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The Islamic Bookbinding Tradition. A Book Archaeological Study

Scheper, C.H.

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The Islamic Bookbinding Tradition

A Book Archaeological Study

The Islamic Bookbinding Tradition
Karin Scheper

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The Islamic Bookbinding Tradition

A Book Archaeological Study

PROEFSCHRIFT

ter verkrijging van
de graad van Doctor aan de Universiteit Leiden,
op gezag van de Rector Magnificus prof. mr. C.J.J.M. Stolker,
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Prof. dr. N. Pickwoad
Prof. dr. W. van der Molen
Prof. dr. H. Beukers
Dr. J. Schmidt

One who seeks this art should have quick understanding, good observation, dexterity of the hand, and be certain without being hasty. The latter is a good manner of getting along and it has the elegance of attracting others of grace and good character.

Tamim Ibn al-Muizz Ibn Badis, ca. 1025 CE
'Twelfth chapter on the art of binding books in leather and the use of all its tools until it is finished by the bookbinder', in: *Mediaeval Arabic bookmaking and its relation to early chemistry and pharmacology*, translated by Martin Levey (1962), p. 42.

The intelligent ones will understand this with simple directions. For others loud shouting will be necessary. Another group will need cursing but not the stick. A stick will be necessary for the last group.

Ahmad Ibn Muhammad al-Sufyani, 1619 CE
'Art of bookbinding and of gilding', in: *Mediaeval Arabic bookmaking and its relation to early chemistry and pharmacology*, translated by Martin Levey (1962), p. 5.

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ACKNOWLEDGEMENTS

Being trained as a conservator of Western manuscripts and printed works, I knew nothing of Islamic manuscripts when I started the conservation workshop in the Leiden University Library (UBL) in 2000. The Oriental manuscripts required my attention nevertheless. A condition-assessment of part of the collection helped to get acquainted with these objects, with their physical particularities and their preservation needs in general. When one works with old books, the senses are always involved. Books have a scent, which tells us something about the materials they are made of and the circumstances they have been kept in. They can be visually attractive, interesting or rather dull, and they emit sounds too; creaks may caution the user for vulnerable joints and leafing through parchment or paper textblocks will produce subtle sound differences. But above all, these objects with their composite materials have a special touch. For me, tactility has been the most intriguing aspect of the Arabic manuscripts in the Oriental Collection; they are so very different from Western books. The Islamic paper of the older volumes is soft, sometimes almost cloth-like. The rounded corners of textblocks bear witness of intense use; these books were carried around and pocketed and thumbed a lot. The covers, flush with the edges of the textblock, with boards not made of wood or other heavy material but consisting of laminated paper leaves, are light and sometimes even a little limp, and thus they form a unity with the textblock in a surprising way. The leather, used to cover the bindings, is quite different from the leather used on Western bindings as well. Perhaps the most typical feature of these bindings, the envelope flap which closes around the fore-edge of the textblock and is put underneath the front cover, is a protective element which is very sympathetic with the manuscript; these artefacts have no metal clasps and accompanying nails that leave small holes or corrosion marks in the outer leaves. The use of silk for the decorative endband sewing adds to the attractiveness of the volumes. On the whole, the books are easy to touch and accessible, even the ones affected by old age or the heavily repaired ones – perhaps those especially. Notwithstanding the (for me) inaccessibility of the Arabic writings, I felt a strong affinity with the materials and shape of these manuscripts.

The manner in which *real* books – as opposed to their digital equivalents – appeal strongly to our senses is instrumental to one of the most important effects old books have on us when we work with them: we get a sense of being in touch with the past. It is through their materiality and the physical characteristics, that books speak to us beyond their intellectual content. The book as a physical object is an information carrier, provided that one knows how to interpret the message. In the case of the Arabic manuscript collection in the UBL it was clear that there were an abundance of messages, but a framework to interpret the information was lacking; though Islamic bindings had been studied for art-historical developments, the technique of their making and structural composition had been largely ignored. Because of my professional need for a better understanding of these objects – in order to be able to make conservation decisions – and my interest for Islamic manuscripts as artefacts, I decided to use the collection itself to learn about the technique of Islamic bookbinding. Conducting the actual survey was like excavating and mining the stacks; it was a privilege to be able to do that.

