couture absolument égyptienne (à fils indépendants) [...]. Ce pays est resté fidèle à ce modèle de reliure jusqu'au XIX^{e} siècle inclus.[42]

Szirmai has reported this theory, and even if he does not clearly support it, he does not discredit it either. Indeed, referring to Ethiopian bindings, he states:

> Their simple structure has often been equated with that of early Coptic codices, which would have meant that the Ethiopian binder had preserved the tradition of his craft for more than a millennium.[43]

In light of this, it can be argued that the confusing use of the terms 'Coptic' and 'Ethiopian' binding has its roots in the past literature produced by distinguished scholars, who spread the idea of the similarity between Ethiopian and Coptic binding technique. The assumption was also fuelled by the Ethiopian Church being formally dependent on the Coptic Church until the mid-1950s. As a consequence, the Ethiopian sewing technique began to be called 'Coptic'. However, the assumption of similarity between the two traditions was founded on underlying generalisations and misunderstandings. To highlight the differences between Coptic and Ethiopian sewing techniques, Section 4 presents a comparison between them.

42 'Ethiopian bindings have an undoubtedly Egyptian sewing technique (with independent threads) [...] This country remained faithful to this binding model until the nineteenth century included' (van Regemorter 1967, 104; translation mine).
43 Szirmai 1999, 45.

4 Ethiopian and Coptic sewing technique in comparison

The following section offers a comparison between Ethiopian and Coptic binding. It first discusses how the quantity and state of conservation of preserved specimens influence the study of the binding tradition; it then compares Ethiopian and Coptic sewing technique.[44]

4.1 The problem with Ethiopian and Coptic bookbinding evidence

The problem with a comparative study of Coptic and Ethiopian binding is, first and foremost, the considerable time gap between the preserved specimens of the two traditions. Ethiopian manuscripts dated before the thirteenth century are rare, their number limited to a handful of examples. Several factors probably underlie this scarcity: besides the Muslim persecution that destroyed Christian heritage during the sixteenth century, other violent events, such as the Italo–Ethiopian war (1935–1941), certainly also played a role. So too did the deliberate replacement of old manuscripts with new ones due to damage, the need to remove and replace texts, or simply the poor storage conditions that accelerated the natural decay of manuscripts.[45] Amid the paucity of evidence, it is difficult to trace the evolution of the binding technique.

As Ethiopian manuscript production still endures today[46] – producing codices that, at first glance, are similar to the older ones – one might be tempted to reconstruct the ancient technique based on modern practices. However, recent studies have revealed minor variations among Ethiopian bindings. Moreover, the preserved manuscripts have often been reworked and repaired. The boards and leather covers, fulfilling their function as protective elements of the book block, inevitably suffer deterioration. The sewing in particular is one of the first elements that must be replaced, due to the wear it undergoes when turning pages. The presence of unused holes in the quires (for sewing) or boards (for

44 For the purpose of this article, only the structures sewn through the fold of the quires will be considered.

45 For a discussion on the number of early manuscripts and the causes of their scarcity, see Bausi 2008, 518–520 and Bausi 2015, 48.

46 For recent studies on the manuscript production as it is today, see Mellors and Parsons 2002a; Mellors and Parsons 2002b; Winslow 2015.

attaching them to the book block) indicates the practice of replacing the sewing and reusing old boards in new bindings. Therefore, it is even more difficult to assess to what extent the ancient technique has been preserved.

Despite such cycles of deterioration and replacement, some original features have survived in the binding of the Abba Gärima Gospels, the most ancient Ethiopian manuscripts known so far (sixth/seventh century).[47] As evidenced by the 2006 restoration, the bindings have been repaired over time, so the codices do not retain the original sewing. Although the dating of the bindings is uncertain, the Abba Gärima Gospel 2 metal covers are decorated 'with a large cross in late antique style'.[48] A further feature of their antiquity is that the lower metal cover of Abba Gärima Gospel 1 is attached to a laminated papyrus board on which traces of a leather cover are visible. It may be speculated that this is the rest of an ancient, laminated papyrus board with a leather cover,[49] similar to some preserved Coptic bindings.[50]

As far as Coptic bindings are concerned, since the late eighteenth century, Coptic and Greek manuscripts from Egypt have entered European and non-European collections. However, it is evident from the first glance is that these manuscripts are in a highly fragmentary state, and rarely has a codex been preserved intact at a single institution. Coptic and Greek manuscripts have either suffered the ravages of time, or were intentionally torn apart when discovered to sell them in separate pieces, thus increasing the sale proceeds. As a result, fragments belonging to the same codicological unit are scattered throughout various collections worldwide.[51]

Moreover, as researchers focused on the language and intellectual content rather than the materiality of the manuscripts, even codices preserved in good condition underwent invasive processes to facilitate the handling of the leaves. For example, the bindings were separated from the book block; the sewing was cut to free the quires and allow the bifolia, sometimes cut in half for the purpose, to be housed between glass panes. This procedure was common in many

47 The dating of the gospels has been discussed in Bausi 2011.

48 Bausi et al. 2020, 49.

49 A full set of digitised images of Abba Gärima Gospel 1 is available, upon registration, in the HMML Reading Room (see https://w3id.org/vhmml/readingRoom/view/132896).

50 The presence of a papyrus board has been noted in Winslow 2015, 249, n. 69.

51 For this purpose, abbreviations identifying codicological units, like the CLM, are used. For example, the manuscript fragments originating from the monastery of Shenoute at Atripe, belonging to the codicological unit CLM 264, are scattered in collections in Egypt, France, Germany, Italy, the United Kingdom, and the US. See https://atlas.paths-erc.eu/manuscripts/264 (accessed on 28 February 2023).

European and non-European institutions until the second half of the twentieth century. In some cases, the treatment was even worse: in antiquity, discarded fragments of old manuscripts were often reused, glued together to provide rigid supports for leather coverings; later, in the interest of recovering scholarly texts, the boards were split to extract the precious manuscript fragments, thus reducing the bindings to empty leather covers. Moreover, since the bindings were deemed of little value, they were sometimes even disposed of by conservation institutions after these invasive operations.

In light of this, one can understand why there are so few manuscripts still preserving the original Coptic binding, complete with sewing.[52] Additional information can be gathered from folios with remnants of sewing threads but detached from their cover, which has not been preserved. Therefore, research must combine all the fragmentary evidence and interpret the resulting image, filling in the remaining gaps.

In the absence of material evidence, the sewing structure could only be reconstructed if it was documented before the invasive interventions. Unfortunately, this happened only rarely. For example, the sewing structure of the codices from the monastery of Apa Jeremiah is known thanks to Lamacraft, who documented it, even with drawings, before the codices were dismembered.[53] One outstanding case consists of a few photographs that emerged, during the course of this research, from among Walter Ewing Crum's papers at the Griffith Institute in Oxford. They show some of the Coptic manuscripts from the city of Edfu purchased by the British Library from the American Egyptologist Robert de Rustafjaell on 12 November 1907. When they were first acquired, the manuscripts still preserved their binding, albeit in a deteriorated state. Most of the photographs accompany the description of Rustafjaell's collection that appears

52 Coptic manuscripts still preserving the ancient sewing are: Barcelona, Arxiu Històric de la Companya de Jesús a Catalunya, P. Palau Ribes 181–183 (CLM 3956); Cologny, Fondation Martin Bodmer, P.Bodmer VI (CLM 34), P.Bodmer XVI (CLM 35), P.Bodmer XIX (CLM 37), and probably P.Bodmer XVIII (CLM 36) (in the digitisation, the fold is hidden by strips of parchment with the function of sewing stays); Leiden, Rijksmuseum van Oudheden, AMS9 (CLM 3355); New York, NY, Morgan Library and Museum, G67 (CLM 44) and M910 (CLM 1399) (which has not been opened yet due to its state of preservation); and probably Princeton, NJ, University Library, Scheide MS 144 (CLM 6296).

53 See Lamacraft 1939. He had an incredible conservationist sensitivity for the time, since he kept all the original materials he removed from the bindings (even the dust and smallest debris). Now, everything is housed neatly in forms cut to size in Plastazote® panels and preserved in boxes.

in *The Lights of Egypt* (1909), but those showing binding features (for example, Fig. 1 and Fig. 2) were not selected for publication.[54]

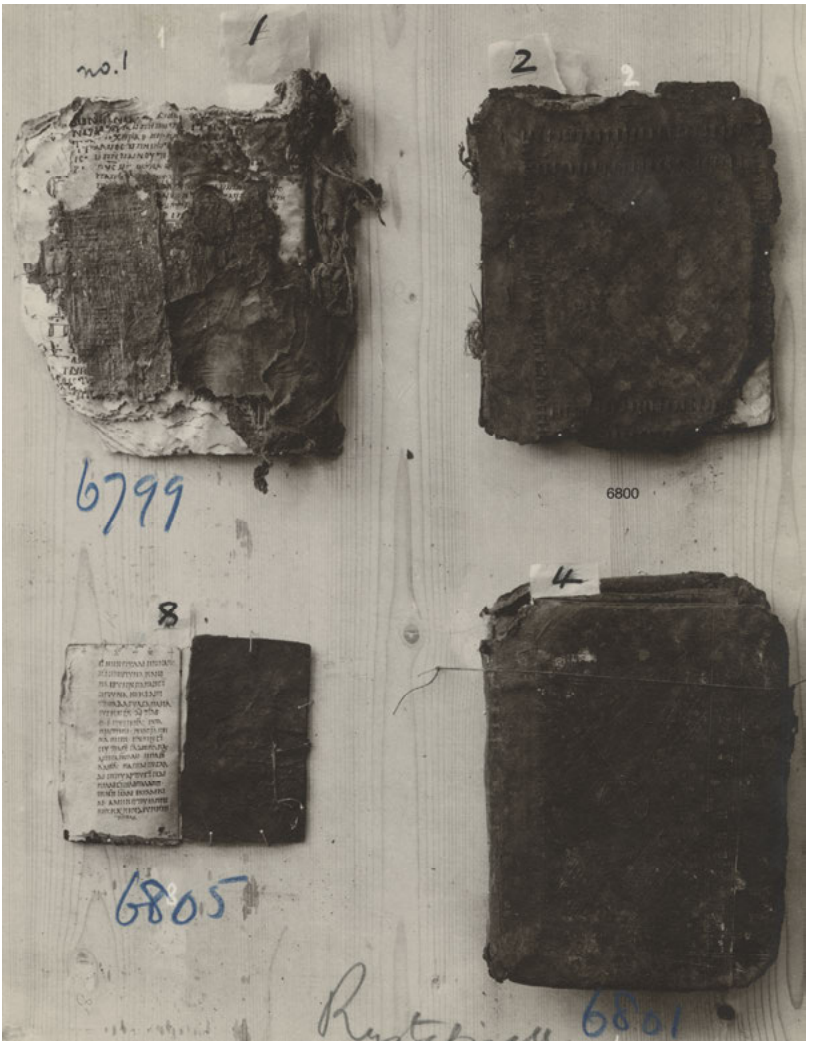

Fig. 1: The Coptic manuscripts London, British Library, Or. 6799 (CLM 183), Or. 6800 (CLM 197), Or. 6801 (CLM 184) and the Old Nubian manuscript Or. 6805, in their ancient bindings. Oxford, Griffith Institute, Crum mss I.3.12.4 © Griffith Institute, University of Oxford

54 De Rustafjaell 1909.

The manuscripts have since been rebound and the ancient bindings were not preserved;[55] therefore, the photographs are unique testimonies of the pristine state of the bindings: they show aspects of the external appearance of the covers, and internal structural features such as the sewing. The previously unknown photographic documentation makes new observations on Coptic sewing technique possible.

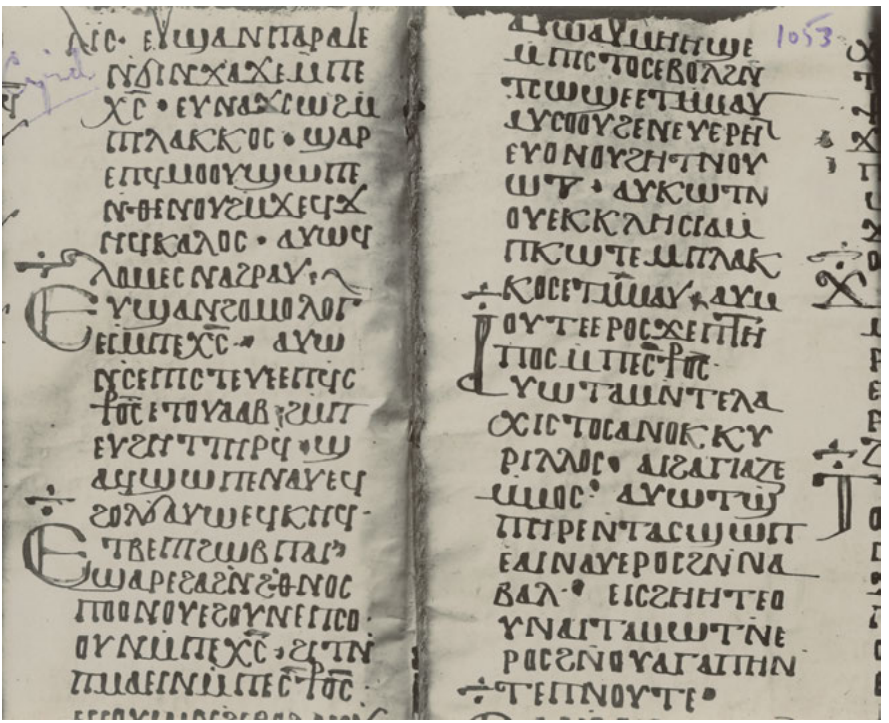

Fig. 2: Original sewing of London, British Library, Or. 6799 (CLM 183). Oxford, Griffith Institute, Crum mss I.3.12.3 © Griffith Institute, University of Oxford

55 Of the manuscript binding London, British Library, Or. 6801 (CLM 184) only the central panel of the covers is preserved, trimmed and glued as *doublure* to the modern binding. For a summary of the bindings of the Edfu manuscripts still preserved at the British Library, see Lindsay 2001. Jen Lindsay is currently preparing an updated study of these Coptic bindings.

4.2 Ethiopian and Coptic sewing methods

As discussed in the previous sections, the sewing technique is traditionally indicated as an element of similarity between the Ethiopian and Coptic binding traditions. Specifically, the statements on which this assumption was built, based on the surveyed literature, are that of Petersen regarding the presence of double stitches in the fold, and that of van Regemorter regarding the periodic structure of the fold pattern. However, these statements are not universally valid, and to avoid generalisations, they must be restricted to specific cases, as demonstrated by direct observation.

The sewing technique used in both Ethiopian and Coptic multi-quire codices is the chain-stitch, a type of unsupported sewing common to Eastern bookbinding traditions (for example, Islamic, Byzantine, Coptic, and Ethiopian), which assumes a chain-like pattern on the spine of the book block. Usually, in the Ethiopian tradition, the chain-stitch is executed with independent threads on pairs of sewing stations and is often referred to as a 'two-needle sewing'. The expression indicates that each pair of sewing stations is sewn using two needles: either with one thread (one needle at each end) or two threads (one needle each).[56] Therefore, in the centrefold of the quires, two thread lengths move independently, resulting in a double stitch. Normally, Ethiopic manuscripts are sewn on two sewing stations (one pair) or four sewing stations (two pairs). The latter structures present the periodic fold pattern noted by van Regemorter. An analytical drawing of the Ethiopian sewing on four sewing stations is presented in Fig. 3, and the resulting periodic fold pattern in the centre of the quire is shown in Fig. 4.[57]

56 Sean Michael Winslow observes that the sewing could be conducted either with needles or solely by means of awls to punch the holes in the quires and pull the thread through; see Winslow 2015, 205.

57 Fig. 3 does not show the sewing of the first quire or the board attachment, as several variants are possible.

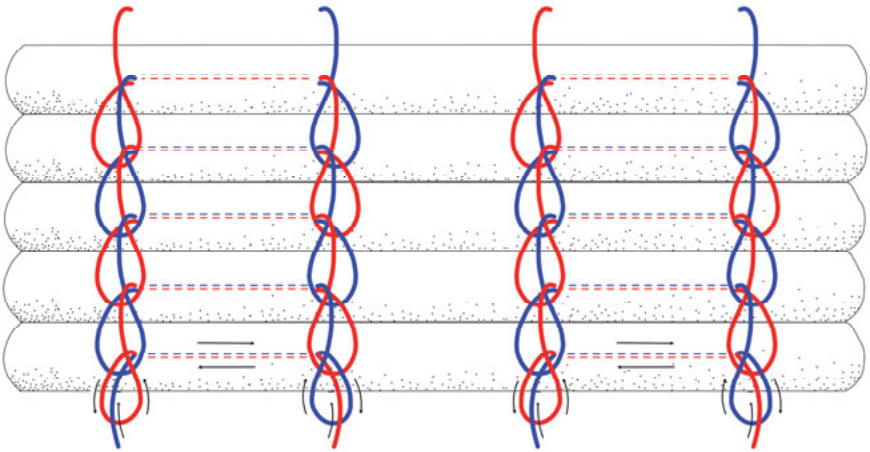

Fig. 3: Analytical drawing of an Ethiopian sewing on four sewing stations (two pairs).

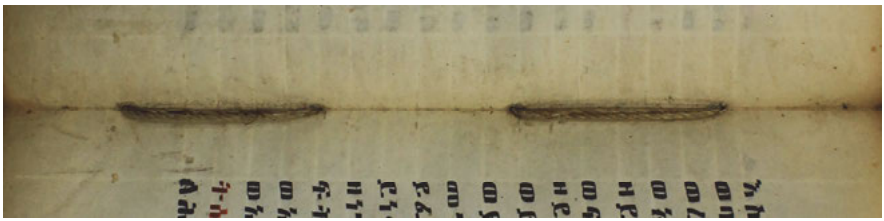

Fig. 4: Periodic fold pattern of an Ethiopic manuscript sewn on four sewing stations (two pairs) with double stitches between each pair. Grottaferrata, Biblioteca statale del Monumento Nazionale di Grottaferrata, Crypt. Aet. 7.

However, structures sewn on an even number of paired sewing stations are not the only possibility, and a smaller number of manuscripts are sewn on three sewing stations.[58] Ethiopian three-hole sewing has been the object of Dan Paterson's investigations in preparation for the conservation of Ethiopic manuscript MS 93 of the Thomas Kane Collection in the African and Middle Eastern Division of the Library of Congress. Common features of the three-hole bindings are the

58 The manuscripts sewn on three sewing stations represent a minority in the collections of Ethiopic manuscripts. For example, only seven of the one hundred and one manuscripts examined by the conservator Dan Paterson had a three-hole pattern (see Paterson 2008, 58), and only six of the ninety-one manuscripts in the collection of May Wäyni had the same (see Tomaszewski and Gervers 2015, 210).

continuous fold pattern and the presence of double lengths of thread in the fold. However, during his investigation, Paterson discovered that even among the few structures with three sewing stations, there are variations in the way the sewing was performed, leading him to state:

> the variations within the small number of three-hole bindings confirms [*sic*] for me that Ethiopian bindings are not as uncomplicated or uniform in structure as is often assumed.[59]

Specific research is needed to fully understand these structures. For this purpose, an essential aid would be the systematic recording of the number of sewing stations in cataloguing projects.

In the Coptic bookbinding tradition, multi-quire codices are sewn with the chain-stitch technique as well.[60] However, this exhibits different features compared to the Ethiopian tradition. Based on the current evidence, in Coptic bindings, the presence of double stitches between sewing stations is confined to quires with a continuous fold pattern. In some codices, the continuous fold pattern with double stitches could have been maintained throughout the codex, as, for example, in the codex Washingtonianus (Washington, DC, Smithsonian Institution, Freer Gallery of Art, 06.274, where the quires have been sewn on five sewing stations with double stitches,[61] and Dublin, CBL, Cpt 815 (CLM 66), sewn on three sewing stations with double stitches.[62] Sometimes the continuous sewing pattern is maintained, but the presence of double stitches between the sewing stations is limited to the first and last quires. So far, this feature is common to codices furnished with wooden covers, as it has been recorded in the manu-

59 Paterson 2008, 61.

60 The presence of a sort of sewing supports has been recorded, but only for the repair of broken sewing. Indeed, Petersen notes that broken chain-stitch links in manuscripts M586 (CLM 251) (= binding 6) and M599 (CLM 215) (= binding 12) at the Morgan Library and Museum were repaired by sewing the loose quires to strands of cord stretched across the spine of the book; see Petersen 2021, 36–37.

61 According to Petersen (2021, 34, Fig. 16c), in two instances there are even three stitches between the sewing stations, while in the second and third quires there is only one length. However, the state of the sewing today is not the same as that observed by Petersen. See the digital reproduction available in the digital collection of the Centre for the Study of New Testament Manuscripts, https://manuscripts.csntm.org/manuscript/View/GA_032 (accessed on 1 March 2023).

62 See Lamacraft 1939, 232 (= MS. C); Petersen 2021, 29; and for an analytic drawing of the sewing, Szirmai 1999, Fig. 2.3c. It is worth noting that both Ethiopian and Coptic book structures sewn on three stations have a continuous fold pattern, but their comparison awaits dedicated research.

script Dublin, CBL, Cpt 814 (CLM 65), sewn on four sewing stations;[63] the codex Princeton, NJ, University Library, Scheide MS 144 (CLM 6296), on three sewing stations; the codex Glazier (New York, NY, Morgan Library and Museum, G67; CLM 44), on three sewing stations;[64] and the codex Ann Arbor, MI, University of Michigan Library, Ms 167 (CLM 68), kept at the University of Michigan Library, sewn on four sewing stations.[65] Other times, only one thread length connects one sewing station to the next, creating the continuous fold pattern. The late Copto-Arabic specimens, such as Vatican City, Biblioteca Apostolica Vaticana, Barb. Or. 17 (CLM 3070), which is sewn on five stations, preserve this structure. However, this is not the most adequate example on which to base a general assessment, as it represents an evolution of the binding technique that assimilated features of Islamic tradition and possibly underwent conservation treatments. However, even though other codices featuring chain-stitch sewing with a single thread length have not been preserved in their entirety, there is further evidence to document its use. In fact, the miniature Cologne Mani-Codex shows this type of sewing. Though the outer margins of the parchment bifolia are missing, the fold is preserved, and it retains fragments of the S-plied thread used for sewing arranged in a continuous fold pattern.[66] Another fragmentary proof of sewing with a single thread length in the centre of the fold can be found among Crum's papers at the Griffith Institute in Oxford. The photograph is the only document of the now lost sewing of the Coptic manuscript Or. 6799 (CLM 183) shortly before its acquisition (and dismembering) at the British Museum (Fig. 2). The photograph shows an open central bifolium sewn with a Z-plied thread that connects three sewing holes in a continuous fold pattern. Another piece of evidence comes from Hyvernat's photostats of the Hamuli Coptic codices that are now in the Morgan Library and Museum. Fr. Henry Hyvernat, director of the Department of Semitic and Egyptian Languages and Literatures at the Catholic University of America in Washington, DC, was hired to catalogue the collection and took a series of photostats showing the codices still in their bindings before they were sent to the Vatican Library for preservation, where the sewing was cut to separate the book blocks from the covers. According to Petersen, the photo-

63 See Lamacraft 1939, 227 (= MS. B), and for an analytic drawing of the sewing, Szirmai 1999, Fig. 2.3b.

64 See Sharp 1999, 463 and Fig. 6.

65 See Lamacraft 1939, 233 (= MS. D) and Sharp 1999, 463 and Fig. 6.

66 For colour digital reproductions, see https://papyri.uni-koeln.de/features/mani-kodex (accessed on 1 March 2023).

stats show the codices sewn with 'three stitches' on four sewing stations.[67] Fig. 5 is one of the photostats,[68] which confirms Petersen's statement showing the manuscript New York, NY, Morgan Library and Museum, M605 (CLM 255) sewn on four sewing stations with continuous fold pattern and single thread length. The image also shows stitches at the head and tail for attaching endbands. The short horizontal lines mark the extention of stitches and were later added on the photostat probably by Petersen.

In Coptic bookbinding, as in the Ethiopian tradition, there are structures with a periodic fold pattern, sewn on pairs of sewing stations. Yet the preserved specimens show that there is a difference between the two traditions; while in the Ethiopian tradition there are two thread lengths between each pair of stations, in the Coptic there is just one. The Coptic sewing method has already been described and drawn by the conservator and bookbinding historian Paul Adam, and more recently by Brent Nongbri.[69] A schema of the sewing is presented in Fig. 6. From the comparison of the sewing schemas of the Ethiopian (Fig. 3) and Coptic (Fig. 6) manuscripts sewn on two pairs of sewing stations, the difference in the number of threads passing along the fold between a pair of sewing stations emerges.

Furthermore, in the Coptic tradition, a codex can switch the fold pattern from continuous to periodic. In these cases, the presence of double stitches is limited to the first and last two quires, with a continuous fold pattern, while the remnant, with a periodic fold pattern, have only a single thread length between the pairs of sewing stations. This structure has been recorded, for example, in the manuscript Dublin, CBL, Cpt 813 (CLM 64).[70] Other structures might have been sewn entirely on paired sewing stations with a single thread length between them, as shown in the digital images of Cologny, Fondation Martin Bodmer, P.Bodmer VI (CLM 34),[71] P.Bodmer XVI (CLM 35),[72] P.Bodmer XIX (CLM

67 In the specific, Petersen refers to the photostats of M586 (CLM 251) (Petersen 2021, 102 = binding 6), M599 (CLM 215) (Petersen 2021, 118–119 = binding 12), M585 (CLM 238) (Petersen 2021, 141 = binding 20), M575 (CLM 214) (Petersen 2021, 150 = binding 23), M574 (CLM 213) (Petersen 2021, 152 = binding 24), M570 (CLM 208) (Petersen 2021, 157 = binding 25), M605 (CLM 255) (Petersen 2021, 160 = binding 26).

68 The original colours of the negative print have been inverted using the graphics editor Affinity Photo.

69 Adam 1914, 91; Nongbri 2018, 31–34.

70 See Lamacraft 1939, 218–220 and Fig. 2 (= MS. A).

71 See https://bodmerlab.unige.ch/fr/constellations/papyri/barcode/1072205347 (accessed on 1 March 2023).

37),[73] and P.Bodmer XXI (CLM 38).[74] The same pattern has emerged from the direct examination of Barcelona, Arxiu Històric de la Companya de Jesús a Catalunya, P. Palau Ribes 181–183 (CLM 3956), and P. Theol. 51 and 53–60 in the Papyrussammlung der Universität zu Köln.[75] Szirmai's drawing of the fold pattern of Barcelona, Arxiu Històric de la Companya de Jesús a Catalunya, P. Palau Ribes 181–183 seems to contradict this observation, since he drew the sewing structure as periodic and with double stitches between each pair of sewing stations.[76] Szirmai has affirmed that he based the drawing on Coptologist Hans Quecke's description of the manuscript; however, Quecke has described the sewing as follows:

> Es läuft nämlich jeweils zwischen den beiden unteren und den beiden oberen Einstichen ein Faden im Inneren der Lage. […] Es befanden sich also im Lageninneren jeweils zwei 4 cm lange Fadenstückchen, die die Einstiche des unteren und des oberen Paares verbanden.[77]

Therefore, he describes the sewing with a periodic fold pattern and one stitch between each pair of sewing stations. Thus, the photograph, taken during my first-hand examination of Barcelona, Arxiu Històric de la Companya de Jesús a Catalunya, P. Palau Ribes 181–183, corresponds to Quecke's description (Fig. 7), but not to Szirmai's drawing.[78]

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72 See https://bodmerlab.unige.ch/constellations/papyri/barcode/1072205355 (accessed on 1 March 2023).

73 See https://bodmerlab.unige.ch/constellations/papyri/barcode/1072205348 (accessed on 1 March 2023).

74 For the leaves kept at the Fondation Martin Bodmer see Cologny, Fondation Martin Bodmer, P.Bodmer XXI at https://bodmerlab.unige.ch/constellations/papyri/barcode/1072205359 and for those kept at the CBL see Dublin, CBL, Cpt 2019.8, https://viewer.cbl.ie/viewer/image/Cpt_2019_8/1/LOG_0000/ (accessed on 1 March 2023).

75 The digitised manuscripts in Cologne, are available at https://papyri.uni-koeln.de/features/tura (accessed on 1 March 2023).

76 Szirmai 1999, 21, Fig. 2.3d.

77 'There is a thread running inside the centrefold respectively between the two lower and the two upper sewing stations. […] So there were two 4 cm long pieces of thread inside the centrefold, connecting the sewing stations of the lower and the upper pair' (Quecke 1984, 11; translation mine).

78 As Quecke notes, the sewing is broken and the quires are loose (Quecke 1984, 10). Therefore, it cannot be ruled out that fragments of thread may have been lost. However, it is unlikely that this happened systematically in each quire, leaving only one length per pair of sewing stations.

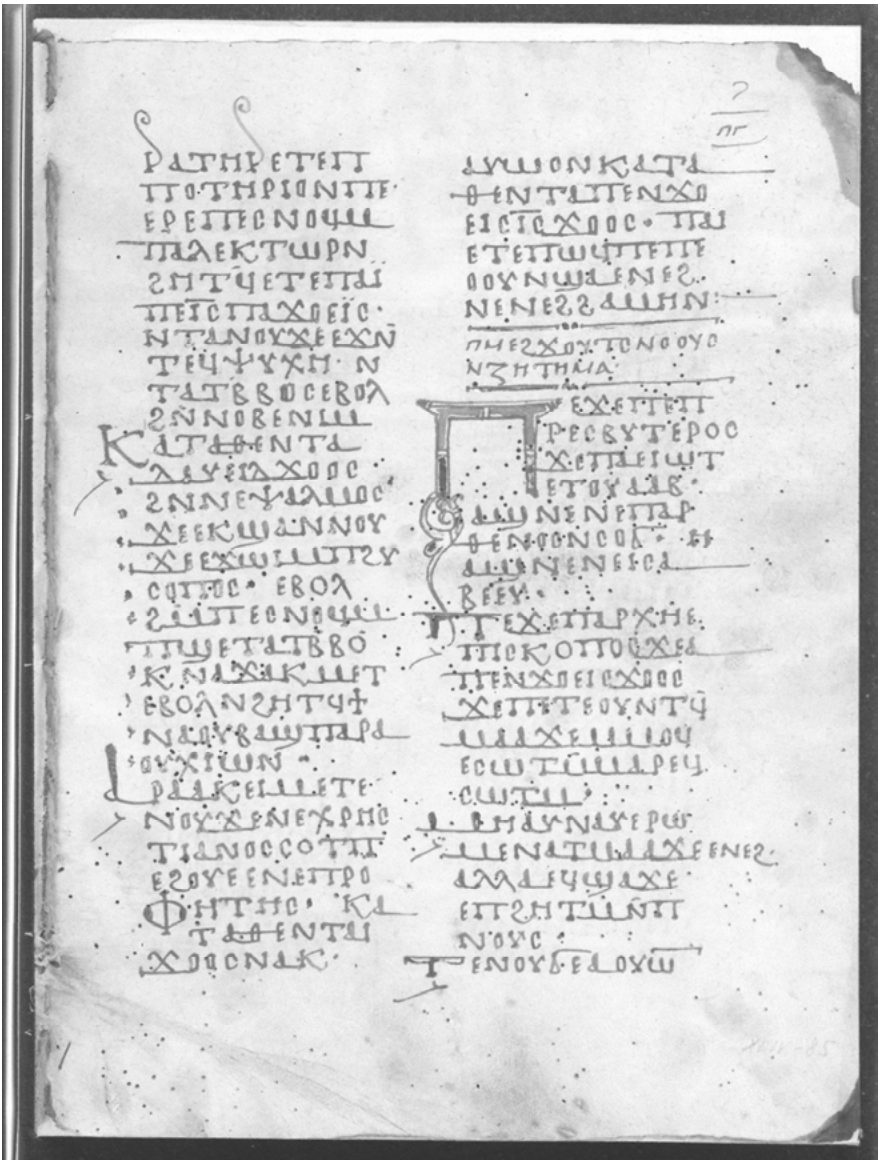

Fig. 5: Original sewing on four sewing stations, with continuous fold pattern and single thread length of New York, NY, Morgan Library and Museum, M605 (CLM 255). Washington, DC, The Institute of Christian Oriental Research (ICOR) Library, CODD. Copt. Tom.XIV M.575 (K.11), Pl. 85

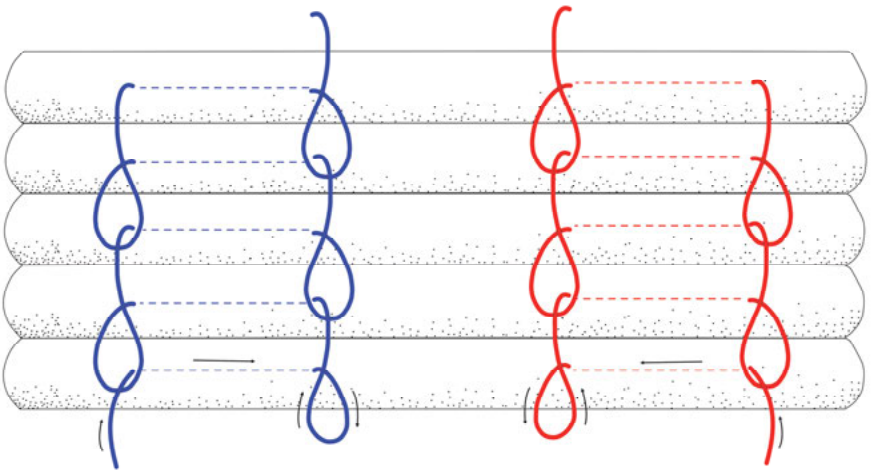

Fig. 6: Analytical drawing of a Coptic codex sewn on four sewing stations (two pairs) with a single thread between each pair.

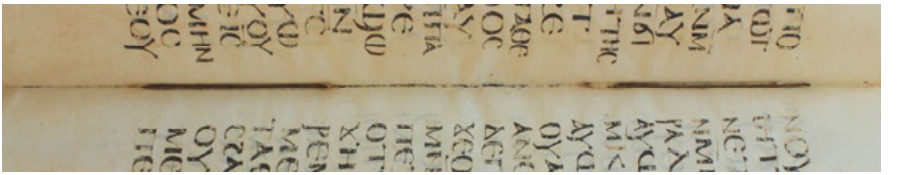

Fig. 7: Periodic fold pattern of a Coptic codex sewn on four sewing stations (two pairs) with a single thread between each pair. Barcelona, Arxiu Històric de la Companya de Jesús a Catalunya, P. Palau Ribes 181–183 (CLM 956) / © Arxiu Històric de la Companya de Jesús a Catalunya.

The difference between the Ethiopian and Coptic techniques can also be appreciated from a spine view of the codices, where the appearance of the 'chains' resulting from sewing is distinct. Whereas the Ethiopian chain-stitch takes on a distinct 'chevron' pattern on the spine of the codex (Fig. 8), the Coptic does not (Fig. 9).

Lastly, to conclude the comparison of Coptic and Ethiopian sewing techniques through the fold of the quires, it can be mentioned that both Ethiopian and Coptic bookbinding feature book structures in which the sewing is not intended to connect one quire to another. This is obviously the case of those codices formed by one quire, but also of multi-quire codices where each quire is sewn independently.

Fig. 8: Chain-like pattern on the spine of an Ethiopic codex. Grottaferrata, Biblioteca statale del Monumento Nazionale di Grottaferrata, Crypt. Aet. 7.

Fig. 9: Chain-like pattern on the spine of a Coptic codex. Cologny, Fondation Martin Bodmer, P.Bodmer XVI (CLM 35).

In the Coptic binding of single-quire codices, the quire is attached directly to the cover by means of tackets.[79] The bindings of the Gnostic codices discovered in 1945 near the village of Nag Hammadi are probably the most famous examples.[80] All but one of the eleven codices preserving the binding consist of a single quire attached directly to the cover with two leather tackets. Each lace passes through two holes pierced in the centrefold, and the leather cover is lined

79 For a list of single-quire codices, see Turner 1977, 58–61. The presence of single-quire codices in Ethiopian manuscript culture is mentioned, for example, in Nosnitsin 2016, 82 and Balicka-Witakowska et al. 2015, 171.

80 The bibliography on the Nag Hammadi codices and their discovery is vast. As a starting point for the study of the bindings, see Miller and Spitzmueller 2018; Robinson 1975; and Szirmai 1999, 7–14.

with layers of papyrus sheets. These bindings appear to be finely crafted artefacts, as indicated also by the presence of decorations drawn in ink and blind-tooled on their covers.

Tackets can serve as temporary devices while the manuscript waits to receive a permanent binding. For example, in the Ethiopian manuscript tradition, the quires are formed by holding the leaves of the quires together by means of tackets, piercing the quires at the head and tail, which are cut and removed as the codex receives the definitive binding.[81] Petersen has noted that Coptic quires may have been similarly prepared for their definitive sewing. He has observed that the quires of codices M581 (CLM 232), M595 (CLM 243), and M604 (CLM 254) at the Morgan Library and Museum in New York feature two different sets of sewing holes, where one could have served as a temporary sewing of the quires.[82]

However, these simple structures may also have been definitive, and in this case, they are provided with protective material as a cover. In the Ethiopian tradition, a single or a few quires can be secured directly to a parchment or leather cover. The quires can be attached to it by means of tackets, passing through matching holes in the centrefold and the cover, and passing over the head and/or tail of the quires.[83] Otherwise, the quires can be attached to the cover with quick sewing, like running stitches.[84] Furthermore, in the Coptic tradition, there are examples of economic bindings that, despite not being temporary, make use of quick sewing techniques and less expensive materials, often reused. This is the case, for example, of the booklet P. Heid. Inv. Kopt. 686 in the Heidelberger Papyrussammlung, which contains the praise of the Archangel Michael and rituals for protection on a parchment palimpsest.[85] It is part of a kind of booklet produced and used by practitioners who used to travel from village to village, making their income performing 'magical', oracular rituals. The binding consists of two loops of leather that directly pierce the leaves at four points, two at the head and two at the tail, to fix them to the cover. The simple nature of the binding indicates that the book was not intended for display.

81 For a description of assembling the quires and further bibliography, see Balicka-Witakowska et al. 2015, 159.

82 Petersen 2021, 16.

83 See, for example, London, British Library, EAP 286/1/1/114, https://eap.bl.uk/archive-file/EAP286-1-1-114 (accessed on 1 March 2023).

84 See, for example, London, British Library, EAP 526/1/89, https://eap.bl.uk/archive-file/EAP526-1-89 (accessed on 1 March 2023).

85 See Heidelberg, Universität Heidelberg, Heidelberger Papyrussammlung, P. Heid. Inv. Kopt. 686, https://doi.org/10.11588/diglit.39754.

5 Final remarks

This article started by noting that the term 'Coptic' is often used to refer to the Ethiopian sewing technique. The misleading use of the term stems from the fact that historical Ethiopian bindings have characteristics that correspond to modern Coptic-style book structures: namely, the board attachment is an integral part of chain-stitch sewing. However, these modern structures may not be conceived as historically accurate, but only as bindings that meet specific aesthetic standards. For this reason, modern bindings created for aesthetic purposes must be considered separately from reproductions of historical bindings. Furthermore, historical Ethiopian and Coptic bindings are different, therefore, to avoid misleading interpretations, it would be better to speak separately of modern bindings inspired by the Ethiopian or the Coptic technique.[86]

Yet the term 'Coptic' is also used in some catalogues to describe the Ethiopian sewing technique. This inappropriate label has its roots in an outdated idea of the similarity between Coptic and Ethiopian binding that has been assimilated by technical jargon and persists to some extent in the literature. Indeed, in the early days of bookbinding studies, distinguished scholars supported the theory of similarity between ancient Coptic and modern Ethiopian binding traditions. The theory was particularly plausible given the existence of points of contact between the sewing techniques, the apparent stability of Ethiopian bookbinding, and the fact that Ethiopian book production was linked to a religious sphere that formally depended on the Coptic Church until the mid-twentieth century.

The Coptic binding technique was considered the origin of Ethiopian bookbinding *and* all other traditions. This Coptic influence would extend as far as northern Europe.[87] Quite significant in this regard is Geoffrey D. Hobson's statement on Coptic bindings:

86 As proposed in the video tutorial Ethiopian *Two-Needle Binding // Adventures in Bookbinding*, which was uploaded on YouTube on 19 February 2022. The author, aware of the terminological problem, accurately states that he will show the making of 'a modern binding based on the traditional Ethiopian binding', often named 'two-needle Coptic binding'. He then explains why he thinks that 'this is not the best name to use and unfair on the Ethiopian binding tradition'. See https://youtu.be/Nvxvq6AlWvY (accessed on 1 March 2023).

87 For the Coptic influence on the eighth-century gospel found in the coffin of Saint Cuthbert, see van Regemorter 1949 and Powell 1956.

> The interest justly claimed by their antiquity is greatly increased by the fact that they are the source of all other decorated bindings, whether European or Asiatic.[88]

However, it should be noted that the Coptic binding technique has been credited as the forerunner of all other binding traditions because Egypt, with its favourable climatic conditions, provided specimens of early bindings that have not been preserved elsewhere. Georgios Boudalis has clarified that the influence of Coptic bindings must be reconsidered in light of the presence of physical, literary, and iconographic evidence that compensates for the absence of late antique bindings in areas outside of Egypt. Furthermore, based mainly on the iconographic evidence, Boudalis argues that the characteristics of the bindings believed to corroborate the influence of the Coptic technique are not specific to this tradition, but were rather shared throughout the Mediterranean basin and far beyond.[89]

Moreover, a comparative analysis of Coptic and Ethiopian bindings cannot disregard the fact that Ethiopian manuscripts dated before the thirteenth century are rare, and even those preserved were often reworked and repaired. Furthermore, evidence shows that the theory under which Ethiopian bindings remained unchanged for centuries must be reconsidered, and the stability of Ethiopian binding techniques over time cannot be taken for granted. Therefore, modern manuscript production in Ethiopia cannot be used to reconstruct the earliest binding technique, since it is impossible to determine the extent to which it has been preserved today.

The most obvious point of contact between Coptic and Ethiopian binding technique is found in structures with four sewing stations sewn with independent threads. When the sewing takes place on two pairs of stations, the resulting fold pattern is periodic in both Ethiopian binding and Coptic. However, the Coptic sewing technique differs from the Ethiopian in that only one thread length runs between the pairs of sewing stations.

Furthermore, in the Coptic tradition, there is evidence of structures sewn all-along on four sewing stations with one thread length between the stations, and it is possible to switch between continuous and periodic fold patterns with-

88 Hobson 1938, 206.

89 See Boudalis 2017. However, it might be imprecise to use the suggested term 'Early Christian bindings' to refer to late antique binding as a whole, since it is unlikely that the very same decorative and binding techniques were shared by the variety of societies that populated the Mediterranean basin. Instead, they likely all adopted the general characteristics depicted in the iconography, but detailed them in their own way. Moreover, it is not certain that all bindings had a 'Christian' origin.

in the same codex – characteristics that are utterly unrelated to the Ethiopian binding technique.

To conclude, the comparative analysis of the sewing technique shows that Coptic and Ethiopian sewing technique belong to distinct traditions. Therefore, it seems improper and misleading to use the term 'Coptic chain-stich' to describe the Ethiopian sewing. It would be more accurate to speak of Coptic and Ethiopian chain-stitch as two separate entities, also admitting that many aspects of both traditions remain obscure to this day and await dedicated research, which may, however, be impeded by the state of preservation of the original specimens.

Acknowledgements

The research leading to these results was funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) under Germany's Excellence Strategy – EXC 2176 'Understanding Written Artefacts: Material, Interaction and Transmission in Manuscript Cultures', project no. 390893796. The research was conducted within the scope of the Centre for the Study of Manuscript Cultures (CSMC) at Universität Hamburg.

A preliminary and shorter version of this paper was presented at the Forschungskolloquium Afrikanistik & Äthiopistik held at the Asien-Afrika-Institut of the Universität Hamburg on 12 January 2022. My thanks go to Alessandro Bausi, Roland Kießling, and Henning Schreiber, the organisers of the colloquium, and to the audience for their insightful comments. My thanks also go to Paola Buzi, Daria Elagina, Dorothea Reule, Karin Scheper, and Massimo Villa for having helped me with issues relevant to this article. I would also like to thank Alberto Nodar (Arxiu Històric de la Companya de Jesús a Catalunya), Francisco Bosch-Puche (Griffith Institute Archive), the Istituto Centrale per la Patologia degli Archivi e del Libro (ICPAL), and Monica J. Blanchard (ICOR Library), who allowed the free reproduction of their images, and to the conservators, curators, registrars, and all the staff of the institutions for having kindly facilitated access to the Coptic bindings collections. Responsibility for any remaining errors in the article is exclusively mine.

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Dmitry Bondarev

Loose-leaf Islamic Manuscripts of West Africa: Retention, Adaptation or Invention?

Abstract: Manuscript units in Islamic West Africa are formed by unstitched leaves placed between protective boards, wrapped in a leather folder and secured with a strap. The extant manuscripts assembled of single leaves are omnipresent. Judging by traces of production, most of the loose-leaf manuscripts were originally made of bifolia or bifolia gathered in quires. The use of unstitched bifolia at the initial stage of production is comparable to the practices reconstructed for the central lands of Islam, and such formal similarity points to the past connections across the Sahara. However, the complete omission of stitching in binding seems to be a clear break from the original Islamic tradition. Does unstitched binding retain some features of the past? Is it an adaptation of a specific type of binding to a wider variety of socio-cultural uses or was it an entirely West African invention? This short essay gives tentative answers and suggests a reconstruction of the historical development of loose-leaf binding.