Many people helped to get the work on its way or see it getting done. I much appreciate the enjoyable discussions I had with colleagues and friends, either close by or far away, among whom are Gabriëlle Beentjes, Femke Prinsen, Wineke Meeuws, Mandana Barkeshli, Annabel Teh Gallop, Amélie Couvrat Desvergnes, Kathryn Schwarz, Meredith Quinn, Herre de Vries and Luitgard Mols. My thanks also go to Evyn Kropf, Teresa Espejo Arias, Marie-Geneviève Guesdon, Adam Gacek, Jan Just Witkam, Jake Benson, and Joachim Meyer, who responded to my questions so graciously. I thank Laura Parodi, Neill McManus for sharing some of his findings, and all others who I met through TIMA and COMSt projects; often the conversations we had helped to shape my ideas.

The initial idea to conduct this study was supported and encouraged by Paul Hepworth, who generously shared his expertise and did not shun further involvement by accepting an unofficial editorial role; I am greatly indebted to him. Any mistakes that remain are my own responsibility, of course. Paul Hepworth and I worked on the development of the *Glossary for the conservation and description of Islamic manuscripts* during the same years as when my thesis took shape, and since the use of terminology is unavoidable when writing about Islamic manuscripts, the *Glossary* proved an indispensable tool for this study. However, without Nicholas Pickwoad, who has more experience in defining book vocabulary than anyone, the thesis' glossary would not have been what it is now. I am grateful for his suggestions.

I received warm support from my library colleagues, especially those linked to the Special Collections, who attentively left me to work undisturbed in the vault, all those Wednesdays. The library

granted me unlimited access to the stacks which is a gift in itself, and the two collection curators, Marie-Odette Scalliet and Arnoud Vrolijk, provided counsel, enthusiasm and knowledge. In addition, I would like to thank LUCAS, for the support that enabled me to take a two-months leave in the final stage of my writing, which proved to be very productive as it allowed me to fully focus. My conservation colleagues who work with me in the workshop offered practical backing and stimulated my study further by showing genuine interest and asking many questions. In addition, I am deeply indebted to Femke Prinsen, for her amazing computer skills and her readiness to help.

My husband, Erik Geleijns, has always supported this undertaking. When I started this project, our daughters, Judith and Elize, were already old enough to not really mind that I spent most of my evenings and many weekends behind the computer, and the three of them have seen the process through with good humour, for which I am immensely thankful.

INTRODUCTION

Books as material culture

Although the manuscript in codex form originated in the Middle East, the study of the Islamic manuscript as a physical object has its foundations in the Western world. The field of book history covers the making, dissemination and reception of books, and the development of scripts and printing. Within this field, the study of the technical and material aspects of bookbinding constitutes a separate part. As decorative objects, bindings have been studied since the nineteenth century. It was, however, only in the second half of the twentieth century that the history of the technique of bookbinding developed as a discipline in its own right. Instead of focussing on the higher end of the book trade, which was inherent to the art historical approach, it widened its scope to include the whole spectrum of book production, and, in addition, the construction of books became a topic of interest. The general focus, however, was on the development of the Western book.

Modestly bound, even plain books came to be recognised as objects of importance since they represent a large part of the total of book production. Economic motives have always been an important factor in the book trade, and all levels of the binding trade are of significance when studying the means of economising. By the same token, the use of materials, the binding's structure and particular marks of craftsmanship came to be valued as informants on the book's history. Instrumental for the growing awareness of this aspect of the history of the book is the development and establishment of a related field of expertise: book conservation. Since book conservators have access to parts of the structure that remain concealed to others, their contribution to the knowledge of the physical book has been crucial. Over the last decades the exchange of information between scholars and conservators has much intensified and has encouraged discussion between these specialists, stimulating and contributing to the study of the physical aspects of books.

The awareness and recognition that a manuscript or printed book also carries information beyond its text is relatively new, and it has added an interesting dimension to the study of books. The study of the materiality and technical aspects of a book is also known as book archaeology. The construction and the materials used to make the artefact can reveal valuable data about the historical and social context of a particular text and the book as an object. Through examination of the physical book, information may come to light that could not have been found in another way, for example on the item's provenance. In other cases, material evidence may corroborate with clues already found through different methods, thus supporting theories that otherwise could have remained inconclusive.

The idea that a book is not just a text-carrier but a material informant as well, is nowadays acknowledged by many scholars involved in the study of manuscripts and printed books, both Western and Oriental. However, contrary to the field of Western book archaeology, the technical study of Islamic manuscripts is still in its initial phase. Research in the field of Islamic manuscripts also gradually widened its scope from philological and palaeographical studies to contributions concerning the design and ornamentation of calligraphy and bindings. As with the Western bookbinding tradition, the interest in the materials and techniques, applied to produce the artefacts, arose at a later stage. It is this aspect of Islamic manuscripts with which present study is concerned.