1 Keeping loose leaves together

Folios in loose-leaf manuscripts from West Africa are organised by catchwords. A catchword written in the left corner of the lower margin of the verso of the folio refers to the beginning of the first line that starts the text of the recto of the next folio. Catchwords unambiguously keep the folios in correct order, providing a kind of virtual binding without stitching.[1]

The unstitched set of leaves is held together as a whole by placing it between protective boards, wrapping in a leather folder and securing with a strap. Some manuscripts are also placed into a made-to-measure satchel (Figs 1 and 2).[2]

1 The metaphor of stitching by catchwords was common with the European medieval binders, who also used an alternative term *stitchwords*, see Clemens and Graham 2007, 49.
2 Brockett 1987; Blair 2008; Mutai and Brigaglia 2017.

https://doi.org/10.1515/9783111292069-010

Fig. 1: A leather wrapper; The Metropolitan Museum of Art; Open Access Public Domain.

Fig. 2: A satchel, Maiduguri, Nigeria; photo by Dmitry Bondarev.

1.1 Single folia or bifolia?

The notion of loose leaf requires some explanation. Most of the surviving loose-leaf manuscripts of West Africa produced before the middle of the twentieth century consist of single leaves. Their various codicological features are, however, indicative of a bifolium form, i.e. a single leaf folded in two. The single leaves that we observe in the extant manuscripts are usually bifolia which have fallen apart as a result of wear and tear or constant folding. Some evidence is provided by traces of a ruling frame (*misṭara*) visible on the paper and the positioning of the lines of the text in relation to inner and outer margins. Wider margins always face outwards and the narrow margins inwards – to what would be the spine side of a quire. The fact that the width of the inner margin is usually consistent suggests the placing of the *misṭara* in a fixed position, such as the crevice of a folded paper. The bifolium nature of loose-leaf manuscripts is supported by some surviving manuscripts. In the latter, some leaves are singletons and some bifolia (Fig. 3).

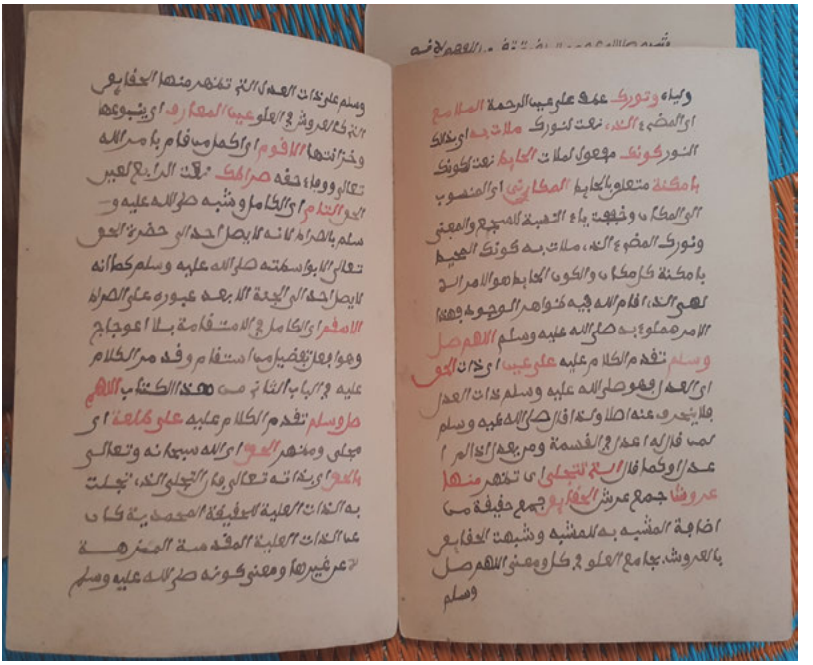

Fig. 3: A bifolium of a manuscript from the Bibliothèque de Manuscrits de Djenné; photo by Maria Luisa Russo.

Given that the text is uninterrupted and flows from the verso of the preceding leaf to the recto of the following leaf on the surviving bifolia, it is obvious that bifolia were not gathered into quires but were rather placed one after another. Adrian Brockett, who studied sequences of watermarks and countermarks in two nineteenth-century Qur'an manuscripts, arrived at a similar conclusion about the predominant bifolium format.[3]

The current practices of manuscript production exhibit the same bifolium principle. Scribes in modern-day Nigeria, for example, use a bifolium as the minimal unit of production. The process of cutting and preparing sheets of paper by Nigerian scribes was recorded in detail in my documentary and described by Maimadu Barma Mutai and Andrea Brigaglia.[4] Here, suffice it to say, that the end result of such a process is a bifolium – a folded sheet. This is irrespective of the ultimate size of the sheet prepared for the intended manuscript format. The Qur'an manuscript I describe in the documentary has the size of a full sheet of paper folded twice (i.e. *quarto*, very approximately 15 × 21 cm) and the Qur'an discussed by Mutai and Brigaglia has been written on larger bifolia, each folio being 26.5 × 19 cm.

Once the bifolia have been prepared, the scribes use a ruling frame (*misṭara*) to facilitate the even positioning of the text. If, in the past, the *misṭara* was made of parallel cords stitched to a piece of cardboard, the modern-day *misṭara* has only a rectangular frame. The impression of the frame made into a bifolium provides an inconspicuous borderline for the text area of four pages (i.e. recto and verso of the first and second folio). Here again, a single bifolium remains a minimal production unit.[5]

The same principle occurs when the scribe writes the text. The folded bifolium is filled up with writing starting from the recto of the first folio and finishing on the verso of the second folio.

2 Learning and reciting using unstitched manuscripts

Loose-leaf manuscripts are prominent in all settings of Islamic education observed nowadays, from the very beginning to the most advanced levels.

3 But see Déroche 2006, 88–89, for counter-examples.

4 Bondarev 2009, minutes 6:28–9:22; Mutai and Brigaglia 2017, 341.

5 Bondarev 2009, minute 9:27.

One can see in a 1963 documentary shot in Borno that loose leaves are already redistributed between the students at the initial learning stage so that they can copy the Qur'anic passages from paper to wooden slates (Fig. 4).[6]

Fig. 4: Copying the Qur'an text from single leaves onto wooden writing boards; screenshot from a documentary released in 1963, entitled *Maiduguri: eine mohammedanische Stadt im Sahel*, directed by Nina Fischer, production of Bayerischer Rundfunk, Studienprogramm (<https://www.br.de/fernsehen/ard-alpha/programmkalender/ausstrahlung-2370796.html>, accessed on 20 February 2023).

It is difficult to tell from the video whether the student is holding some bifolia or bifolia cut into two single leaves. Given that the Qur'an manuscripts of the period often retain the bifolium structure, it would be natural if such manuscripts were distributed in bifolia. On the other hand, it is single leaves rather than bifolia that are used in the recently observable reading sessions which involve traditionally made manuscripts. Did these leaves, by regular folding and unfolding in the process of reading, gradually separate from their adjacent counterparts of what were erstwhile bifolia? Or were the bifolia further cut to produce

6 This is, however, only one of the methods used in memorising the Qur'an.

an even smaller unit which became *the* circulation unit? This remains unclear. For now, I suggest the following production-circulation relationship: the smallest production unit of a bifolium has two minimal modes of circulation, one in form of the same bifolium, and the other in the form of a single leaf cut from the adjoining leaf of the bifolium.

Loose leaves feature in reading and recitation by advanced scholars. Abba Tijani and I recorded a recitation session of *Kitāb al-Shifāʿ bi taʿrīf ḥuqūq al-Muṣṭafā* (a biography of the Prophet Muhammad composed by al-Qāḍī ʿIyāḍ, d. 1149) in Maiduguri, Nigeria, in 2005 (Fig. 5). The late Imam Ibrahim Ahmad (right), former Chief Imam of Borno, and Shettima Komi (left) chanted the text in Arabic and Old Kanembu/Tarjumo. They both hold different copies of the same text in Arabic, both copies being loose-leaf. Shettima Komi first reads in Arabic, and then Imam Ibrahim translates it into Old Kanembu (Old Kanembu is not written in the copy the Imam holds). This is a typical two-person recitation of the same Arabic text when the text is being translated into a different language.

Fig. 5: Reciting from loose-leaf manuscripts; photo by Dmitry Bondarev.

A YouTube video, also recorded in Maiduguri in 2014, shows a recitation of the same text with more people in attendance.[7] The configuration of the setting is the same: two reciters read from loose-leaf copies of the same text. Importantly, many people in the audience also have their loose-leaf copies. They follow the recited text by listening to it and silent-reading from their copies. This kind of recitation is ordered linearly: one phrase of the Arabic text is translated into the target language, then the next Arabic phrase in sequence is translated, then the next one, and so on.

However, there are situations that require a simultaneous reading of a large portion of a text within a fixed time frame. On such occasions, the same copy of a manuscript is distributed between the participants of a ritual reading, and different parts of the same text are read aloud in parallel. A passage from Robert Launay and Rudolph T. Ware deserves special attention in this respect:

> This faith in the efficacy of the Divine Word spoken in Arabic is not limited to the practices of daily prayer and Qur'anic recitation. For example, in the Dyula community of Korhogo [Côte d'Ivoire], part of the funerary ritual consists of *reading an entire book of over a hundred pages* of praise to the Prophet on behalf of the deceased. To accomplish the task rapidly, *three or four detached pages are redistributed to each literate member of the audience*. When the signal is given, one might see *thirty men simultaneously chanting the pages* they have each been assigned, *finishing the recitation in several minutes rather than several hours*.[8]

Similar practices of simultaneous reading have been reported in fifth-century AH Tunis, but the manuscripts involved were multi-volume Qur'an copies, most certainly stitch-bound.[9]

3 Loose-leaf: practice or form?

The manuscript production and use of single leaf manuscripts raise some questions. Did practices of learning and recitation play any role in the formation of the specific unstitched character of West African Islamic manuscripts? Were there external factors behind this codicological feature, such as direct borrow-

7 Imam Mustafa Laisu Ibrahim Ahmad, the Chief Imam of Borno State, recites *Kitāb al-Shifāʿ* in the main mosque of Maiduguri. 2014. https://www.youtube.com/watch?v=u0cc18rhPpg (accessed on 13 January 2023).

8 Launay and Ware 2016, 256–257, emphasis added.

9 Ben Azzouna 2017, 121.

ing of the loose-leaf format from historical donors of Islamic culture? Historical evidence is insufficient to answer these questions with any certainty and the hypothesis on the origin of the widespread loose-leaf format in West Africa suggested at the end of this essay is of a very tentative nature.

Islam came to various regions of West Africa via trans-Saharan trade routes from several sources of influence and at different times. The Muslim presence of Ibāḍī merchants is evident in the late ninth century in ancient Ghana, in what are now areas between Mauritania, Senegal and Mali. The people of Gao, in present-day eastern Mali, encountered Islam in the late tenth century, possibly by way of contact with the Umayyads of Al-Andalus,[10] and later had strong connections with the Almoravids. Further east, in what is now northern Chad and southern Libya, the rulers of Kanem converted to Islam in the eleventh century, coinciding with the late Fatimid period, although much earlier contacts were also reported, going back to the Ibāḍī rulers of Jabal Nefūsa (modern Libya) of the mid-eighth century. The kings of Mali were converts to Islam from the twelfth century, being in contact with the Almoravids and later with the Almohads and the Mamluks. The successor state of Mali was the Songhay Empire that propagated the Muslim faith from the late fifteenth to the late seventeenth century along the territories of the middle bend of the Niger river.[11]

Despite various substantial reconstructions of the coming of Islam to the south of the Sahara (including the studies cited in the previous footnote), there are only some vague indicators of the early Islamic practices in West Africa during the time span between the ninth and fourteenth centuries characteristic of the early development of Islamic culture in sub-Saharan Africa. The scant data available for that period hardly yield any direct evidence of manuscript production, let alone binding techniques. At the same time, a very general overview of what came to the Sahel region with Islam is at odds with the predominant loose-leaf type of manuscripts.

I will outline six aspects of the early Islamic culture of West Africa that must have defined the form and function of Islamic manuscripts there. These are conversion to Islam, Qur'an manuscripts, script style, layout, paper and book covering.

10 Insoll 2003, 233.

11 Hiskett 1984; Levtzion and Pouwels 2000; Insoll 2003.

4 Basic elements of the Islamic manuscript culture brought to West Africa

4.1 Conversion narratives

Medieval Arab geographers who mention Islam in sub-Saharan Africa describe the conversion of local rulers in similar words. Their story is typically centred on catastrophic droughts undergone by the ruler and his people. A Muslim scholar then comes onto the scene and suggests that the ruler should convert to Islam and recite some verses of the Qur'an to evade the disaster.[12]

4.2 Qur'an manuscripts

Although recitation of the Qur'anic verses in conversion narratives does not necessarily entail the presence of a manuscript, the prominence of the Qur'an in royal rituals and children's education is discernible from at least the mid-fourteenth century. Thus, Ibn Baṭṭūṭa (1304–1377) talks about the recitation of the Qur'an at the court of the ancient Mali's Sultan Mansa Sulayman, and commends the zeal of the local Muslims to get their children to memorise the Qur'an.[13]

4.3 Script style

There is indirect evidence of visual characteristics of the early Islamic manuscripts in West Africa. Ibn Khaldūn (1332–1406) makes a distinction between the old heavy and angular script style, which he calls *Ifrīqī* (Ifrīqiya being the Arabic name for the region of modern-day Tunisia and western Algeria), and a new flowing and a more flexible style called the Andalusi hand.[14] Ibn Khaldūn reports that the old *Ifrīqī* style was preserved in south-western Tunisia, and Adrian David H. Bivar suggested that the old *Ifrīqī* style was also preserved in sub-Saharan Africa,[15] as evidenced by Qur'an manuscripts from Borno. Bivar's hypothesis of the antiquity of the Borno script style (*Barnāwī*) has been supported

12 Levtzion and Hopkins 1981, 82; Launay 2019.
13 Levtzion and Hopkins 1981, 289 and 296.
14 Bivar 1968; Bivar 2007.
15 Bivar 1968.

by subsequent research, suggesting the independent development of *Barnāwī* from its cognate Maghribi script, both going back to a family of Kufic scripts that were in circulation in North Africa from the tenth to twelfth centuries.[16]

4.4 Layout and decorative elements

Local aesthetics and decorative motives aside, West African Qur'an manuscripts exhibit a consistent similarity in visual organisation.[17] The features common in most such manuscripts are the same as in the Qur'ans from North Africa and Maghrib of the ninth century and onwards. These features include the rectangular and/or rounded decorations of the first chapter of the Qur'an and at the beginning of the second chapter, coloured trefoils for verse separation, a triangle-shaped sign used for every fifth verse and roundels for every tenth verse.[18]

4.5 Paper

Paper was never produced locally and was imported from the north. Initially from the suppliers in the Islamic states (for example, in the cities of Fez, Tlemcen, Kairouan and Cairo), and from European producers starting from the mid-sixteenth century.[19]

16 Brigaglia and Nobili 2013; Bondarev 2014, 137–143.

17 Brockett 1987, 46–47; Hamès 2013; Bondarev 2017.

18 Déroche 2004, 67–96; Déroche 2006, 233–236.

19 On the periodisation of paper production pertinent to the discussed period, see Déroche 2006, 55–58; Bloom 2008; on paper traded to West Africa in the eighteenth and nineteenth centuries, see Walz 1985; historical conjectures about the early paper trade in West Africa have been offered in Last 2008; Lydon 2011, 45–47; on Italian paper in sub-Saharan manuscripts of the nineteenth to early twentieth centuries, see Biddle 2017. The earliest extant manuscripts produced in sub-Saharan Africa are unfortunately too few and too late to be of significance for the history of the early Islamic culture in West Africa. I am only aware of two manuscripts from the sixteenth century: one is a copy of a treatise on Mālikī law *Risāla al-Qayrawāniyya* penned for the Songhay ruler Muḥammad Bāni b. Askiya Dāwūd (r. 1586–1588) and finished on 19 July 1587 (Hunwick 2002) and the second manuscript is a copy of another work on legal matters *Mukhtaṣar al-Khalīl*, possibly penned in Kano, Nigeria. This manuscript, catalogued as Paden/417, is held in the Melville J. Herskovits Library of African Studies, Northwestern University, and the date of the mid-sixteenth century (of one part of the manuscript) has been suggested by Michaelle Biddle based on the watermark (personal communication, March 2015).

4.6 Book covering

As mentioned earlier, loose-leaf manuscripts of West Africa are placed in leather wrappers which have a typical fore-edge flap and the envelope flap. These were elements of the early Islamic binding, classified by François Déroche as type II.[20]

4.7 A puzzle: why no traces of stitching?

What can be surmised from all this? That the most important Muslim scripture, the Qur'an, was introduced to sub-Saharan Africa at very early stages of conversion to Islam, must have been in manuscript form and written in an angular style of script similar to the *Ifrīqī* type. When local scribes started producing their own manuscripts, they copied the visual organisation of the imported Qur'ans. The earliest copies of the Qur'an encountered in West Africa must have been on parchment, the most common writing medium in central lands of Islam before the ninth century.[21] However, manuscripts on paper could have been introduced as early as the ninth and tenth centuries by routes from Cairo and Kairouan.[22] At the same time, the Qur'an manuscripts coming from the Maghrib could be on both parchment and paper until the fifteenth century.[23] Although it is impossible to say when exactly the first paper manuscripts appeared south of the Sahara, paper was certainly an expensive commodity and never produced locally. Finally, the type of Islamic bookbinding, with its characteristic fore-edge flap and envelope flap, was borrowed by local leather makers, but they stopped short of copying the entire binding technique and, instead, used book wrappers as separate entities unattached to the text block by stitching.

In short, West African Islamic manuscripts retain most of the features brought to the south of the Sahara from the Maghrib and North Africa with the only exception of stitching leaves together. This is puzzling. After all, stitching is not a complex technique, especially compared to writing or the manufacture of leather wrappers and satchels. More surprising still is that the Islam of West Africa is characterised by conservatism and retention, most obvious in the survival of the ancient Islamic system of schooling,[24] ongoing manuscript produc-

20 Déroche 2006, 260.
21 Déroche 2006, 33.
22 Déroche 2006, 51.
23 Déroche 2006, 78.
24 Launay and Ware 2016.

tion,[25] similar translational practices across the whole of the Sahel,[26] and the antiquity of exegetical tradition in some regions.[27] Thus, it does not seem plausible that absence of stitching – this crucial subcategory of binding – was due simply to a random divergence from a codicological ideal. It is not a variation in style, but the omission of the whole category. It would, therefore, make sense to look at the unstitched type of manuscripts in the Islamic world as a possible prototype for the West African loose-leaf binding. Unfortunately, there is no evidence of the loose-leaf type in the central lands of Islam during the period of early contact with sub-Saharan Africa, from the ninth to fourteenth centuries. But it is not impossible that unstitched binding existed outside West Africa, as suggested by Duncan Haldane.[28] Nuria de Castilla and Karin Scheper also pointed to the existence of unsewn binding in the seventeenth and eighteenth centuries, respectively.[29] And if loose-leaf form occurs in the seventeenth-century manuscripts, why should it not exist in earlier times? Hence, a hypothesis.

5 Stages of development of loose-leaf binding in West Africa: a hypothesis

I suggest that the loose-leaf form so universal in West Africa points to some protoforms that did not survive in the central lands of Islam, possibly due to the transient nature of unstitched bindings. Thus, the codicological category of unstitched binding was part of the Islamic manuscript culture at the time of early contacts with West Africa. Even if it was not a prevalent type of binding, both stitched and unsewn manuscripts were introduced to West Africa together with other features of the Islamic manuscript culture. However, the unsewn type of binding was restricted to a specific functional domain: learning and memorising the Qur'an. Unsewn manuscripts were convenient for redistribution within the learning community. The paucity of paper and increased demand of religious texts and spiritual efficacy of 'bulk' recitation could then lead to an innovation whereby the restricted feature was extended to other functional

25 Brigaglia and Nobili 2017.
26 Bondarev 2022.
27 Bondarev 2019.
28 Haldane 1983.
29 I am grateful to Nuria de Castilla and Karin Scheper for their remarks during the conference 'Tied and Bound' in Hamburg (20–22 May 2021).

domains and the unstitched transient type of binding consolidated into a permanent category.

More research is needed on unstitched binding in early Islamic manuscripts to explore this tentative reconstruction. It is also necessary to undertake the subregional classification of loose-leaf manuscripts in West Africa. Reports on loose quires rather than bifolia leave some doubt about bifolium as the only unit of production.[30] It is possible that some sub-Saharan regions favoured loose quires over loose folia. And if the manuscripts also existed in quires, their redistribution by single leaves would not make much sense since the sequential order of the text would then have been disrupted. This, again, is a question for future study.

Acknowledgements

The research for this article was funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) under Germany's Excellence Strategy – EXC 2176 'Understanding Written Artefacts: Material, Interaction and Transmission in Manuscript Cultures', project no. 390893796. The research was conducted within the scope of the Centre for the Study of Manuscript Cultures (CSMC) at Universität Hamburg.

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30 Déroche 2006, 88–89.

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Legacy of Binding

Serena Ammirati

Bound to be Rebound: Fates of Latin Manuscripts in Late Antiquity

Abstract: The reutilisation of books for the production of other books is a phenomenon whose origins certainly go back to those of the book itself, made up of complex and varied dynamics, which, over time, have given rise to different and multiform solutions. This contribution focuses on the reuse of Latin papyrus and parchment manuscripts in codex bindings between Late Antiquity and the Early Middle Ages from the 'extended' Mediterranean basin. Their origin, provenance and morphology is very different from case to case, involving sources not necessarily only in the Latin language and script. The phenomenon concerns a wide, multilingual and plurigraphic area that finds some significant points in common in the techniques of codex manufacture and the phenomena of reuse.

1 Introduction: the long history of book reuse

The reuse of books to make other books is an ancient phenomenon, inherent to the history of books themselves, varied and multiform.[1] The ways in which it manifests itself are numerous, long-standing and continuous over time: from papyrus opisthograph (also written on the outer side) *volumina* to the parchment covers of modern printed volumes, palimpsest leaves, bindings and the restoration/recovery of lost textual/bibliological units.[2] It is rightly part of the mentality of reuse that so much characterises ancient and medieval material and intellectual culture, giving rise to cases of 'unconscious conservation' that represent the complement of that conscious reuse better known as *spolium*.[3] Regarding the various (and often unfortunate) fates of manuscripts from Antiq-

1 An effective introduction to the topic of the reuse of manuscripts in bindings can be read in Caldelli 2012, 30–88, with bibliography, and Solidoro 2018.