The technique of Islamic bookbinding

It is customary to use the term 'Islamic' for objects of art and artefacts produced in the Islamic world which are made by or for Muslim peoples, whether the items themselves function in a religious, socio-cultural or political context. The term thus indicates a clear cultural origin, and that is what the words 'Islamic manuscript' signify in this study. The book arts have always held a prominent position in Islamic culture throughout territories, which links the manuscript tradition to a vast geographic area and a wide timeframe, in which diverse ethnic

groups adopted Islam. For that reason alone one may safely assume that there are several quite distinctive local traditions.

While it is perfectly clear to most people, also non-experts, that the material form of the Western codex is characterised by diversity, it is often thought that in Islamic bookbinding such variety cannot be found and that the Islamic bookbinding tradition is more conservative, if not static. It is true that many Islamic manuscripts share visual characteristics and binding features, and there certainly is a predominant outward appearance. However, the assumption that the bulk of these manuscripts were made according to a uniform procedure, does not suffice. There are simply too many variations, and anomalies, to justify such a conclusion. In order to gain a better understanding of the breadth of the Islamic manuscript tradition, and more specifically the heterogeneity in the technique of Islamic bookbinding, the construction of these artefacts needs to be observed and analysed more closely.

A biased opinion

Another misperception is the supposed weakness of the Islamic codex. Again, when a comparison with 'the Western book' is made, the Islamic binding structure is deemed to be inferior. Not only does the comparison fall short, as there is no such thing as *the* Western book structure; more importantly, the composite structure of the predominant Islamic book is often misunderstood. Its binding is commonly described to be a *case-binding*, which implies that the binding was made separately from the textblock, and was only attached to it by means of adhesive on the spine. Additionally, the unsupported link-stitch sewing on two sewing stations, which was common for the Islamic textblock production, is generally judged to be an inferior sewing method. This overall depreciative image of the Islamic bookbinding tradition has caused the rebinding of many volumes, and has also resulted in a range of misjudgements when it comes to conservation treatment. With the best intentions, the faulty interpretation may lead to alterations and 'improvements' that interfere with the original artefact, and are often harmful to its functioning.

Working with the Oriental Collections in the Leiden University Library (UBL) and examining objects before and during treatment, it appeared to me that many Islamic manuscripts refuted these general assumptions. The dominant link-stitch sewing appeared to be part of a composite structure, involving a method of lining and endband application which together resulted in a functional and durable construction. In addition, though a consistent, archetypal binding format could be defined, I observed a variety of original sewing methods. Moreover, the characterisation of the Islamic binding as a case-binding was contradicted by many volumes. These observations prompted the comprehensive assessment and technical analysis of all of Leiden's Islamic manuscripts.

Understanding in order to preserve

The importance of recognising the diversities within the tradition is two-fold. A better understanding of the developments in the bookbinding practice and the diffusion of the methods used supports other studies in the field of Islamic manuscripts or Islamic culture in general. However, we can only really learn and benefit from the material information a binding carries when the manuscripts are preserved in their original form. Needless to say, many manuscripts have already been resewn, rebound, repaired or ruthlessly restored. In the light of this loss, it is all the more important to safeguard those manuscripts still retaining their original structure and cover as best as possible. The responsibility for this falls within the domain of professional book conservators. They are the specialists who preserve these valuable objects with all their particular characteristics, provided that they are aware of these features and understand their importance. Therefore, one of the aims of this study is to serve the preservation and conservation of Islamic manuscripts. It does so directly, by informing conservation specialists about the multiplicity of structures and techniques one can

encounter when working with Islamic manuscripts, and indirectly, by creating an awareness that underpins the development of preservation strategies for this particular heritage.

Understanding the structure of a book is a prerequisite for any conservation treatment. When the material structure is poorly understood and decisions are based on assumptions, the impact of any intervention is a potential risk, and the damage to the material evidence could be irreversible. The book as an artefact should be considered as a container of archaeological material evidence. We cannot preserve such information embodied in an object if we do not know what that evidence looks like or what it is composed of. It is essential to recognise the type of structure and the materials used, and to be aware of their strength and vulnerabilities. Understanding the book structure as a composite artefact will also promote the development of treatment solutions. More specifically, it is hoped that increased knowledge about the Islamic bookbinding tradition will enhance the integrity of the Western conservation specialist with regard to the cultural importance of these manuscripts; it may help them to respect the structures belonging to these artefacts so that they are less inclined to impose Western structures on them.