2 On the latter topic in particular, I refer to Bianconi 2018.

3 On the concept of 'unconscious preservation' (*conservazione inconsapevole*), see Petrucci Nardelli 2007, 1. Rarely do the two practices converge: this is the case, for instance, of Latin manuscripts with musical notations used in medieval Damascus as book covers, for which see Hirschler 2020, 449–451. On the aesthetic value of the reuse of musical manuscripts in bindings, also see Kügle 2020.

https://doi.org/10.1515/9783111292069-011

uity to the present,[4] that of reuse in other books/written objects is certainly the one that has received most attention from scholars. This absorption in reuse, effectively reconstructed by Elisabetta Caldelli (2012), was initially motivated by an interest of a mainly textual nature; later, and progressively, in an attempt to reconstruct the techniques and skills of book manufacturing as examples of the mentality and material culture, in the context of a renewed archaeology of the manuscript book that has animated codicology and bibliology studies in recent decades. Reused books are always fragments of books, of different consistencies and sizes, and often very damaged. Their study is determining, among varying opinions, the birth of a specific path of investigation in these years, known as fragmentology. The impetus certainly also derives from the possibilities offered by technology: text databases make it possible to identify already attested works without any effort, digitised images enable the reuniting of *fragmenta disiecta* dispersed in different manuscript collections, and photographic techniques allow one to read the illegible, even at a distance. This is not the place to express assessments of fragmentology as an autonomous discipline among the historical sciences of manuscript books, nor to linger on further generalisations, with the risk of losing specificity of periods and contexts.[5]

2 Bindings and palimpsests in Late Antiquity and the Early Middle Ages: a common history

The focus of this paper is the reuse of Latin papyrus and parchment manuscripts in codex bindings between the Late Antiquity and the Early Middle Ages, taking into account manuscript sources from the 'extended' Mediterranean basin: sources of ancient and continuous archival-library preservation, archaeological provenance, and those not necessarily only in the Latin language and script. A wide, multilingual and plurigraphic area is, in fact, concerned here,

4 For an overview of medieval papyri, see Caldelli 2012, 31, n. 6; a great deal of information on the various uses of papyri (in cartonnages, as stoppers of amphorae and jars, even as toilet paper) can be found in the preface to individual editions and in papyrology manuals; see an overview of the phenomenon in Luijendijk 2010.

5 In addition to the numerous initiatives that have sprung up in recent years (one of which is Fragmentarium.ms) to define epistemological assumptions, methodologies and future perspectives, a thematic journal, *Fragmentology*, has also been added: see the editorial of the first issue (Duba and Flüeler 2018) for a framing of fragmentology in the context of codicological studies *tout court*.

where the techniques of codex manufacture and reuse show some significant points in common.

The first proof of the importance of the phenomenon in the Western world can be found by examining the number of items from bindings in the *Codices Latini Antiquiores* (CLA):[6] 262 of the 2,047 items covered in the catalogue[7] were re-covered in bindings, about one-eighth of the total, a number slightly lower than the number of CLAs recorded as palimpsests (287). The two phenomena must, therefore, be considered equally significant in the period of interest, and together, represent a quarter of the surviving ancient manuscript production in the Latin language and script. The absolute numbers can undergo significant variations (in the order of tens) if we consider the following phenomena. Firstly, there are few but significant cases (eleven in all from the catalogue perusal) for which the same manuscript has been both partly palimpsested and partly readopted in a binding. Secondly, a number of Latin fragments of bindings were published after the last addendum to the CLA (which dates back to 1992). Thirdly, some fragments in the CLA had not been recognised by Elias Avery Lowe as fragments of bindings. Finally, the phenomenon, only recently adequately valued, of the circulation of Latin manuscripts in the form of loose (*disligati*) quires must be taken into account:[8] bibliological and textual units conceived and set up for a book form that was not closed, even if definitive, and written with calligraphic and bookish scripts and careful *mise en page*. In addition to an outdated perspective, the CLAs obviously offer a pool of evidence limited to the Latin world, which is only a part of the broad Mediterranean area that I want to consider here. We do not have any late antique bindings preserved in their original form from the Latin world; most of those currently preserved come from the Egyptian area, from the Greek and Coptic linguistic and cultural environments. The techniques used to set up these bindings have been thoroughly investigated,[9] and rightly traced back to craft practices of a broader material culture, in which the same techniques of stitching sheets into quires and quires into bindings are otherwise visible in other everyday objects.[10]

The binding is perhaps the most provisional and changeable component of the book in codex format, frequently liable to replacement and for practical

6 Lowe 1934–1966, 1971, 1972.

7 Now easily available in an online version thanks to a meritorious initiative of the University of Galway, 'Earlier Latin Manuscripts' (ELMSS): <https://elmss.nuigalway.ie>. All websites mentioned in this article were accessed on 27 January 2023.

8 On the phenomenon, see Fioretti 2016; Boccuzzi 2019.

9 van Regemorter 1958.

10 Boudalis 2018 is fundamental.

(and other) reasons, which often led to its irreparable loss. The phenomenon of the obliteration of bindings has been perpetrated up to ages very close to our own, causing gaps in knowledge of varying magnitude and proportion. This is especially true, as we shall see shortly, for fragments re-covered in bindings of papyrus codices. Consequently, it can be inferred that those among the surviving parchment fragments, especially ones of archaeological origin, to be identified as reused in papyrus codex bindings are many more than those currently recognised as such.

Palimpsest sheets and binding fragments are comparable in several respects. As I have mentioned above, the same manuscript intended for reuse could be partly palimpsested and partly used to make strips for binding. Most 'coffin'[11] manuscripts were set up with palimpsest sheets of different origin, writing, content, date, layout and original size. Regarding the Latin West, two particularly representative cases are St Gall, Stiftsbibliothek, Cod. Sang. 908,[12] the so-called 'king of palimpsests', which has as many as ten different manuscripts (CLA 7.954–965), some *ter scripti*, among its *scripturae inferiores*; and Vatican City, Biblioteca Apostolica Vaticana, Pal. Lat. 24 (CLA 1.69–77: <https://digi.vatlib.it/view/MSS_Pal.lat.24/0001>), among whose redeployed leaves are hidden some very important late Latin manuscripts of classical literature.[13] The same is true of the fragments readopted as bindings, which – in cases where it can be determined – come from different manuscripts. As shall become evident, the variety of contents sometimes does not necessarily correspond to randomness: the whole may suggest a homogeneous and coherent context of origin/provenance.

3 Fragments reused in bindings between East and West: a typological survey

The fragments could be used in several places in the binding and for different purposes: the largest fragments come from boards, used as stiffening in soft bindings. This fate is also shared by parchments in the late antique and early medieval

11 'Coffin' manuscript means that the manuscript is set up with the sheets of reuse, within which they were in a sense 'laid down', 'buried'.

12 See CLA 7.953, <http://dx.doi.org/10.5076/e-codices-csg-0908>.

13 A still valid analytical description can be found in Fohlen 1979; a fine-tuning, also bibliographical, in Ammirati 2015, *passim*.

world, mostly – in this period – coming from books,[14] and by papyrus sheets, with literary and documentary content, both in the East and West; the mass of bindings often includes fragments with different contents in terms of language, writing and format, but not necessarily – as mentioned – inhomogeneous.

The Pommersfelden fragments are certainly a remarkable case as far as the Latin West is concerned: they comprise twenty-one papyri, seven Greek[15] and fourteen Latin, all dating between the fifth and seventh centuries. Their present form and traces of glue have made it possible to ascertain that all of them were reused to form the pasteboards of bindings of later manuscripts (or perhaps of the same manuscript), probably in the Early Middle Ages. The fragments arrived together in Pommersfelden in September 1725 as a gift from the Bamberg cathedral chapter to its *Fürstbischof*, Electoral Prince Lothar Franz Graf von Schönborn, a collector of books and manuscripts. It is not possible to determine exactly how and when the papyri came to Bamberg, but it is reasonable to assume that it was through one of the book donations made to the city's *Domkapitel* by emperors of the Ottonian dynasty, the earliest of which dates from the early eleventh century, with many manuscripts coming from Italy. The texts contained therein could all be found with reasonable certainty in an archive or chancellery. A Ravenna origin or permanence can be assumed for the fragments in Latin language and script: P.Pommersf. L 14r[16] is a document of almost certain origin in Ravenna, whose *terminus post quem*, which can be deduced from its content, is 22 February 433; the verso of the same document P.Pommersf. L 14v (CLA 9.1349) was redeployed to annotate passages of *De vigiliis* of Niceta of Remesia in new cursive script; P.Pommersf. L 7-13 (CLA 9.1350) also consists of seven fragments from a papyrus roll, containing an unidentified text on the recto and the *Altercatio Simonis Iudaei et Theophili Christiani* by Evagrius on the verso, a text that was, according to the sources, well known in Late Antiquity. Given the popularity of the text and the type of writing, it can be assumed that the scroll was a transcription for personal use, a private copy. Accompanying them is P.Pommersf. L 1-6 (CLA 9.1351), a group of papyrus fragments originally belonging to six sheets of a codex containing at least Book 45 of the *Digest*, written in the same legal uncial as the Florence, Biblioteca Medicea Laurenziana, Florentine Pandects (CLA 3.295).

Things do not change much from Ravenna to Sinai. The same fate was suffered by the sheets of the Bernardakis papyrus, from a bilingual and digraphic papyrus codex containing a Greek commentary on Roman law, dating back to

14 There will also be many documents in the early medieval period: see Caldelli 2012, 7–27.

15 Sirks, Sijpesteijn and Worp 1996.

16 Tjäder 1958.

the sixth century. Some of the sheets were removed from the pasteboards of the binding of the codex Sinai, St Catherine, Ar. 588 and published.[17] Recent investigations at St Catherine's monastery by Michelle Brown and the team from the University of Vienna coordinated by Claudia Rapp have identified other sheets from the same codex still glued to the boards.[18]

Parchment fragments generally seem to be reused for binding elements where greater strength is required. This phenomenon is also found in both East and West. The P.Berol. inv. 14079, an unpublished fragment from the Berlin collection containing the *Responsa* of the jurist Papinian[19] (written in 'primitive minuscule', referring to the fifth century CE), must certainly have been used as a central reinforcing strip in the binding, at the spine. The strip is too small to be used for pasteboards and too large to be used as a reinforcement at the point where the threads pass through, but just high enough for a small to medium-sized codex, as is frequently found in late antique Coptic bindings. In addition to its size, the regular cut and traces of glue on the flesh side of the parchment, which blackened the surface and made the text particularly difficult to decipher, indicate this use. A western comparison can be made with the fifth-century parchment fragment, in 'old-style' uncial script, of the *Collectanea rerum memorabilium* of Solinus, recently identified by Isabella Bardini and Laura Pani in the binding of the Tolmezzo, Fondazione Museo Carnico, 585AR D101, an octavo copy of the first volume of the collection of homilies by the German theologian Johann Maier, known as Eck, printed in Paris in 1574 by Jean Ruelle.[20] The very late reuse of the Solinus fragment makes one wonder whether these fragments were kept for a long time before being refunctionalised, or whether the final reuse, the one by which they have come down to us, was not the only one. The same fate as the Solinus fragment happened to some leaves of an uncial codex of the *Annales ab urbe condita* of Titus Livius, now preserved in Bamberg. Those found by Hans Fischer and Ludwig Traube[21] in the bindings of Bamberg, Staatsbibliothek, Theol. 99 and Bibl. 41, now constitute the Bamberg, Staatsbibliothek, Class. 35a and, judging by their state of preservation, must

17 van der Wal 1983.

18 Brown 2017.

19 The edition is currently being prepared by Marco Fressura and Luigi Pellecchi as part of the REDHIS ('Rediscovering the Hidden Structure: A New Appreciation of Juristic Texts and Patterns of Thought in Late Antiquity') project <http://redhis.unipv.it>.

20 Bardini and Pani 2017.

21 Fischer and Traube 1907; Traube 1909; see also Seider 1980, 145–149.

have come from the spine.[22] In addition, some of the leaves are still visible *in situ* in Bamberg, Staatsbibliothek, Bibl. 18, where they were used to reinforce the margins of parchment sheets gnawed by mice,[23] and Bamberg, Staatsbibliothek, Patr. 4, in the form of offsets.[24] The original codex, probably of Italian origin, must have reached Bamberg with the Ottonian donations mentioned above.

The situation of the fragments still visible *in situ*, which we have observed – with a different gradient – for Bamberg and Tolmezzo, is a rare circumstance, even rarer in manuscripts of archaeological provenance. An interesting case is represented by PSI XIII 1348, three large fragments of a bifolium of a papyrus codex, plus a series of smaller fragments containing legal definitions and maxims, dating from the fifth to sixth century.[25] The bifolium, which must have been the central element of a quire, has a long and narrow strip of parchment at the fold, in which several holes are visible, which must have been used for the passage of the binding thread. There are no visible traces of writing on the parchment, but this does not preclude the possibility that it could be the reuse of the unwritten margin of a sheet. Some of the numerous strips recovered from the binding of Vienna, Österreichische Nationalbibliothek, lat. 2160 + Vatican City, Biblioteca Apostolica Vaticana, Barb. lat. 9916 + St Florian, Stiftsbibliothek, III.15.B, a papyrus codex containing works by Hilary of Poitiers, probably written in southern Italy in the first half of the sixth century,[26] are also almost unwritten. In this case, the parchment fragments were found and identified by Stephan Ladislaus Endlicher in 1835 in the inner leaves of the quires (*quaternionum* [...] *interioribus foliis*), removed (*laciniolis* [...] *solutis*) from their original location, lest the papyrus suffer any loss (*ne quid*

22 See <https://zendsbb.digitale-sammlungen.de/db/0000/sbb00000099/images/index.html>. The fragments have been detached and are now stored in plexiglass cases and have been rejoined to form the pages of the original manuscript: <https://zendsbb.digitale-sammlungen.de/db/ausgaben/thumbnailseite.html?id=00000099&seite=4&image=sbb00000099_00004.jpg&bibl=sbb>. The present Bamberg, Staatsbibliothek, Class. 35 is the medieval copy of the late antique codex now reduced to fragments: a singular case of double reuse here too. On the dating and origin of the Bamberg, Staatsbibliothek, Class. 35, see Tischler 2000.

23 See <https://zendsbb.digitale-sammlungen.de/db/0000/sbb00000147/images/index.html>.

24 See <https://zendsbb.digitale-sammlungen.de/db/0000/sbb00000142/images/index.html>.

25 See <http://www.psi-online.it/documents/psi;13;1348>.

26 The manuscript was in Vienna in the last quarter of the eighteenth century when the Jesuit Joseph Benedict Heyrenbach made a careful transcript of most of the text (now Vienna, Österreichische Nationalbibliothek, L 9799). The main manuscript was presented to Emperor Joseph II by Camillo IV, count of Colloredo, between 1793 and 1797; it was then bound up with Vienna, Österreichische Nationalbibliothek, L 903 (*Epistulae Pauli,* in Beneventan script, tenth century). See: <https://digital.onb.ac.at/RepViewer/viewer.faces?doc=DTL_6752817&order=1&view=SINGLE>.

papyrus detrimenti pateretur)[27] and, once reassembled to form the structure of the original pages, arranged in a separate album (receiving another shelf mark: Vienna, Österreichische Nationalbibliothek, Lat. 1a and 1b).[28] They come from two fifth-century uncial parchment codices containing the *Institutiones* of the Roman jurist Ulpian and Pliny's *Naturalis Historia*. In the case of Hilary, therefore, we know from which codex it comes, but have no detailed information on the features of the original binding.[29] The strips of parchment, cut from the pages both lengthwise and widthwise, are all of similar size and format.[30]

Sometimes even the dimensions themselves could be misleading in the absence of a known and archaeologically studied context. This is the case of some parchment fragments (P.Mich. inv. 4969, fr. 36) containing the text of Seneca's *Medea*, which are the only evidence of archaeological origin for this author. They all come from a single leaf and are similar in size. They were used to prepare the binding of a Coptic codex, also made of parchment, together with other scraps of different sizes. The three Senecan *laciniae* (which originally must have been four, judging by the reconstructible missing section) all show signs of a central fold and two sets of holes equidistant from it. The distance between the holes and their reciprocal position coincide with the position of the cord still visible on the remaining cover, allowing us to imagine with good plausibility that the entire sheet was reshaped as a reinforcing strip, protecting the leaves of the new codex from being damaged by the binding cord.[31] It is curious to note that the reconstructible dimensions for the page of the original Seneca manuscript coincide with those of a surviving pasteboard of the binding and other fragments reused as endpapers: P.Mich. inv. 4970. Because of this coincidence, one can perhaps hypothesise that other leaves of the Seneca may have been used either as guard papers, which were subsequently lost, or as the stiffening

27 It is curious to note the radical change in the perception of danger and potential damage: the parchment tears were inserted between the papyrus sheets for exactly the reason that Endlicher felt they should be removed!

28 The account of the discovery, together with a first transcription of the Ulpian fragments, can be found in Endlicher 1835. The evident disappointment with the content of the fragments – *Sed proh dolor!* [...] *avara spe delusus* (!) – is also noteworthy (Endlicher 1835, 3 and 4).

29 Which has been lost, according to Fackelmann 1974, 193. Curiously, there is no mention of parchment reinforcements in the work.

30 Cf. CLA 10.1470 and 1471.

31 Markus and Schwender 1997, 73.

of the pasteboards of the binding, the contents of which seem to be papyrus fragments.[32]

In other contexts, however, it is only the shape of the object and the possible presence of holes that determine the context of origin with good approximation. This is certainly the most frequent circumstance, especially among parchment scraps of archaeological provenance, which very often – as mentioned above – appear detached from their original locations, without any trace of the original position remaining in the registers and inventories of the collections. Dismantled and inventoried with inventory numbers that are often very different from those of their coffin manuscript, due to linguistic, graphic and chronological differences, they are destined, in most cases, to remain isolated and deprived of that 'archaeological' context that would allow us to know much more about their history *tout court* and reuse.

In the case of the Latin fragments, this situation occurs with varying degrees of a lack of information. The history of the *Fragmenta Londiniensia Anteiustiniana* (FLA), for instance, comprising seventeen parchment fragments belonging to the same codex possibly containing a collection of laws (the *Codex Gregorianus*?), dating from the fifth to sixth century CE, provides some still useful contextual elements. The fragments are 40–45 mm long, and 15–16 mm or 28–32 mm high, with the larger pieces worn along the central axis. Several have a distinct 'butterfly' shape, typical of having been used in 'Greek binding' (widespread across the Near East). All the fragments must have been recovered from bindings. However, some appear to have been painted with reagents (to aid the visibility of the lettering) and others repaired with Japanese rice paper, so that they are likely to have been detached from their source book or books for some considerable time. None of the fragments appears to have been palimpsested, although there are cases of textual transfer, probably from adjacent binding fragments. The clearest case of this is the Syriac transfer on London, University College, *Fragmenta Londiniensia Anteiustiniana*, FLA 12B. The latter

32 <https://quod.lib.umich.edu/a/apis/x-14078/4972v.tif>. An interesting comparison in terms of size and workmanship can be found in the binding pasteboards in Montserrat, which probably belong to the binding of the famous *Codex Miscellaneus Montserratensis* (LDAB 552), which also consists of two papyrus pasteboards, covered with a sheet of parchment, about 13 cm high and 11 cm wide. Among the visible remains are two parchment scraps crossed by strings, one of which also has traces of papyrus. One can perhaps imagine that the two strips were used to reinforce the passage of threads through the body of the manuscript, but the hypothesis deserves further investigation.

suggests that the page was cut up for binding in the Near East (broadly defined) sometime between the ninth and thirteenth centuries.[33]

Finally, when the context is completely lost, it is only the shape, the presence of holes and any traces of papyrus still attached that can guide us as to the reuse of the fragments. A fragment of binding, perhaps glued to the spine, might have belonged to PSI XIII 1306, a rectangular fragment (12.8 × 2.6 cm) containing the bilingual Latin-Greek version of the Epistle to the Ephesians by St Paul,[34] from Antinooupolis, whose flesh side, barely legible, perhaps shows traces of glue compatible with this reuse.[35] The P.Lond.Lit. 42 (CLA 2.175), the only fragment of archaeological provenance testifying to Lucan's *De bello civili*, written in old style uncial and datable to the beginning of the fifth century, is a small strip of parchment (9 cm wide and 1.6 cm high) certainly from a binding. P.Laur. III/504, a rectangular parchment frustule, 11.7 cm wide and 2.7 cm high, has sharp edges and traces of vegetable fibres, suggesting its use as a reinforcement for the binding of a papyrus codex. It bears a text of grammatical content that includes a quotation from Vergilius's *Aeneis* 11.12–13; written in a tiny upright minuscule, it can be dated to the fifth century.[36] And the list could become longer ...

4 Fragments reused in bindings between East and West: a fortunate case

There are numerous other cases to be listed, and a lot more can certainly be found by reconsidering the formats and dimensions of numerous parchment frustules, not only in Latin, preserved in the various papyrological and library collections around the world. It will not be superfluous to remark that for some, it was precisely the arrival in these locations that determined, often irreversibly, the loss of the link with the 'sarcophagus' context/manuscript of origin. The

33 Corcoran and Salway 2010. According to the authors, moreover, Eastern provenance is also suggested by the fact that the Latin fragments were originally offered for sale with seventeen Greek fragments from seven separate manuscripts dating between the fifth and seventh centuries. This should not be pressed too far, however, as the association of the Greek and Latin fragments need be no more than the coincidence of their recent ownership history.

34 Fressura 2016.

35 See <http://www.psi-online.en/documents/psi;13;1306>.

36 Pintaudi 1989; Scappaticcio 2013, 147–148; Ammirati 2015, 62.

latter, however, can sometimes be redetermined, and this is the case with which I would like to conclude this overview.[37]

Starting in spring 2015, as part of the research conducted for the REDHIS project,[38] I had the opportunity to examine some unpublished fragments in the Latin language and script kept at the Papyrusammlung of the Österreichische Nationalbibliothek in Vienna; among them, two small scraps of parchment, perfectly rejoinable, written in a very calligraphic rustic capital and kept glass-framed under the inventory number P.Vindob. L 141[39] (Figs 1–2). Although it is not possible to find any exact textual match, the content is evidently legal: the mention of *senatusconsulta Apronianum* (hair side, l. 2), *Pegasianum* (flesh side, l. 2), and *Trebellianum* (flesh side, l. 3) reveals that the main topic must have been *hereditas*, and changes that may have occurred in its regulation in relation to *fideicommissa*. The provenance of the Vienna fragment could not be traced in the Papyrussammlung archive because we have very scanty information about provenances of this section of the collection. Nonetheless, P.Vindob. L 141 shows a very strong resemblance to another couple of fragments of legal content written in rustic capital, which were not edited, but recorded in catalogues: P.Louvre inv. E 10295bis, currently kept in the Department of Egyptian Antiquities in the Louvre Museum. The latter consists of two parchment strips taken from the binding of a well-known late antique papyrus codex (thirty-eight leaves, P.Louvre inv. E 10295: see Figs 3–4) that contains the *De adoratione et cultu in spiritu et veritate* of Cyril of Alexandria and is written in Alexandrian majuscule dating to the middle of the seventh century. Parchment strips had been removed from the original binding sites, but still appear *in situ* in older photos. Leaves and fragments of the same Cyril codex are also preserved in Dublin, London and Vienna: Dublin, Trinity College, Pap. Select Box 99 + Dublin, Trinity College, Pap. Select Box 100 + London, University College, Petrie Museum, number unknown + P.Vindob. G 19899-19908.

37 I reproduce below the conclusions reported in Ammirati 2019, with some minor updates.

38 <http://redhis.unipv.it/>.

39 I examined the fragments in Vienna between 2015 and 2021 with the help of a microscope and UV lamp.

Fig. 1: P.Vindob. L 141 hair side; © Österreichische Nationalbibliothek.

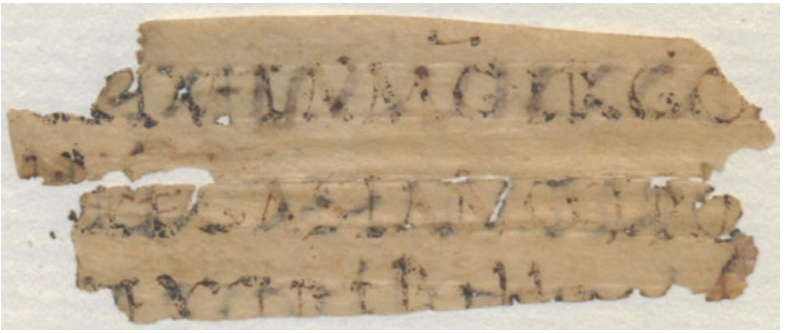

Fig. 2: P.Vindob. L 141 flesh side; © Österreichische Nationalbibliothek.

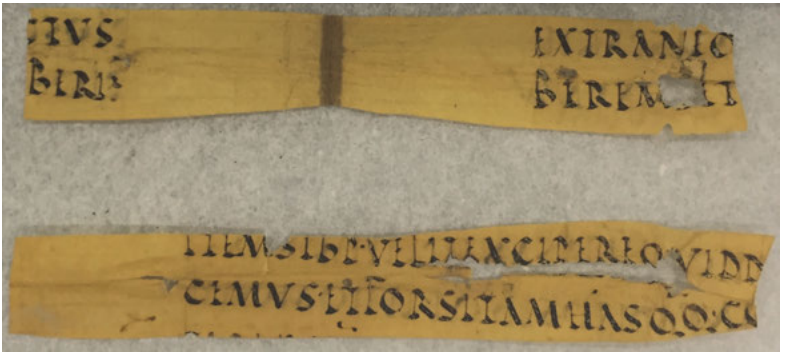

Fig. 3: P.Louvre inv. E 10295bis, frgs 1 and 2 hair side; © Musée du Louvre, Département des antiquitées égyptiennes.

Fig. 4: P.Louvre inv. E 10295bis, frgs 1 and 2 flesh side; © Musée du Louvre, Département des antiquités égyptiennes.

Having examined both parchments in rustic capital autoptically, I could ascertain that they must have belonged to the same original manuscript; therefore, the Vienna strips were taken from P.Vindob. G 19899-19908 (of which two fragments of bifolia, a suitable site for the parchment strips, survive), possibly soon after the manuscript had entered the Austrian collection; according to old bibliographical references, strips bearing Latin writing were also among the Dublin folia, but they seem to be currently lost; nothing is in London. The visits to Paris in 2016 and 2019 brought some further fortunate surprises: I found other parchment scraps, two already taken away from the Cyril quires, and five still *in situ* (Fig. 5). Having seen them still sewn to the original binding allowed me to ascertain how they were used: they were glued and sewn in the middle of the quire, and prickings for the binding laces occur at a regular distance. A detailed unpublished description of the binding (and binding technique) of the Cyril codex was carried out by Berthe van Regemorter.[40] Her typescript is still retained with the papyrus leaves in Paris and bears the date 'April, 27th, 1960'; at that date, four parchment strips were still sewn *in situ*. Therefore, we now have one fragment from Vienna and seven from Paris, but only five out of these seven belonged to the same original parchment codex in rustic capital. The other two (one still sewn, frg. 6, the other kept detached in an envelope and still bearing the binding lace, frg. 7) still display uncial letters, consistent in ductus and size with another Vienna Latin fragment, P.Vindob. L 94. Similar to P.Vindob. L 141, L 94 also has juridical content. Still unedited, it is known thanks to a brief description in CLA 10.1534. The consistency with P.Louvre inv. E 10295bis, frgs 6 and 7 suggests it possibly belonged to the binding of P.Vindob. G 19899-19908.

40 van Regemorter 1958.

Moreover, a further examination of frg. 6 and Vienna, P.Vindob. L 94 revealed their nature of palimpsest, the lower script being two different types of Greek majuscule bearing the Greek text only on one side of the parchment. Marco Fressura and I were able to identify the texts contained in the two fragments as belonging to two different books of the Old Testament and we will edit them shortly. Two preliminary conclusions may be relevant for the present paper. Firstly, since the two texts and the two writings are different, it can be stated with reasonable certainty that the two scraps, before constituting the *scripturae inferiores* of the Latin parchment codex with frg. 6 and P.Vindob. L 94, must have belonged to two different manuscripts. Secondly, since both are written on one side of the parchment and bear the text of the Old Testament, it is reasonable to assume that they originally belonged to parchment *volumina* of the Holy Scriptures, perhaps an edition in several rolls, written by several hands, which then fell into disuse.

Fig. 5: P.Louvre inv. E 10295, a fragment still sewn in the binding; © Musée du Louvre, Département des antiquités égyptiennes.

The uncial script of frg. 6 and P.Vindob. L 94 can be dated to the fifth century at the latest; the Greek *volumina* can be dated, at the latest, to the fourth century on palaeographic grounds. The fact that the lower writings of the Latin manuscript are in

Greek constitutes an element in favour of the Egyptian origin of the Latin codex. The parchment of frg. 6 and P.Vindob. L 94, in short, lived at least three lives, before ending up as *membra disiecta* between Vienna and Paris. It is also worth noting the similarity in content between the two reused Greek *volumina* (Old Testament) and the two Latin codices reused as bindings for the Coptic codex (legal texts), one in capital and one in uncial. A further element in favour of the hypothesis that reuse practices not infrequently drew on reused materials perhaps from the same context.[41]

5 Bound to be re-bound: Some final remarks

The increasing attention that scholars have devoted in recent years to the archaeology of handwritten books and their manufacturing techniques has made it possible to recover not only important information on the history of ancient handicrafts but also book fragments. Too little has been done so far in this regard for fragments of archaeological provenance, for which it is not always easy to determine phases of reuse, either at the time of excavation or when studied in large collections and repositories. It is important, therefore, that, in time, this material too can be reconsidered systematically in the light of these intents, and tell – as in the fortunate case of the fragments dispersed between Vienna and Paris – interesting new stories about books in the late antique world.

Acknowledgements

I am grateful to the anonymous reviewer for comments and observations. A full digital reproduction of almost all the manuscripts mentioned is available at the links indicated. Images of the manuscripts also mentioned as CLA items are available here: <https://elmss.nuigalway.ie>.

41 I have also attempted to offer some reflections on the reuse of reuses regarding the fragments in the Latin language and script from the Qubbat al-khazna in Damascus: see Ammirati 2020, and generally the whole volume in which this article is published.

Abbreviations

Shelf-marks and editorial abbreviations of the papyri are provided according to the criteria of the 'Checklist of Editions of Greek, Latin, Demotic, and Coptic Papyri, Ostraca, and Tablets', <https://papyri.info/docs/checklist>.

CLA = Lowe 1934–1966, 1971, 1972, with addenda and supplements; Bischoff, Brown and John, 1985, 1992.
LDAB = Leuven Database of Ancient Books, <https://www.trismegistos.org/ldab/>.

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Imre Galambos

Bound and Unbound: A Chinese Codex from Dunhuang and Its Pieces

Abstract: Among the group of Dunhuang manuscripts in the codex form is S.5531 from the Stein collection at the British Library (London). This is a small multiple-text manuscript booklet from the tenth century, probably produced by several family members in collaboration with each other as part of the series of rituals commemorating the dead. In its current form, the manuscript consists of four quires tied together, although it is also clear that at least one quire is missing from the beginning. This paper is able, for the first time, to reconstruct most of the original manuscript by identifying two pieces of this missing first quire in other collections of Dunhuang manuscripts. More importantly, however, the separate pieces allow us to gain an insight into the different stages of the manuscript's life between its initial production and its internment in the Dunhuang library cave. This reveals that the manuscript continued to be used for different ends long after the texts were copied by members of a family for the sake of commemorating their deceased kin.

1 Introduction

The Dunhuang manuscripts represent the largest body of manuscripts from premodern China. They have been researched extensively by scholars all over the world since their discovery in 1900, leading to crucial insights into Chinese and Central Asian history, literature, religions and languages.[1] Although the manuscripts were initially studied mainly for the texts they contained, researchers in the past few decades have become increasingly interested in their non-textual aspects, such as function, use and production. The manuscripts provide evidence of the diversity of book forms and binding methods, some of which are common in the collection but either entirely unknown elsewhere or attested only outside mainstream Chinese book culture. The group of more than 400 codices that appeared in Dunhuang around the turn of the tenth century, showing a direct influence of book cultures to the west of China, is particularly

1 I am grateful to Yukiyo Kasai for the help I received while working on this paper.

https://doi.org/10.1515/9783111292069-012

interesting. This paper examines one of these codices, today kept in London at the British Library (BL) under press mark Or. 8210/S.5531 (hereafter: S.5531), which survives as a four-quire booklet, lacking the first quire from the beginning of the volume. I explore how the condition of binding, including the degree to which it has been unbound, can shed additional light on the manuscript's history by identifying two more manuscripts that were originally part of the same codex and considering its function. Even more importantly, the phonetic glosses of Chinese words in the Tibetan script, which appear on one of the pieces, have implications for the history of the entire region.

2 Manuscript S.5531

After the discovery of the Dunhuang cave library at the beginning of the twentieth century, its contents were acquired by a series of foreign explorers and visitors and, within a few years, significant collections of manuscripts found their way into libraries and museums around the world. Therefore, the manuscripts that were originally sealed together in a cave in the early eleventh century ended up in different public collections. Three of the most important of these, all relevant to the discussion presented in this paper, are the Stein collection in the BL in London, the Pelliot collection in the Bibliothèque nationale de France (BnF) in Paris, and the Oldenburg collection in the Institute of Oriental Manuscripts (IOM) in St Petersburg.[2] It is not uncommon that parts of the same manuscript are now housed in different collections, and such cases are usually attributed to how the manuscripts were handled when they were initially acquired.

The original contents of the Dunhuang library cave comprise tens of thousands of manuscripts, chiefly written in Chinese and Tibetan, with smaller numbers in a variety of other languages, such as Old Uyghur, Khotanese, Sogdian and Sanskrit. Amidst this vast body of manuscripts, more than 400 are in the codex form, and even though their quantity is negligible in comparison to the total number of manuscripts, they are highly visible, signalling a drastic departure from the traditional scroll form that had dominated Chinese manuscript culture for more than six centuries. They are also important because they represent our earliest extant books with pages, a format which was to become,

2 For an overview of the main Dunhuang collections around the world, see Rong Xinjiang 2013, 137–176.

in a different iteration, the dominant book form for the following millennium or so.

Among the codices, it is possible to identify a group of about thirty multiple-text manuscripts (MTM) with shared characteristics, which were probably created in tenth-century Dunhuang for the sake of commemorating the dead. These items are relatively small and contain several shorter scriptures, aiming to provide karmic protection and solicit favourable rebirth for the deceased person, who may have been a family member. The booklets typically feature different hands, suggesting a scenario in which several family members were involved personally in the copying of scriptures, acting in collaboration to produce the final manuscript.[3] Among the Dunhuang manuscripts, this model of production was not exclusive to codices, but these MTM codices form an easily recognisable group. It is not clear why some people opted for using a rare new book form to copy scriptures for their mourning rituals, instead of continuing with the traditional scroll form. Whatever the answer to this question may be, it is likely that the small size of the booklets was related to them being carried on the body, to enable the recitation of texts while travelling and working and, simultaneously, to provide protection for their carriers.

One of these MTM codices is manuscript S.5531 from the Stein collection at the BL (Fig. 1). It is merely 12.5 × 7.3 cm in size, which makes it smaller than the size of a modern passport (15.5 × 10.5 cm). The manuscript features ten short Buddhist texts, mostly popular scriptures, written in several hands. Of the ten texts, the first and by far the longest is Chapter 25 of Kumārajīva's (344–413) translation of the *Lotus sūtra* (Ch. *Miaofa lianhua jing* 妙法蓮華經), known by the title 'Chapter on Universal Gateway' (Ch. 'Pumen pin' 普門品). This chapter was widely popular not only in Dunhuang but throughout East and Central Asia and commonly circulated as a stand-alone text, often identified using the separate title *Guanyin jing* 觀音經 (*Sūtra* on Avalokiteśvara).[4] This stand-alone form is, in fact, how it appears in S.5331, although in this specific manuscript the title at the end of the text reads *Miaofa lianhua jing yi juan* 妙法蓮華經一卷 (*Sūtra* of the Lotus Flower of the Wondrous Dharma, one scroll).[5] In terms of its message, the text encourages anyone facing difficulties or going through hardship to appeal to and call out the name of Bodhisattva Avalokiteśvara (Ch. Guanyin 觀

3 I have explored this group of codices in detail in Galambos 2020a, 37–84.

4 For the sake of brevity and convenience, in this paper, I will also use the title *Guanying jing* to refer to this text.

5 Here the word 'scroll' (*juan*) is clearly a textual unit rather than a codicological one, since the manuscript is a codex rather than a scroll.

音), who will, without fail, deliver them from trouble. These apotropaic and salvatic qualities made the *sūtra* particularly well suited for rituals involving the commemoration of the dead. The scripture was probably included in most MTM booklets belonging to this group for this reason. It was often, as in this case, the first text.

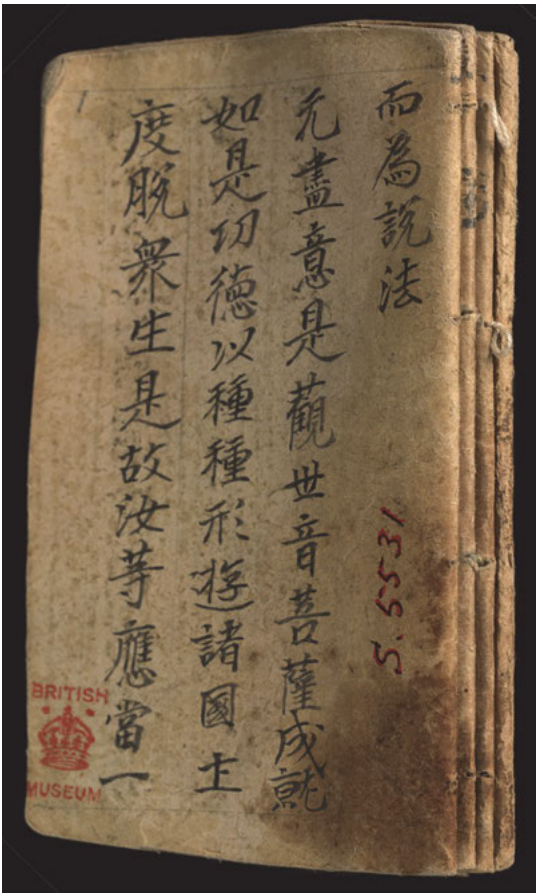


Fig. 1: The four extant quires of manuscript London, BL, Or. 8210/S.5531; courtesy of the British Library Board.

In its current form, S.5531 consists of four quires, each of which comprises eight bifolios (i.e. sixteen folios or thirty-two pages). The bifolios are sewn together along their centrefold using a beige thread, with a sporadic addition of some

red, green and blue threads. The thread shows signs of wear and is torn in several places but remains functional and able to hold the bifolios and the quires together. It is probably the original thread, rather than an addition by modern conservators, which is a possibility of which we are keenly aware. We cannot see what the front cover looked like because the beginning of the manuscript is missing. Fortunately, the back cover is extant and, as is the case with Dunhuang codices in general, it is the limp last leaf of the manuscript. There is no separate cover independent of the quires. The outside of this last leaf, although made from the same paper as the rest of the codex, is of a darker brown colour, at least partly from finger grease but possibly also from smoke or as a result of intentional colouring. The inside of this last leaf gives the date as the end of the *gengchen* 庚辰 year, which could refer either to 921 or 981. We find three titles (with some mistakes) on the back cover from among the ten texts present in the booklet. These three titles, however, can be identified as having been written by Aurel Stein's Chinese secretary in the early twentieth century.

The *Guanyin jing* at the beginning of S.5531 starts mid-sentence more than halfway through the text. A quick calculation reveals that only about 40 % of the text is present, whereas the preceding 60 % is lost. Based on the number of characters preserved in the manuscript, it is possible to calculate that the missing portion of this text would have amounted to about a quire, provided that it was the same size as the four extant ones and there were no other texts preceding it. While, in principle, there could have been other quires with additional texts before that, we will see below that this was not the case.

The individual folios in the booklet do not form rectangular sheets of paper with straight edges but have rounded corners and arching top and bottom edges, which is of significance for the subject matter of this paper. The arch of the side edges is less pronounced, yet, is obvious when observed against the vertical ruling lines of the pages. The round corners and arching edges produce a characteristic folio shape, which is somewhat uncommon among codices from Dunhuang. In addition, there are four sewing holes along the centrefold of the bifolios, positioned at roughly equal distances from each other, with the top and bottom holes being relatively close to the edge.

3 Two additional pieces

I was recently fortunate to have been able to identify two pieces from the lost first part of S.5531 in other Dunhuang collections. This was possible largely due to the characteristic shape of the folios and the distinctive handwriting at the

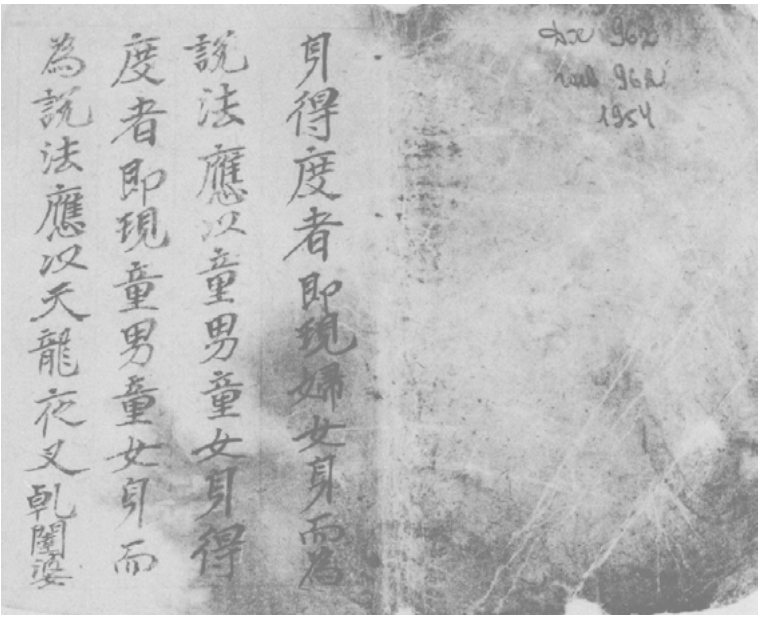
beginning of S.5531, which I was able to recognise while looking at other manuscripts from Dunhuang. The first of these pieces is manuscript Дх-962, currently part of the Oldenburg collection at the IOM in St Petersburg (Fig. 2).[6] This is a single bifolio and it is apparent that the folio shape, including the arched edges, matches that in S.5531.[7] The same is true for the location of the four sewing holes, except that this is a single disconnected bifolio and, thus, the thread is now missing. Only the last two (i.e. two sides of the same folio) of the total of four pages contain writing. The text is arranged into four lines per page, 10–12 characters per line. It comes from the *Guanyin jing*, connecting seamlessly to the beginning of S.5331. It is visible, even at first glance, that the handwriting is the same as that at the beginning of S.5531. All these details confirm that Дх-962 used to be part of the same manuscript.[8]

Because S.5531 begins with a new quire, the fact that the text of the *Guanyin jing* in Дх-962 connects directly to the beginning of S.5531 tells us that the folio covered with writing in Дх-962 was the missing quire's last folio, and the second page of it, connecting to S.5531, was the last page of that quire. This, of course, makes perfect sense if we look at the blank half of Дх-962, which would have been the first folio of the quire. Thus, its first page is of a significantly darker colour, matching the last page (i.e. back cover) of S.5531, proving that this was the cover of the original manuscript. Accordingly, the manuscript, indeed, originally consisted of five quires, the first of which, in time, became detached from the rest. This also makes it clear that the *Guanyin jing* was the first text in the booklet and both sides of the first folio of the booklet, similar to those of the final folio, were blank.

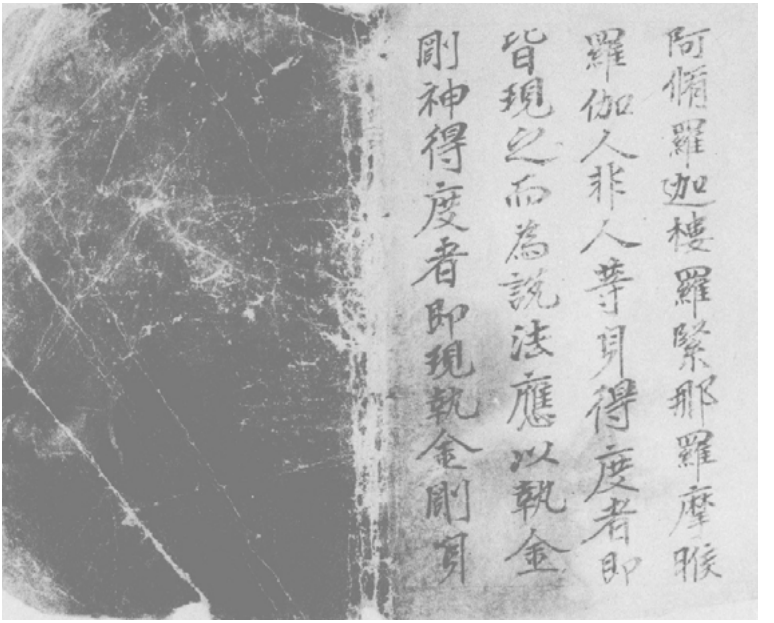
6 Without discussing it in detail, I have briefly identified this fragment as belonging together with S.5531 in Galambos 2020b.

7 Lev Menshikov gives a brief description of Дх-962, dating it to the ninth to eleventh centuries, in the catalogue of the Russian collection of Dunhuang manuscripts. He correctly identifies it as the outer cover, describing it as 'heavily soiled' (see Vorobjeva-Desjatovskaja et al. 1963, 207).

8 Unfortunately, colour is not a reliable criterion for matching manuscripts. Manuscripts kept in different collections cannot be compared side by side, and their images are published on different media, some in black and white. In addition, manuscripts may age differently depending on how they are stored or whether they are ever used or exhibited.



a



b

Fig. 2a–b: The two sides of the bifolio St Petersburg, IOM, Дх-962; reproduced from Eluosi kexueyuan Dongfang yanjiusuo Shengbidebao fensuo et al. 1996, 229–230.

Another piece of this manuscript that I was able to locate is Pelliot tibétain 1262 from the BnF in Paris (Fig. 3). This manuscript was originally classified as Pelliot chinois 2935, as a pencil note on the top margin of the first page shows. Subsequently, the manuscript was transferred from the Chinese to the Tibetan collection and, along with this move, acquired a new press mark.[9] This is an incomplete quire consisting of three bifolios covered in writing. The shape and size of the folios match those in S.5531 and Дх-962, and so do the locations of the four sewing holes. Once again, noticing these non-textual similarities was the first step in identifying the manuscript as belonging with the other two. Although today the three bifolios are kept together and classified as a single manuscript, they are no longer held together with a thread. This, of course, is entirely reasonable, since these bifolios were part of the quire that had become detached. In fact, they must have separated from the rest of the manuscript precisely because the thread tying them to the other quires was torn. Thus, once the bifolios were not held secured with the thread, they could easily go missing.

The text in Pelliot tibétain 1262 does not connect directly with either of the other two manuscripts, but it comes from the part of the *Guanyin jing* that does not appear in the other manuscripts. Therefore, there is no overlap, which would have negated the possibility that these pieces were once part of the same manuscript. It is the first of the several hands featured in S.5531, writing the *Guanyin jing*, that matches the one in Дх-962. Pelliot tibétain 1262 has two hands (the change happens on page 4) and, as expected, the second of these matches the hand in the other two manuscripts. Thus, we can be certain that both Pelliot tibétain 1262 and Дх-962 were part of the missing first quire. In this manner, with these two manuscripts, we now have accounted for four of the original eight bifolios of the quire. It is of course possible that all or some of the still missing bifolios will be located in the future.

The most conspicuous aspect of Pelliot tibétain 1262 is the presence of Tibetan annotations on the first page (Fig. 3). The phonetic reading of every Chinese character on this page is written to the right in Tibetan script. Even though this happens only on the first page, involving just four lines of text, transcribing Chinese words into another language was relatively uncommon and there are not many examples of this in the Dunhuang corpus.[10] The transcriptions must have been the reason for moving the manuscript into the Tibetan collection, even though the language re-

9 Drège 1979, 18.

10 Anderl and Osterkamp 2017, 222 lists three texts where Chinese characters are accompanied by Tibetan transcriptions and sixteen texts where a Chinese text is written entirely in the Tibetan script.

mains Chinese, plus the other eleven pages contain exclusively Chinese characters. This has also been the main attraction of the manuscript for research, and there have been quite a few studies citing the manuscript in connection with the phonetic reconstruction of the local Chinese dialect or as an example of the linguistic interaction between the Chinese- and Tibetan-speaking inhabitants of the region.[11] Without doubt, these are valid considerations and the phonetic glosses offer important insights for such enquiries. At the same time, I think that the physical and visual characteristics of the manuscript, including its layout and codicological structure, are also of value because they have the potential to clarify the circumstances under which the Tibetan transcriptions have been added. This, in turn, may help us understand the context of the interplay between the two languages and scripts.

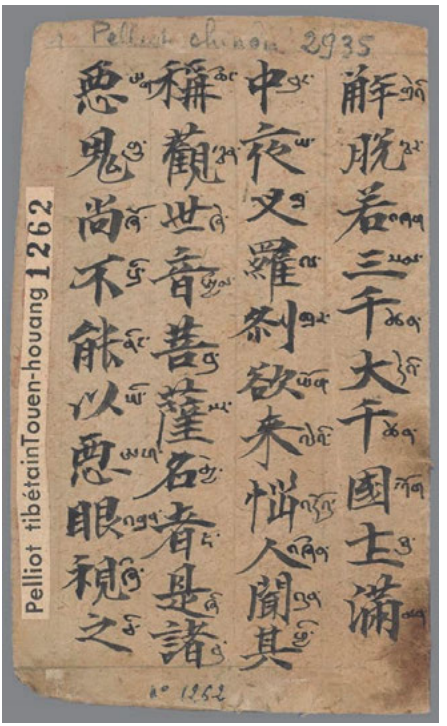


Fig. 3: The phonetic glosses in Tibetan script; Paris, BnF, Pelliot tibétain 1262, first page; courtesy of the Bibliothèque nationale de France.

11 See e.g. Coblin 1991, 98; Takata Tokio 1987, 98.

The Tibetan transcription appears on the right side of each character, in a slightly smaller script and the same orientation as the Chinese script.[12] Thus, they are written horizontally, gloss by gloss, annotating the Chinese characters. However, they cannot be read together continuously as a horizontally written Tibetan text. This type of arrangement is far from trivial because the Tibetan glosses were sometimes arranged in an entirely different manner. Exemplarily, in Pelliot tibétain 1046 (A), a manuscript that contains Tibetan phonetic glosses alongside the Chinese text of the *Qianziwen* 千字文 ('Thousand character text'), the Tibetan glosses are turned sideways, enabling the reader to turn the manuscript 90 degrees counterclockwise and read the Tibetan script continuously without looking at the Chinese characters.[13] The reader would have to turn the manuscript back to read the Chinese-character version, at which point, reading the Tibetan transcriptions would become inconvenient. The transcription in Pelliot tibétain 1262, however, is oriented in the Chinese manner, and the reader does not have to rotate the page sideways. But this also means that reading the Tibetan glosses continuously, if one was reciting the text, would be awkward. The current layout suggests that whoever added the Tibetan transcriptions intended to read the page using the Chinese characters, looking at the Tibetan transcriptions only as auxiliary notations, perhaps when being uncertain about the correct reading of a character.

Something that is seldom mentioned in scholarship is that this manuscript consists of twelve pages and only the very first has Tibetan glosses. This lends a degree of arbitrariness to the Tibetan transcription, as a more thought-out or systematic engagement with the text would have surely involved a larger portion. Similarly, if the goal was to aid the recitation or chanting of the *sūtra*, then we would expect the transcriptions to continue on the remaining pages. Instead, only four lines of Chinese text amounting to forty-one characters were transcribed. In addition, they do not start at the beginning of the *sūtra* but at a random place around the middle portion, precipitated simply by how the manuscript fell apart when it became unbound. Consequently, the transcriptions give the impression of an exercise not connected directly with recitation or any other type of religious practice.

12 We know several examples of the *Guanyin jing* transcribed with the Tibetan script without the presence of Chinese characters. These include the verso of Pelliot tibétain 1239 (BnF) with six lines from the beginning of the text and F-325b (IOM); Takata Tokio 1991 and 2019.

13 Pelliot tibétain 1046 (A) was originally manuscript Pelliot chinois 3419, until it was also moved to the Tibetan collection. This manuscript has been mined extensively for linguistic data; see, for example, Coblin 1992; Csongor 1960; Takata Tokio 1981.

4 The original manuscript

Having identified Дх-962 and Pelliot tibétain 1262 as pieces of the first quire of the original manuscript, we can use the text of the *Guanyin jing* to work out the exact position of these bifolios, as well as the parts that are still missing from the manuscript. Of the first quire, we currently have the single bifolio (Дх-962, in red in Fig. 4), which was the outer bifolio of the quire, plus the three stacked bifolios (Pelliot tibétain 1262, in green), which were at the centre. Since the amount of text missing from the *Guanyin jing* indicates that the first quire also consisted of eight bifolios, similar to the remaining four quires in S.5531, we are currently still missing four bifolios, i.e. sixteen pages. These are the four bifolios (in grey) that were originally located between Дх-962 and Pelliot tibétain 1262.

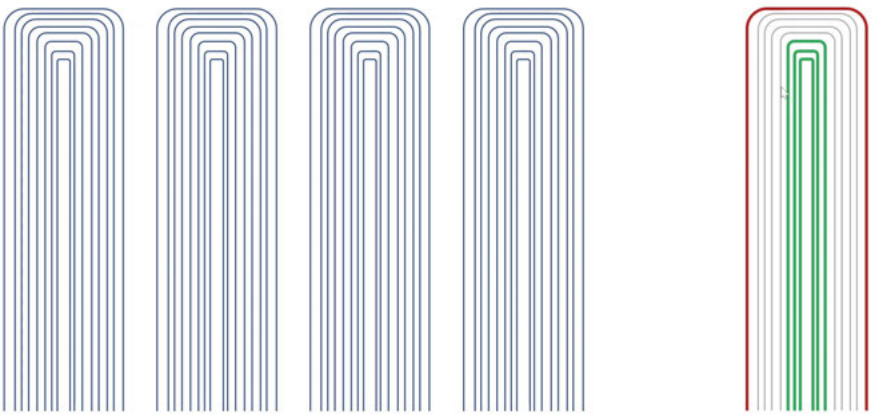


Fig. 4: Structure of the four quires of S.5531 (left) and the partially reconstructed first quire (right).

The fact that several pieces of the original booklet ended up in different collections is, in itself, not unusual for Dunhuang manuscripts and there are plenty of similar examples. In fact, now that the majority of manuscripts have been published in facsimile form of sufficient quality or are available in digital form on websites such as Gallica[14] and International Dunhuang Project,[15] rejoining disjointed fragments has developed into one of the promising new directions of

14 See: https://gallica.bnf.fr/ (accessed on 13 February 2023).
15 See: http://idp.bl.uk (accessed on 13 February 2023).

research with a potential to provide context for many loose fragments.[16] The general assumption regarding such cases is that manuscript pieces and fragments, even if fallen apart, had probably been placed together inside the library cave and became separated during the process of handling the contents of the cave at the beginning of the twentieth century when the material was acquired by foreign explorers. This is naturally a valid scenario, especially since the manuscripts and paintings seem to have been removed from the cave and handled on several occasions. It is only to be expected that while moving around thousands of items, some of the loose fragments would be disconnected and misplaced.

Our MTM booklet, however, has the potential to complicate this scenario. The fact that one of the three pieces of our original booklet features sound glosses in the Tibetan script on the very first page indicates that the manuscript had fallen into pieces before it was deposited inside the cave. The Tibetan glosses must have been added after the manuscript came apart, which is why they appear on the first page of the quire, rather than, say, on the first page of the original booklet. Consequently, the Tibetan-script transcriptions could not have been contemporaneous with the production of the booklet. They must have been added at a later stage and probably had nothing to do with the context in which the booklet had originally been produced. This original context, as mentioned above, was probably related to the mourning ritual performed for the benefit of a deceased family member. By contrast, the Tibetan transcription could have been added years or even decades later as an unrelated event. By this time, the separate pieces were no longer kept as part of the same manuscript, and the person adding the transcriptions may not even have been aware that other pieces of the manuscript were still somewhere nearby.

Why is this of significance? Because this reconsidered scenario reveals that the manuscripts we see today were not always the result of a single act of production at a specific moment in time. Instead, in their current state, the manuscripts are often chronologically layered objects, the end result of several, potentially unrelated, acts of intervention that happened over an extended period. In the case of our MTM codex, the initial production of the manuscript would have been the copying of the ten scriptures as part of the ritual commemorating the dead. But even this seemingly simple process did not happen overnight, because the presence of different hands in the manuscript demonstrates that the copying involved multiple individuals, who probably copied the texts over

16 For representative studies of this direction, see Zhang Xiaoyan 2016; Zhang Yongquan 2021; Zhang Yongquan and Luo Mujun 2016.

the course of weeks or months.[17] Another episode in the history of the booklet would have been the moment when the thread broke and the binding fell apart.[18] This probably did not happen while the mourning period was in progress, otherwise the binding would probably have been fixed. And yet another episode would have been when the booklet was already in pieces and someone used the beginning of three loose bifolios (i.e. Pelliot tibétain 1262) to practise their reading of Chinese characters.

In other words, the manuscript remained in use after the initial act of its production. While it was originally produced for a specific purpose, it was used at a later point by other individuals for other purposes in different contexts. This kind of reuse is markedly distinct from the idea of recycling, which implies that the original manuscript is used purely for its paper or some other properties. Instead, in this case, the new users continued to interact with the content of the original booklet, but were doing this in a different way from those who produced it. Clearly, the person adding the Tibetan syllables on the first page of Pelliot tibétain 1262 was not taking advantage of the empty space on the page to write unrelated things but actively engaged with the text that was already there. He or she was adding a layer that was meaningful only in combination with the previous layer. Without the Chinese text of the *Guanyin jing*, the transcription would not have been complete. This kind of interaction enriches the original item and, at the same time, personalises (or, rather, re-personalises) it to fit the new context.

The example of S.5531 and its satellite pieces reminds us that the Dunhuang library cave was not simply a collection of manuscripts deposited there at various points in time over the course of the preceding six centuries. The contents of the cave were generally a late tenth- and early eleventh-century collection, which also means that many of the manuscripts had been used in a variety of contexts for decades or even centuries. By the time a fifth-century scroll was interred in the cave in the early eleventh century, it would have had a history of more than five hundred years, and, during that period, members of respective communities would have interacted with it in a variety of ways. They would not have just stored it but, from time to time, would also have read it, leafed

17 Some MTM scrolls used in a similar mourning context have colophons demonstrating that the final manuscript was produced over the course of the three-year mourning period; see Galambos 2020a, 81–83.

18 Of course, the tearing of the binding thread could have been caused by someone (but probably not the mourners) using the manuscript for some time. Thus, there might have been many more episodes of which we will remain unaware.

through it while reciting it, displayed it in public, showed it in private to important guests, copied it, imitated its calligraphy, added notes on the recto or the margins, repaired and conserved it, and generally appreciated it as an object of value and significance. By the time it was interred in the cave, the scroll would have looked very different from how it looked when first produced. To some extent, the same holds true for much later manuscripts as well, as they would have had their own histories before ending up in the cave.

The Tibetan transcriptions, in turn, raise the question of who added them and why. As the Tibetan sound glosses follow the orientation of the Chinese, they are effectively truncated into single words, making them inconvenient to read as continuous sentences. This indicates that the exercise was not specifically oriented at learning how to recite the *Guanyin jing*, because then the transcriptions would not have started from a random point in the text. Instead, the point was to study reading or annotating Chinese characters in general, which was evidently a skill someone needed to practise. As to who this might have been, the first idea that comes to mind is naturally that this would be a Tibetan speaker practising his or her Chinese reading skill. However, as Takata Tokio argued in connection with phonetic transcriptions of Chinese texts using the Tibetan script, these might have been used by Chinese-speaking inhabitants (in some cases students) of the region who were not proficient at reading Chinese characters, and the phonetic script would have helped them to read or vocalise the texts.[19] This practice would have started during the Tibetan control of Dunhuang but continued right through the tenth century and possibly later. Because our manuscript dates from the tenth century, it is clear that the Tibetan transcriptions were also added in the tenth century (certainly before the closing of the library cave in the early eleventh century), providing yet more evidence for the interaction of Chinese and Tibetan scripts and languages during this period.

5 Conclusions

The exercise of rejoining pieces of the same manuscript has the potential to provide context for fragments. The date 921, for example, jotted on the inside back cover of S.3551 would clearly be applicable to both Дх-962 and Pelliot tibétain 1262. Similarly, our knowledge that S.3551 is an MTM booklet probably

19 Takata Tokio 2019, 99–103.

produced as part of the commemoration of the dead allows us to realise that the same also holds true for the other two pieces, even if in their current state, these are single-text manuscripts. Yet, there may also be elements in the individual pieces which were not part of the original codex and are, thus, not applicable to it. The most obvious example of this is the transcriptions of Chinese characters in Pelliot tibétain 1262, written in the Tibetan script. These were added after the original codex became unbound and, thus, have no relevance to the other pieces. More importantly, these additions provide evidence of the different stages of the manuscript and its pieces, some of which would have happened well after the initial process of producing the manuscript.

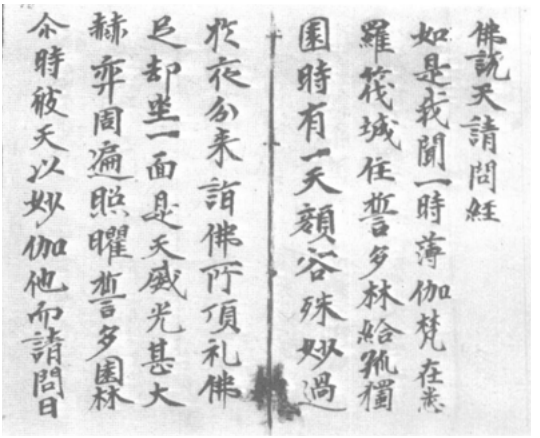


Fig. 5: The beginning of manuscript London, BL, Or. 8210/S.5531; reproduced from Huang Yongwu 1986, vol. 43, 227.

It is also instructive to consider why the disjointed parts of this manuscript have not been pieced together earlier. The most obvious reason is, of course, that they have been kept in separate collections in different countries, some separated from each other by the Iron Curtain. Before facsimile images of the manuscripts were published, it was only feasible to examine them by visiting the holding institutions, a task that was possible for only a very few scholars. And even if a fragment was published, the images were presented in a way that prioritised the texts, paying little attention to the physical form of the manuscripts. The reproductions typically ignored the margins and edges, cropping the images to save space so that text could be shown in as large characters as possible (Fig. 5). Finally, Pelliot tibétain 1262 was moved to the Tibetan collection, which

meant not only that it was less visible by scholars working on Chinese texts but was also never published along with the Chinese manuscripts. In the end, the pieces could be connected, on the one hand, by having access to high-resolution images of the manuscripts and, on the other, by straddling the linguistic divide created by academic specialisation.

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Nikolas Sarris

Binding or Rebinding at St Catherine's Monastery of Sinai

Abstract: The monastic library of St Catherine's is known to hold one of the largest collections of early and undisturbed bookbindings from several different East Mediterranean bookbinding traditions, including Greek, Arabic, Georgian, Ethiopic and Slavonic. How have these books survived to date, what was their use and how does their use relate to the need for bookbinding renovations in the monastic environment? This paper examines the major bookbinding tendencies in the monastery and discusses the relationship between manuscript production, bookbinding and the renovation of manuscripts by binders at St Catherine's monastery throughout the centuries.

1 Introduction

The monastery of St Catherine in Sinai, Egypt, is regarded as the world's oldest active Christian community and one of the most important centres of early monasticism.[1] Throughout fourteen centuries, it has also been famed for its exceptional library, having accumulated manuscripts and been a pillar of manuscript production, holding today one of the most important collections of Eastern Mediterranean manuscripts to survive.

The history of the library runs parallel to that of the monastery itself. According to tradition, Emperor Justinian sent gifts to the monastery upon its foundation in the middle of the sixth century, including many books for its liturgical needs. The famed *Codex Sinaiticus* is allegedly one of these gifts.[2] Nowadays, the monastic library collection comprises approximately 3,300 bound manuscripts, most of them written in Greek. However, a great number

1 The first references to the Sinaitic land are from one of the earliest pilgrims, St Sylvia (or Etheria), who mentioned the existence of a small chapel next to the biblical Burning Bush, allegedly built by St Helena, the mother of the Roman-Byzantine Emperor Constantine the Great. However, the main church, the settlement and the fortification of the monastery of Sinai were founded in the sixth century by Emperor Justinian. For the history of the monastery, see Manafis 1990, 12–13.

2 Clark 1953, 25.

https://doi.org/10.1515/9783111292069-013

are also in Arabic and several other languages, such as Georgian, Syriac, Slavonic and Ethiopic, displaying the enhanced multilingual and cross-cultural nature of the monastery.

These manuscript traditions are unsurprisingly accompanied by a corresponding bookbinding tradition. What is of particular interest to us is that it holds one of the largest collections of original or early Greek bindings,[3] which have preserved their features undisturbed, making it unique for research on the archaeology of their structures.

Bookbinding within the context of Greek monastic libraries is directly linked to the overall history of manuscript production and preservation, as it was the monastic communities that had been responsible, to a large extent, for their accumulation, use and circulation. As such, the production of new books as well as the repair and preservation of older manuscripts were both practices that have been well recorded for Greek Orthodox monastic communities, including, of course, the monastery of St Catherine.

However, what is of particular interest and the focus of this paper is the relationship between the production of manuscripts as a need to provide usable texts for the community, either new or reused, with the activity and purpose of bookbinding within the monastery. A parallel observation of these linked operations can offer an insight into the overall tendencies in manuscript production and circulation, while quantitative and qualitative evidence has helped to answer a number of questions regarding the activity and intentions of the binders who were active at St Catherine's monastery in Sinai throughout several centuries.

2 Manuscript production and provenance

Local manuscript production at St Catherine's has been more or less continuous since the first centuries of asceticism in the Sinai Peninsula the creation of the monastery and at least since the eighth century when more concrete evidence from surviving manuscripts is available, a practice that seems almost never to have stopped. What is equally significant is that the core of the collection of the St Catherine's manuscripts initially consisted of works by ascetics of the Sinai

3 Greek bindings are a bookbinding entity that is generally used to describe bindings that carry features such as unsupported link-stitch sewing, a round and smooth spine, a text block that is cut flush with the wooden boards, endbands that extend over the edges of the boards and are sewn into them, and occasional V-shaped grooves that run around the edges of the boards.

desert or by monks and abbots of the monastery, who have been responsible for the production of manuscripts from as early as the fourth century, copies of which survive in the Sinaitic library. Hosios Nilos, an ascetic from the fourth century, Hosios Nikon (fifth century) and the monk Anastasios (sixth–seventh century) are the earliest known scribes of Sinai.[4] The most important of all was undoubtedly John Climacus, a monk of the Sinai monastery during the seventh century, who, following the request of the abbot of Raithos in Sinai, produced the important ascetical treatise the *Ladder of Paradise*.[5]

Reference should also be made to manuscripts that were offered as gifts from emperors, patriarchs and highly esteemed people[6] as well as those collected or commissioned and dedicated to the library by archbishops and monks of the monastery and its dependencies. Archbishop Arsenios in the thirteenth century was a characteristic example of a scribe and copyist himself, but he was also a collector of manuscripts, which he eventually donated to the monastery.[7] Archbishop Ioasaph (1617–1661) was also occupied significantly with the care and the gathering of manuscripts and has left several inscriptions testifying his involvement with the accumulation and care of books, and many notes written to remind the reader not to remove the manuscripts from the monastery. He is also known to have been involved with repair work and the rebinding of a number of volumes.[8] Several other notes in individual manuscripts indicate that monks from the dependencies of the monastery, either in Sinai, Cairo or from further away such as the dependency in Crete, would often bring books with them upon their return to the monastery in Sinai, which may be the case for the majority of the books that arrived in the monastery during the sixteenth century.[9]

3 Evidence of bookbinding activity

Having such a prolific and undisturbed scribal activity, it would be rather impossible to imagine a parallel bookbinding activity not to have taken place at the monastery. Indeed, evidence of bookbinding activity is rich, perhaps even

4 Digbasani 1992, 569.
5 Sinai Monastery 1979, 12–15; Tsami 1988, 162.
6 Amantos 1953, 42–66.
7 Digbasani 1992, 569.
8 Boudalis 2004, 113.
9 Sarris 2010, 517.

richer than the scribal activity itself, as the numerous surviving bindings become unquestionable testimonies of such work.

Bookbinders' notes or notes referring to the repair of books have survived from as early as the fifteenth century and, more particularly, from the seventeenth and eighteenth centuries.[10] Certain abbots or monks who were related to a prominent binding activity have taken particular care to leave their notes. The latter are valuable sources to help us identify local bookbinding production. Nevertheless, binders' notes are not very frequently found in manuscripts from this collection.

My research studying the Sinai bindings focused on the finishing tools from the decorated bindings of the monastery and the identification of bookbinding 'workshops'. A workshop could be any structure of a bindery, either organised as a group of binders working together, or even as individual binding activity executed by someone who could have been binding books as a *diakonema* – a monastic occupation of obedience – with the minimum of equipment and materials. It is also the case that a workshop could be an establishment or personal activity which could involve the work of one person passed on to another after a certain number of years, along with the decorative finishing tools, the equipment and the bookbinding knowledge. Different workshops at the monastery occasionally also worked during the same period producing groups of bindings with different styles and features. Not having a distinct professional entity or any archival evidence to inform us on how these workshops were structured, it is impossible to understand whether the binders working in these workshops were related or collaborated under one workshop. Under these circumstances and for reasons of consistency, an identified binding group that used a particular set of finishing tools and/or style of bookbinding is perceived to reflect the work of one workshop.

This method, which has provided a much greater source of evidence on the existence and role of local binders. By means of the comparison of decorative and structural features, it was possible to group similar bindings among them and cross-reference the information contained within.

A total of 1,195 of the 3,307 manuscripts in the library have been decorated by means of impressing finishing tools on their leather covers. These decorated bindings provided the main material for examination since the aim was to create some order out of the bookbinding collection. Additionally, an attempt was made to identify the different binding workshops that had connections with the monastery, and which produced bindings that can be grouped by means of

10 Boudalis 2007a.

decorative and structural similarities. Having accomplished that, it was possible to attribute provenance and dates and establish links between the bindings that fell within a particular group.

This research method took into account the entire collection of manuscripts of Saint Catherine's monastery library, making no distinction between bindings of different artistic qualities and significance, or of specific periods of interest. It was, therefore, possible to represent the widest possible range of binding types and qualities within both monastic and commercial bookbinding production and offer an opportunity to investigate the whole variety of the bindings that formed the Greek Orthodox monastic library at different periods.

As a result of this research, seventy-one binding groups were formed with distinct links between the bindings within each group. Some groups may be comprised of only two bindings, while other more prolific ones have up to ninety bindings.

Out of the seventy-one groups, twenty-three relate to the work of binders from the monastery of St Catherine, fourteen consist of imported bindings, while it was not possible to identify the origin of the remaining thirty-four groups (see Table 1).

The twenty-three Sinaitic groups, a total of four hundred bindings, represent a great part of the history of the library of St Catherine's monastery. They demonstrate that bookbinding has been a vivid tradition and activity in the monastery as nearly five centuries of bookbinding are recorded and mapped. This activity often followed the overall involvement of the monastery, its political circumstances, the presence of monk-scribes and the interest of specific archbishops of the monastery towards books.

Table 1: Origin of bindings in St Catherine's monastery

Origin of binding	Number of binding groups	Number of bindings
St Catherine's workshop(s)	23	400
Imported	14	125
Unidentified	34	99
Total	71	624

The wealth of the grouped bindings is significant and has provided enough evidence to be able to explore the tendencies of binders and the need for functionable books at the monastery, which is one of the main issues I aimed to address within the context of this paper. I was particularly curious to under-

stand what the main concern of binders has been, what books they preferred to bind and how that relates to the production of new books as opposed to the need to rebind older manuscripts. The answers to these questions are not linear, as we see different tendencies and evidence in different periods.

4 New books or rebindings?

We should attempt to understand what the need for new books or to repair older ones was. Manuscripts at the monastery cannot be seen as a central collection of one library housing all books, at least not until the seventeenth century when the efforts of Archbishop Nikiforos Marthales[11] gathered all books together and formed a central monastic library. Before that, we know that books at one point in the early days were kept in different chapels, particularly in the *katholikon* (the main church), in different cells or even in rooms within the walls of the monastery. The library was completed in 1734.

It is evident from several ownership notes that we read within the manuscripts that monks often owned their personal manuscripts for which they cared and used personally. This may partly explain the fact that, in certain cases, we find two or more books of the same content having been bound or rebound during the same periods, which is evidence that several copies of the same text must have existed in good condition for use at the monastery. On another note, it is also the case that the monastery has had the need for several copies of the same liturgical contents to be used at its different chapels or dependencies, therefore, this would also justify the need to have many good copies of the same text during the same period. It is very likely that their accumulation within one central library may have come at a much later date.

Today, we find these copies gathered in one library, and unless we look at the specific provenance notes within them and deduct the information from the bookbinding groupings, it is difficult to explain what the need for these books was and to understand where and when each of them was used.

11 Nikiforos Marthales was archbishop of the monastery between 1728 and 1747 and one of the most influential figures for the library, who had also served as abbot of the monastery's dependencies in Constantinople and Wallachia before that. He was a scribe and copyist himself and wrote a number of manuscripts surviving today in the library. Upon his election as archbishop, he gathered all the books that had until then been scattered through the monastery into one place which he restored to form a dedicated library. See Digbasani 1992, 575–578.

5 Bookbinding workshops

What is the evidence we have regarding new bindings or rebindings? Bookbinding has been a major activity at the monastery, however, rebinding has occupied a large part of that activity since early medieval times. It is necessary to look closer into the relationship between the newly bound books from each workshop and the older manuscripts that each group repaired, in order to determine the exact nature of the work of the Sinai binders/restorers. Accordingly, we have to look at each particular workshop and see what their work involved and observe the patterns formed at particular periods.

5.1 Thirteenth-century workshops

The bookbinding activity in the monastery for which there is sufficient evidence is concentrated mainly in the period between the fifteenth and eighteenth century. Only a few examples of earlier work survive.

The earliest identifiable workshops at the St Catherine's monastery are probably *Group 61* and *Group 73*. These are two groups of five and two bindings, respectively, both of which are also roughly dated to the thirteenth century. Interestingly, both groups include bindings only of Arabic manuscripts, containing lectionaries, canons, Sayings of the Fathers and New Testament, exclusively of theological content but quite diverse.

The fact that all of the manuscripts involved are Arabic, bound in purely Greek style, adds weight to a Sinaitic provenance, since the places in the Arabic-Christian world with Greek binding influences are somewhat limited outside the Sinai Peninsula. However, solid evidence of their local provenance is unfortunately not available and further research on these groups and the possible identification of matching bindings from other collections would be necessary to reinforce this speculation.

Three out of the five manuscripts in *Group 61* are first bindings of thirteenth-century manuscripts (Fig. 1a), while the remaining two are rebindings of ninth- and twelfth-century manuscripts, respectively. *Group 73* includes only two bindings (Fig. 1b), which are both the first bindings of their thirteenth-century manuscripts. Unfortunately, the evidence from the thirteenth century is rather small and it is hard to draw any solid conclusions from such exceptional groups.

Fig. 1a: Sinai, Monē tēs Hagias Aikaterinēs, Ar. 72 (*Group 61*).

Fig. 1b: Sinai, Monē tēs Hagias Aikaterinēs, Ar. 178 (*Group 73*).

5.2 Fifteenth- to early sixteenth-century workshops

Curiously, there are no groups surviving from the fourteenth century, which makes the earliest two groups appear as an even more exceptional case. There are a few isolated bindings from that period of what can be described as 'orphan bindings', which are those that do not fit any identified group. However, these instances are difficult to analyse and put in a broader context.

There are two distinct groups identified from the fifteenth to early sixteenth century: *Group 27* and *Group 31* (or 'Antioch' workshop).[12]

Group 27 comprises eight bindings, which were identified from the finishing tools bearing motifs with a bird and a quadruped animal present consistently in all eight covers. What is more, they are all bound in the same style, with many identical structural features in a clear Greek binding style. They are all rebindings of earlier texts on five Arabic, two Syriac and one Greek manuscript dated from the eleventh, twelfth and thirteenth century. It is characteristic that several of the manuscripts bare the same donation inscriptions by Iohanna, archbishop of Sinai.[13]

The bindings of this group (Fig. 2a) are dated between 1486 and 1510 based on a note in Arabic[14] on an added folio in Sinai, Monē tēs Hagias Aikaterinēs, Gr. 742 (Diktyon 59117) (Fig. 2b) that helps to attribute the repair and completion with missing parts of the book to the time of Markos III archbishop of Sinai, whose ordinance was between 1486 and 1510.

12 The group was referred to as 'Antioch bindings' by Boudalis 2004, 69–94, based on the provenance of a small number of manuscripts from the city of Antioch. However, evidence from fifty-one more bindings examined during the work for my doctoral thesis confirmed that the workshop clearly operated within the monastery of St Catherine.

13 Sarris 2010, 121. A note in Arabic that appears repeatedly in some of the group's manuscripts is the following: 'I speak, I am the humble Ioanna bishop of Sinai. This book was dedicated for the church of Mount Sinai. In the name of God, the Son and the Holy Spirit' (e.g. fol. 1^{r} in Sinai, Monē tēs Hagias Aikaterinēs, Ar. 275 and fol. 1^{r} in Sinai, Monē tēs Hagias Aikaterinēs, Ar. 331). I am indebted to Father Gregorios, monk at the Holy Monastery of Sinai, for his assistance in identifying and translating these notes in Arabic.

14 fol. 1^{v} 'This was made in the time of Archbishop Mark'.

Fig. 2a: Sinai, Monē tēs Hagias Aikaterinēs, Ar. 77.

Fig. 2b–c: Bird tool (b); quadruped animal tool (c); full scale.

Fig. 2d: Sinai, Monē tēs Hagias Aikaterinēs, Gr. 742 (Diktyon 59117), fol. 1^{v} with a note in Arabic.

Group 31 consists of sixty bindings created *c.* 1469–1543. It is the earliest safely identified group attributed to the monastery, which was responsible for binding and mostly renovating older manuscripts in Arabic, Greek, Syriac and Georgian containing a variety of theological texts, New and Old Testaments, liturgical texts, services, sayings of Fathers, etc., bound exclusively in a Greek bookbinding style (Fig. 3a). It is certain that at least two different bookbinders worked in this workshop simultaneously and/or sequentially, which would also explain the long time-span of the workshop's activity for more than seventy-four years. This workshop is also characterised by the use of forty-nine different finishing tools (Figs 3d, 3e, 3f and 3g), many of which passed on to be used by later Sinaitic binding workshops. Apart from some indisputable inscriptions in a number of manuscripts, clearly supportive of the local origin of the workshop within the

monastery,[15] is also the discovery of two original finishing tools (Figs 3b and 3c) that were used to decorate the leather covers of these bindings.[16]

Fig. 3a: Sinai, Monē tēs Hagias Aikaterinēs, Gr. 561 (Diktyon 58936). Representative example of binding work from *Group 31*.

15 A characteristic note in Arabic that confirms the local origin of this workshop is found in Sinai, Monē tēs Hagias Aikaterinēs, Ar. 561, a composite manuscript consisting of more than ten different text blocks. The note reads: 'It [the manuscript] belongs to the monk Abba Paisios who gathered the leaves which were scattered and bound them and then the bishop of Sinai Lazaros gifted it to him, and no one should have the right to take it from him and this was on Thursday 6 [or 16] June [*]977 [?]'. The date is perhaps 6977 according to the Byzantine calendar which would correspond to the year September 1468 – August 1469. This note was identified and translated by Father Gregorios, monk at the Holy Monastery of Sinai.

16 Sarris 2008, 12–13; Sarris 2010, 32–110.

Fig. 3b–c: Two original finishing tools found at the monastery.

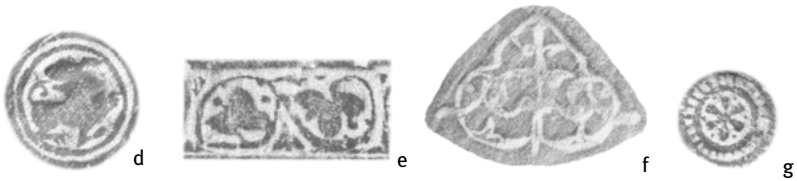


Fig. 3d–g: Common finishing tool motifs of bindings in *Group 31* (full scale): lion tool (d); vine-leaf tool (e); vegetation tool (f); rosette tool (g).

The workshop was involved in the making of nine first bindings for contemporary manuscripts and forty-six rebindings of older manuscripts that date from the ninth century onwards, with the majority dating from the thirteenth up to the fifteenth century.

The two workshops of the fifteenth century were consistent in the type of work they produced in terms of structural features and decoration, all of them complying with the typology of the Greek codex in structural and decorative features. In an equally consistent manner, they were involved mainly with rebinding work on older manuscripts (Fig. 4), and the fact that 76.6 % of the bindings of *Group 31,* are rebindings – a group with such a numerous bookbinding production – demonstrates that this was a common if not the main practice at the monastery from very early on.

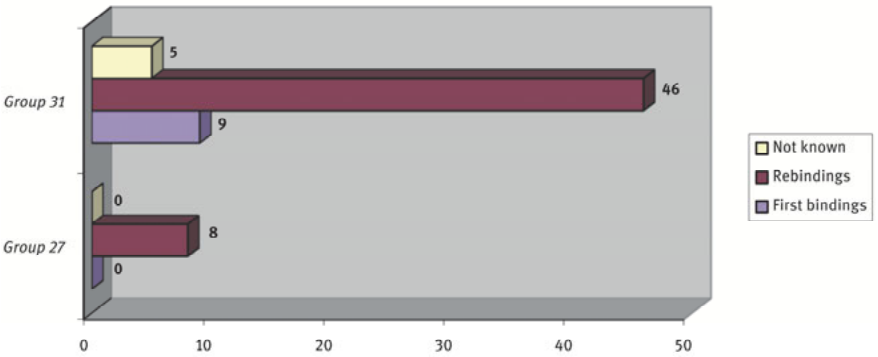


Fig. 4: Number of first bindings and rebindings made by the workshops in the fifteenth century.

There are three surviving groups from the sixteenth century: *Group 30, Group 34* and *Group 71*, other than the workshop of *Group 31* which carried on its activity into the middle of the century.

Group 30, nicknamed the 'Klimis workshop', as Kurt Weitzmann, George Galavaris and then Georgios Boudalis identified it,[17] takes its name from the tool impression with the name Klimis engraved on it (Fig. 5c). The owner of this name is not certain. There are a total of nineteen bindings in this group, covering manuscripts from the tenth to the fifteenth century that contain a variety of liturgical contents written in Greek. It is exceptional that only one is a first binding, while the other eighteen of the group are rebindings. This workshop is dated *c.* 1560. The structures are Greek in every feature, yet, they carry impressions of tools in both Greek and Italian styles.

The Sinai, Monē tēs Hagias Aikaterinēs, Gr. 296 (Diktyon 58671, Fig. 5) of this group is an example of extensive bookbinding repair work on manuscripts within the monastic collection. The manuscript from 1454 containing a lectionary of the Acts was rebound by this workshop a century after its first binding, following which, it received an additional overback repair at an unknown date to keep it functional, which demonstrates that the manuscript was in use intensively for a long time.

Similar characteristics are observed in the bindings of *Group 34*, made by another sixteenth-century workshop at the monastery. It is a group of five bindings from the first half of the sixteenth century made in the Greek style (Fig. 6), with unsupported sewing and Greek endbands sewn on wooden boards, yet,

17 Weitzmann and Galavaris 1990, 170–174; Boudalis 2004, 95–110.

they carry blind tooled decoration with characteristic Italian motifs. It becomes evident that the binding work involved with the workshop had been executed by a binder trained to bind in the Greek tradition but who also had access or was able to procure finishing tools of Italian origin and inspiration. Some of its tools, however, are taken from those available at the monastery that have already appeared on earlier Sinaitic bindings, such as from *Group 31* ('Antioch workshop'). The five bookbindings are all rebindings on very early Greek manuscripts from the tenth and eleventh century, containing saints lives, Sayings of the Fathers, as well as one *Menologion*.

Fig. 5a: Sinai, Monē tēs Hagias Aikaterinēs, Gr. 1793 (Diktyon 60168) of *Group 30* ('Klimis workshop').

Fig. 5b–f: Dragon tool (b); Klimis inscription tool (c); floral tools (d–f); full scale.

Fig. 6a: Sinai, Monē tēs Hagias Aikaterinēs, Gr. 341 (Diktyon 58716) of *Group 34*.

Fig. 6b: Sinai, Monē tēs Hagias Aikaterinēs, Gr. 516 (Diktyon 58891).

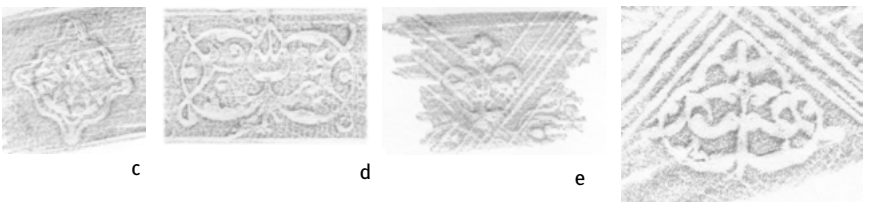


Fig. 6c–f: Geometrically shaped tool (c); interlace tool (d); vegetation tools (e–f); full scale.

The last group of the sixteenth century, *Group 71*, is linked to a workshop dated to *c*. 1520–1532 that includes only three surviving bindings on one Arabic and two Greek manuscripts, one of which is preserved in Oxford at the Bodleian Library, Barocci 141. These manuscripts contain saints' lives, an anthology of ecclesiastical texts and John Climacus's *Ladder of Paradise*. Barocci 141 was written during the thirteenth century by Elias, metropolite of Crete, as confirmed by its title note,[18] and also carries a note on its left endleaves placing the binding before 1532.[19] The bindings in this group are Greek-style with several similarities between them, carrying features that resemble Cretan bindings of the sixteenth century.[20] It is curious, however, that all three bindings have been tooled with a finishing tool that was discovered among the Sinai tools, thus, most probably implying a local Sinaitic provenance, perhaps made by a binder with knowledge of Cretan binding features. We cannot entirely exclude the possibility that these bindings were made in Crete and two of the books in the group moved to the monastery along with the finishing tool, as it was not uncommon for books to travel between the monastery and Crete. Yet, the fact that one of the bindings is on an Arabic manuscript would make the latter possibility all the more curious. These bindings are made both as first bindings on contemporary manuscripts (2) and as rebindings (1).

The workshops of the sixteenth century show a similar situation as during the fifteenth century. The work produced is fairly homogenous, while again consistently more is dedicated to the repair of old manuscripts, particularly of very early periods. By contrast, the production of manuscripts at the monastery during the sixteenth century seems to be at a low level, at least based on the palaeographical evidence and inscriptions that survive. This fact may have created a necessity to seek and reuse the older manuscripts to cover the daily

18 fol. 1^{r}: ἐξήγησις εἰς τὴν ἁγίαν κλίμακα εἰτοῦν τὰς πνευματικὰς πλάκας τοῦ ἁγίου Ἰωάννου τοῦ καθηγημένου τοῦ ἁγίου ὄρους Σινᾶ τοῦ λεγομένου σχολαστικοῦ, πονηθεῖσα τῷ εὐτελεῖ μητροπολίτῃ Κρήτης Ἠλία.

19 αφλβ μαρτίω, εἰς τας β' ἐγένηκε σεισμός.

20 Bindings produced by Cretan workshops are generally characterised by the common features of Byzantine bindings, yet, they carry certain features that are very particular to Crete, mainly in the making of endbands and the decorative motifs used. A compound endband with double-core primary sewing and a secondary weaving very often with red, green and white threads forming a chevron pattern is frequently seen on Cretan bindings. For details on this type of endband, see Boudalis 2007b, 37–40. Tooled decoration that has often been associated with Cretan workshops includes triangular-shaped dragon motifs, lozenge-shaped two-headed eagles and fleur-de-lis. On Cretan binding workshops, see Irigoin 1962; Hoffmann 1982; Boudalis 2004, 388–405; Sarris 2010, 318–462.

needs of the monastery. However, we should not neglect another piece of influential evidence. Looking at the groups of imported bindings to the monastery that can be dated to the sixteenth century, we observe a massive increase and inflow of books deriving mainly from Crete and southern Italy.[21] Numerous manuscripts produced and bound in famous or obscure workshops, were brought to Sinai through the dependency of the monastery in Crete. Such are the approximately forty bindings from the workshop linked with Michael Apostolis, erudite, teacher and scribe from Constantinople, who, after its fall in 1453, found refuge in Crete.[22] From there, Apostolis and his associates gathered, copied and produced numerous manuscripts, many of which were commissioned by Cardinal Bessarion to be sent to Venice. Although there is no archival or palaeographical evidence to suggest the existence of a bindery related directly to Michael Apostolis, as Martin Wittek first noted,[23] a link to a prolific bookbinding workshop is evident. Many of his manuscripts and numerous others not related to him, or even rebindings of older manuscripts, are bound carrying Cretan features with structural and decorative similarities that undoubtedly place them as products of the same workshop (Fig. 7).[24] At least sixty-nine bindings from different libraries have until now already been attributed to this Cretan workshop, which can be dated *c.* 1465–1514.[25]

21 Sarris 2010, 297.

22 Wittek 1953; Cronier 2010.

23 Wittek 1953. Wittek first identified the bookbinding workshop through nine bindings on manuscripts copied by Apostolis and arbitrarily named it the 'Michael Apostolis workshop'.

24 There are several studies that refer to bindings that are attributed to the bookbinding workshop linked with Michael Apostolis. See van Regemorter 1954; Irigoin 1962; Hoffmann 1982; Grosdidier de Matons 1991; Tselikas 2003; Boudalis 2004, 48–68; Sarris 2010, 318–370.

25 Sarris 2010, 318–370.

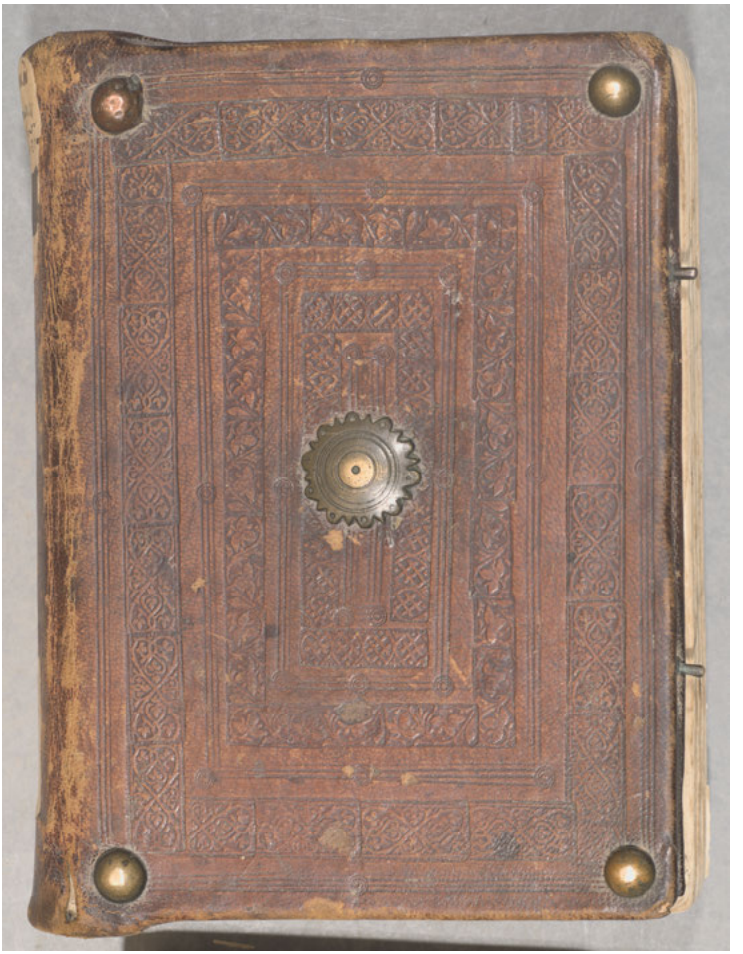


Fig. 7: Sinai, Monē tēs Hagias Aikaterinēs, Gr. 1251 (Diktyon 59626), in a representative bookbinding from the Michael Apostolis workshop, late fifteenth century.

It is essential to see how this gap in monastic manuscript production in Sinai is either caused by or addressed with the importation of Cretan manuscripts. Based only on the grouped bindings, just under one hundred manuscripts were identified as having arrived to the monastery during the sixteenth century from Crete, which is far greater than the manuscript production or rebinding activity within the monastery of that period. What is more, there is sound evidence that

occasionally manuscripts written at the monastery for some reason left for Crete to be bound and then returned.[26]

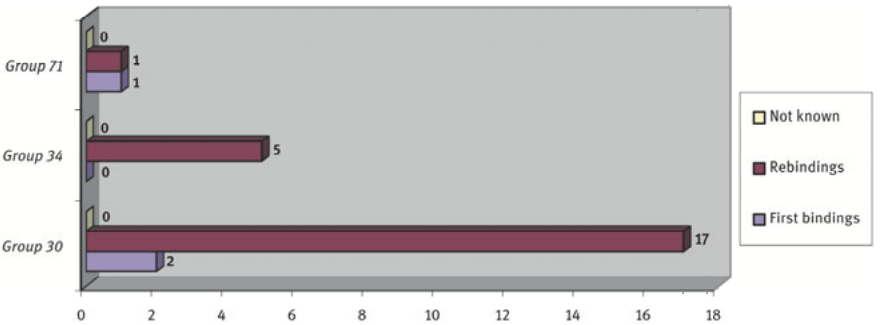


Fig. 8: Number of first bindings and rebindings made by the sixteenth-century workshops.

5.3 Seventeenth-century workshops

The seventeenth century is certainly the most prolific century in terms of the number of workshops that appear at or around the monastery. Thirteen different workshops have been identified, some of which overlap and may have coexisted at the monastery for short periods. Only three of these groups (*Group 15*, *Group 25* and *Group 36*) are confirmed to have worked in dependencies of the monastery and not within its premises during the same period.[27] It is also evi-

26 Such an example is Sinai, Monē tēs Hagias Aikaterinēs, Gr.87 (Diktyon 58462), from *Group 28*; see Sarris 2010, 412.

27 It is evident from these three groups that binders practiced bookbinding at the dependencies of the monastery in Raithos and Cairo. *Group 15* was identified first by Boudalis 2004, 151–155, with four bindings and expanded in Sarris 2010, p. 4, App. I-5 with eighteen more bindings. A binder's note on the right endleaves of Sinai, Monē tēs Hagias Aikaterinēs, Gr. 356 (Diktyon 58731) leaves no doubt that this binding was made at the dependency in Cairo: Τω ζρμα΄ κατά μήνα μάιο ο παρόν εξαήμερος εμετασταχώθι υπο σωφονίου ιερομοδ(ιακόνου) του κυπρέου εν μετοχίω της αιγύπτου ('In 7141 [AM = 1633 CE] in the month of May, the present *Hexaemeron* was rebound by Soph(r)onios hierodeacon from Cyprus in the metochion of Egypt'). *Group 25* is a group of twenty-two bindings, discussed by Boudalis 2004, 183–208, and Sarris 2010, pp. 16–17, App. I-9, that were produced by a workshop at the monastery's dependency in Raithos, Sinai, as testified by several colophons and two binder's notes in Sinai, Monē tēs Hagias Aikaterinēs, Gr. 654 (Diktyon 59029) and Sinai, Monē tēs Hagias Aikaterinēs, Gr. 931 (Diktyon 59306) by binder Akakios. *Group 36* is a group of only four bindings, three of which have clear notes that they were written and/or belonged to Raithos. One of these was also

dent from the table below that the monastery had a bookbinding workshop at almost all times throughout the century.

Table 2: Groups of Sinai bindings during the seventeenth century, arranged chronologically

Group	Date	Location	Number of Bindings
Group 14	*c.* 1622	Saint Catherine	15
Group 16	*c.* 1622–1655	Saint Catherine	55 + 4 printed volumes
Group 15	*c.* 1633–1635	Cairo	22
Group 30	*c.* 1637	Saint Catherine	19
Group 39	*c.* 1640	Saint Catherine	4
Group 36	*c.* 1647	Raithos	4
Group 25	*c.* 1648–1689	Raithos	22
Group 42	*c.* 1659	Saint Catherine	3
Group 67	*c.* 1664 to early 18th c.	Saint Catherine	5
Group 44	*c.* 1664–1666	Saint Catherine	17
Group 13	*c.* 1665	Saint Catherine	3
Group 34	Possibly *c.* 1617–1661	Saint Catherine	5
Group 68	Before 1675	Saint Catherine	2

Group 16 ('*giglio* workshop') is one of the most prolific workshops of the seventeenth century (Fig. 9) that have been identified at the monastery, consisting of fifty-five manuscripts in Greek and Arabic from the tenth to the seventeenth century, as well as four printed volumes. It has been named as such by Boudalis, who first described some of these bindings,[28] based on a fleur-de-lis (*giglio*) finishing tool.

This group demonstrates very vividly the aforementioned evidence on the need for multiple copies of the same text. Characteristically, four manuscripts containing the *Kyriakodromion* (Sunday sermonary) were made within a span of a few years, as well as five books with the liturgy of John Chrysostom and four

tooled with a finishing tool discovered among the tool finds at the monastery (Sarris 2010, 68 [Tool 17]).

28 Boudalis 2004, 113–164.

books of *Triodion* and *Pentikostarion*, all of which are books needed mainly in daily church services.

It is also distinguished by the fact that although we know of quite a few manuscripts from the group that are testified to have been written at the monastery, they are still outnumbered by what have been rebindings. There are also a few bookbinding notes denoting the existence and parallel work of at least seven different binders, including Archbishop Ioasaph himself, a clear indication that he encouraged rebinding work and the care of books.

Three original finishing tools from those discovered at the monastery were used on numerous bindings of this group, including the *giglio* tool itself, confirming further the local provenance of these bindings.

Fig. 9a: Sinai, Monē tēs Hagias Aikaterinēs, Gr. 408 (Diktyon 58783), *Group 16* (*giglio* binding).


b


c

Fig. 9b–c: *Giglio* rubbing, full scale (b); *giglio* tool (c).


d


e

Fig. 9d–e: Chenille rubbing, full scale (d); chenille tool (e).


f


g

Fig. 9f–g: Interlace floral motif rubbing, full scale (f); roll with an interlace floral motif (g).

Another prolific group from the seventeenth century is *Group 14,* which consists of fifteen bindings (Fig. 10a) on Greek manuscripts, made in both Greek and Western-style structures, sometimes combining features of both styles, which

shows that influences from the West had begun to appear by the seventeenth century, even in the remoteness of Sinai. It also shows that the binder(s) of this group was (were) able to switch from Greek unsupported sewing structures to Western supported structures with ease and certainly trained to do both.

Only one of these bindings is the first binding on a contemporary manuscript (Sinai, Monē tēs Hagias Aikaterinēs, Gr. 1158, Diktyon 59533). The remaining fourteen are rebindings of older manuscripts that date from the eleventh to the early sixteenth century. Several scribal and ownership notes survive in these manuscripts to indicate that they were made locally, including a binding note from a monk named Laurentios from Crete, who testifies that he personally bound Sinai, Monē tēs Hagias Aikaterinēs, Gr. 445 (Diktyon 58820, left endleaves): το παρόν βιβλίον εσταχόθι δια χειρός [Λαυρεντίου;] και μονάχου του κριτός.[29]

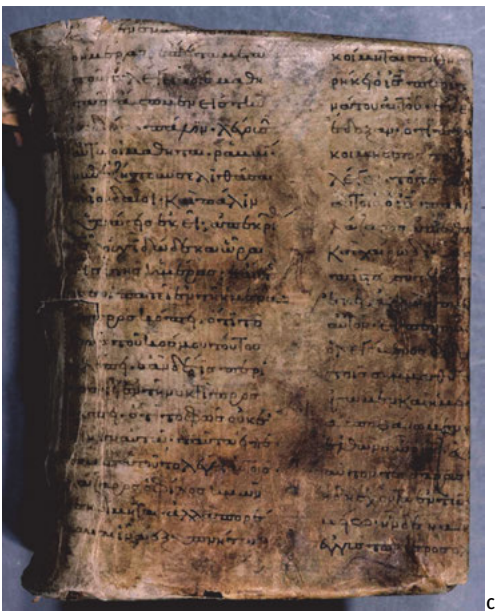
The Sinai, Monē tēs Hagias Aikaterinēs, Gr. 1336 (Diktyon 59711, Fig. 10b) is a particular case of an excessively used book from this group. It is a manuscript of the Old Testament written in 1564 by a Sinai monk, justifying further the presence of a locally made binding for it. However, the manuscript had to be rebound in the following fifty to seventy years following its completion and most elements of its original structure were removed. Unless this book was intensively used and worn, this would appear to be a very short period to for it to require rebinding. It must have also been heavily used during a later period as the rebinding was damaged too and a parchment manuscript waste wrapper was placed to protect it, which has also consequently been torn. This is unusual for an Old Testament manuscript: however, three layers of bindings, rebindings and repairs have not made it through intact to our day, demonstrating the extent of use to which books from the Sinai library were often exposed.

It is worth observing that the majority of the workshops have not left us with evidence to demonstrate long periods of bookbinding activity, but possibly only for a few years or a couple of decades each. With the exception of two fairly active workshops, one of which was the '*giglio* workshop', the majority of them were involved with rebindings (113 bindings) more than with original first bindings on new books (forty-eight bindings).

29 'The present book was bound by [Laurentios?] monk from Crete.'

Fig. 10a: Sinai, Monē tēs Hagias Aikaterinēs, Gr. 72 (Diktyon 58447) (binding *Group 14*).

b



c

Fig. 10b–c: Sinai, Monē tēs Hagias Aikaterinēs, Gr. 1336 (Diktyon 59711) with parchment wrapper.

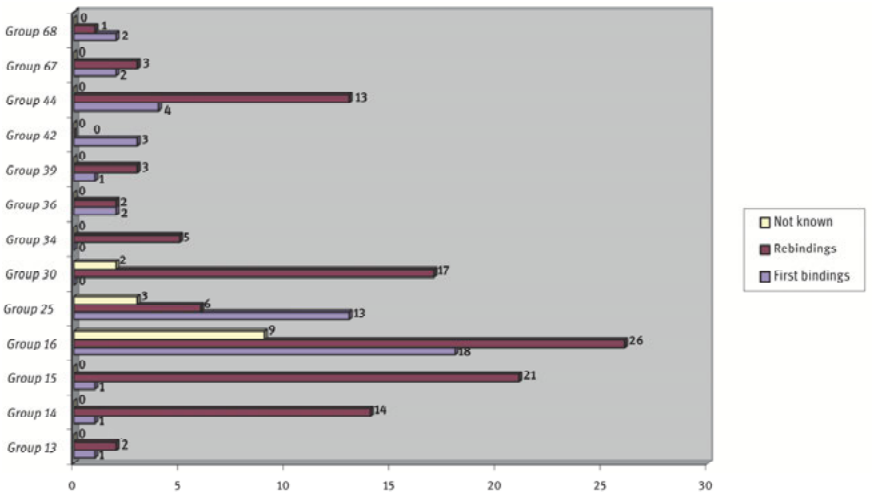


Fig. 11: Number of bindings and rebindings of the seventeenth century.

5.4 Eighteenth-century workshops

The eighteenth century was almost equally prolific in bookbinding production at the monastery as the seventeenth century, yet, fewer workshops were responsible for this production. There are five main workshops identified from this period that produced a total of 114 bindings that still survive today.

Group 18 (or the 'New Library workshop')[30] is the most important workshop with the largest number of bindings surviving at the monastery. There are sixty-seven bindings on manuscripts and at least another twenty-seven bindings on printed books that have been identified. Considering that the majority of post-seventeenth-century printed books have not yet been researched systematically, it is likely that there are many more printed books that will fall within this group. The bindings of *Group 18* are dated between *c*. 1711 and 1790. They are bound on sewing supports and feature Western binding elements in most respects. It is also evident that at least three different binders worked together and/or consecutively in this workshop. In further support of the Sinai origin of the workshop is the use of two original finishing tools from the tool finds at the monastery (Fig. 12).

30 The group was first identified through fourteen bindings by Boudalis 2004; seventy-nine more bindings were attributed to it in Sarris 2010, pp.10–14, App.I-7.

This group is historically vital for the library as it is linked closely, at least during its early stage, with Nikiforos Marthales, archbishop of Sinai, who, aside from being a scribe and a very learned man, was also responsible for gathering the books from the chapels, crypts, cells, and cabinets around the monastery to form the core of the monastic library.

Fig. 12: Sinai, Monē tēs Hagias Aikaterinēs, Gr. 1338 (Diktyon 59713) from *Group 18*, with an original finishing tool next to its impressions on the leather cover.

There are eighteen Greek manuscript bindings and three printed volumes that belong to *Group 57* that were bound by two monks at the monastery between 1704 and 1727.

Group 4 is the next most productive workshop, counting twenty-one bindings of Greek and Arabic manuscripts and one printed volume bound between 1757 and 1777, a period of vigorous bookbinding production. It also coincides with the ordinance of Archbishop Kyrillos II (1759–1790), who is renowned for his great scholarly and publishing activity and his contribution to the acquisition and gathering of

manuscripts and printed books for the monastery.[31] Fourteen of the bindings are original to their text block and seven are rebindings on older manuscripts. These bindings follow a style which had been fashionable both in Western and in Eastern European bookbinding in the eighteenth century, using a combination of different types of tools to achieve their decoration, including several centrepieces, corner-pieces and rolls (see Fig. 13). Although these books were bound within a Greek monastic community, possibly by a Greek binder, their features do not resemble traditional Greek structures, but fit under the transition of Greek bookbinding of the time as they carry predominantly Western features. Three out of the tools[32] impressed on their covers were discovered among the finishing tool finds, a correlation which undoubtedly allows us to attribute these bindings to a workshop at the monastery or one of its dependencies. It is also apparent that this workshop must have coexisted for a number of years with *Group 18,* as it is also the case that several tools were used in common by the two workshops.

Fig. 13: Sinai, Monē tēs Hagias Aikaterinēs, Gr. 1270 (Diktyon 59645) from *Group 4*.

31 Digbasani 1992, 578–579.

32 These are rolls Tool 24 and Tool 25, as well as corner-piece Tool 33, see Sarris 2010, 248–295.

The relationship between new and renovated bindings is more balanced during the eighteenth century. Fifty-four rebindings were made against forty-seven first bindings, which may lead to the suggestion that there was probably a greater scholarly activity during the eighteenth century compared to earlier periods, without noticing a significant change in the contents of the manuscripts chosen to be repaired or produced. It may also be explained by the fact that perhaps the large-scale renovation work of the seventeenth century had covered much of the need for restoration of the worst damaged older manuscripts that were still in use.

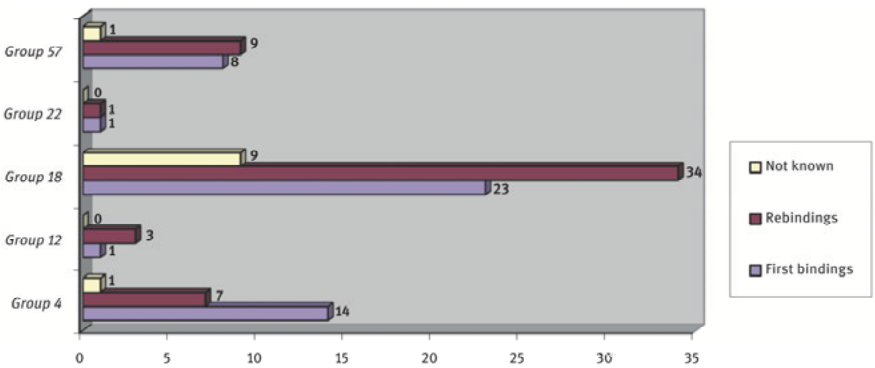


Fig. 14: Number of bindings and rebindings of the eighteenth century.

The following chart (Fig. 14) demonstrates a summary of all the bindings that were identified to have been produced by the Sinai workshops between the fifteenth and the eighteenth century. Overall, 63.9 % of these bindings were restored, 27.8 % were first bindings and the status of 8.2 % is not known.

It is evident that more bindings were restored in these four centuries than were newly bound. However, this may also be explained by the fact that the manuscripts written at the monastery would perhaps not always be sufficient to cover the needs of the monastery and that repairing older ones and often imported manuscripts would be needed to supply the deficiency.

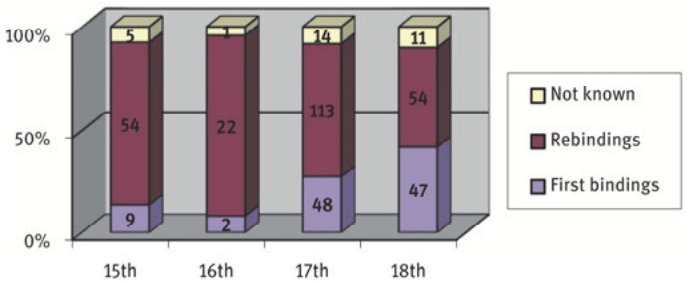


Fig. 15: Summary of first bindings and rebindings.

6 Conclusion

A question that arises from the presentation of the Sinaitic workshops is how to explain the lack of binding groups prior to the fifteenth century, particularly considering the very large number of tenth- to fifteenth-century manuscripts that survive at the library of St Catherine's monastery.

There are four likely hypotheses for this, though it may be the case that all four are valid and that, to a certain extent, they occurred simultaneously.

1. The bindings that were made before the fifteenth century cannot be easily dated. Binders' notes in what appeared to be bindings made earlier than the fifteenth century are entirely absent, which makes the process of identification and dating of early workshops extremely difficult. Grouping them has also proved incredibly difficult, so what remains of them are usually classified as orphan bindings.
2. The bindings before the fifteenth century were less decorated, and if they were so, they omitted the use of representational finishing tools and preferred simple tools, such as concentric rings, straight lines, small rosettes and crosses, that cannot be used for definitive identification and grouping. This is the case with the majority of the prominent early bookbinding traditions that are related to and influenced by Greek bookbinding, such as the Syriac, Georgian and Armenian traditions. There are numerous such bindings in the collection, which have not been possible to identify within a workshop.
3. The earlier bindings with tooling have frequently been so distorted and damaged that the rubbings taken from their impressions could not be of any use and, therefore, their identification was impossible. Only indicatively, about 8 % of the total number of tool impressions that were recorded from

the 1,200 bindings were more or less unusable due to poor quality impressions. This figure demonstrates a relatively high degree of damaged covers.

4. The original bindings of the earlier manuscripts have been replaced by newer bindings made by the workshops of the fifteenth to the eighteenth century, in order to renovate the manuscripts when they were needed for liturgical and personal use. This last observation is probably the most influential factor for the small number of earlier bindings that survive.

Finally, it is also interesting to see what the purpose of rebinding was for the Sinai binders. Naturally, the need for functionable manuscripts must have been a fundamental reason. It was not rare to notice rebinding sprees or renovation periods in European libraries, often executed for purely aesthetic reasons or to create a sense of uniformity within a collection. However, the Sinai library does not fall into this category. Examining the bindings of the seventeenth century, the most vibrant bookbinding period at the monastery, the evidence is striking. Out of 108 rebound manuscripts, ninety-one of them have had old repairs to their text block (84 %), carried out at the time of their last rebinding, with the vast majority including spine fold repairs. This is a feature that demonstrates that the rebindings did not aim to address external binding damages or damages to the cover and the appearance of books, but were elaborate efforts to repair the manuscripts thoroughly after having suffered damage to the text block leaves.

Whether the goal was to make them usable again or purely to repair them with a sense of care and preservation, is not very clear. However, looking at the multiple copies of particular liturgical texts accumulated and rebound or repaired within the monastic library by the seventeenth century, it is natural to suggest that the latter was also the case.

Acknowledgements

I am greatly indebted to Archbishop Damianos and the Synaxis of the monastery of St Catherine for granting me permission to study the bookbindings of the library's manuscript collection. I owe my deepest gratitude particularly to Father Justin, librarian of St Catherine's library for his assistance during my visits to the library and I would also like to thank Father Gregory for his help with the identification and translation of the Arabic inscriptions presented in this paper.

All the images of bookbindings, manuscripts and finishing tools included in this paper have been reproduced with the permission of the Synaxis of the monastery of St Catherine.

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Indexes

This volume contains two indexes. The first is an index of the written artefacts that are mentioned in the book. Page numbers with an asterisk refer to illustrations. The primary aim of the second index is to assist the reader in finding concepts and terms of interest, rather than creating a concordance. This is also why terms that appear too frequently and would therefore be impractical as index headings are omitted as well as personal and geographical names.

Francesca Panini

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https://doi.org/10.1515/9783111292069-015

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