To conservation professionals working in the Islamic world, this study may provide arguments to revaluate their cultural heritage and reconsider some of the Western conservation techniques that were implemented in their practice. As most of the preservation guidelines were introduced from the West, the Western misperception of Islamic bookbinding has percolated their conservation approach. An increase of the knowledge of the manuscripts' materiality contributes to better-informed decision making regarding preservation. The preservation of Islamic manuscript collections may be further stimulated when the intrinsic value of the materiality of the artefacts is made known to the institutional bodies involved in setting out preservation policies and the allocation of budgets.

A codicological framework

Research into the materiality of manuscripts belongs to the field of codicology, the study of the codex's physical form. Codicology aims to provide information on the context in which a book is produced.[1] The analysis of materials and techniques used can shed light on the history of the period in and the circumstances under which a specific artefact is made. However, in order to be able to date and localise a manuscript with the aid of material characteristics, a reference framework should be available. Such a framework contains characteristics of textblock and binding elements, structural components, and the materials or techniques applied which are linked to a certain area or period. For the Islamic bookbinding tradition only part of the necessary knowledge on the characteristics is available. Studies on the decorative aspects, for example, have provided useful tools to classify certain manuscripts or bindings, but there are restrictions to the applicability of these art-historical features. They are, for example, mainly useful to classify the 'upmarket' part of the manuscript production; the bulk of the manuscripts were, however, not produced in court ateliers or a similar milieu, and for these volumes the stylistic and decorative quality offers fewer leads. Analytical techniques have made it possible to investigate paper fibres and ink components, adding

[1] A clear-cut definition is lacking; the *Oxford English Dictionary* offers "the study of manuscripts and their interrelationships" but nothing more specific. The European project COMSt (Comparative Oriental Manuscript Studies) states that: "Whilst codicology involves the study of the material and physical history of codices and, in more practical terms, the study of codex production in all relevant contexts, including attempts to identify scriptoria, modalities of circulation, economic aspects, etc., palaeography deals with the peculiarities of writing, its general development and dating, as well as the social aspects involved in the practice of writing". (COMSt brochure, 2009, http://www1.uni-hamburg.de/COMST/ESF_COMSt.pdf p.4, accessed 16-05-2014). This seems to confirm the general acceptance that codicology does include the study of written features such as marginalia and ownership inscriptions, the physical aspects of decoration and the study of the binding structure and binding materials.

essential information to the framework. However, the applicability of technological analysis is limited for several reasons, which will be further discussed in Part One. The art-historical and technological studies on the one hand and book archaeology on the other complement each other.

My position as a conservator allowed for the examination of the materiality, literally on the inside, since the structures of damaged books are often exposed. Thus, manuscripts in need of treatment invariably offered information. Secondly, the skills and expertise of a conservator enabled me to recognise former intervention treatments and to distinguish between Western and 'local' repairs. Finally, using similar materials and techniques as the original craftsman did, I have reconstructed the diverse structures I encountered. In that process of making book models, very much through trial and error, my insight in the materiality was actually defined. Retracing the actions of a bookbinder, closely following his steps and decisions, appeared to be the only way to verify certain parts from the historic sources on Islamic bookbinding, and to test my understanding of the exact procedures an original binder could or would have followed.

Physical examination of the Leiden collections

Without sufficiently detailed written documentation about the use of particular techniques and materials in certain periods or regions, information of the historic bookbinding practice can only be retrieved from the manuscripts themselves. We have to keep in mind, however, that bindings are not always directly related to the manuscripts they protect. Boards can be reused and manuscripts resewn. Therefore, an expert eye is needed to first establish if there are indications of rebinding or any other alterations made to the manuscript's structure or binding, that might diffuse the analysis. Unfortunately, Islamic bindings are hardly ever signed by their makers, although the colophon at the end of a text may reveal a date or place of completion. Those manuscripts that are dated can be informative with regard to binding traditions in a certain period; when their origin can also be verified specific techniques or materials can be mapped. It is important, however, to realise that such data can only function as a steppingstone: the binding may not have been applied directly or even in the same place. Therefore the results of such analysis should be presented with a certain caution, but the larger the corpus of systematically examined material with verifiable data, the more reliable the outcome will be. When a survey can be conducted on a large enough collection – with a wide enough range of manuscripts – it may become possible to define the dissemination and development of a bookbinding tradition over time. Given the expanse of the Islamic world and its long history, it necessitates the examination of a large number of manuscripts before such a framework can be built.

Four hundred years of Arabic studies at the University of Leiden have resulted in a rich and internationally well-known collection of c. 6000 Islamic manuscript volumes.[2] The oldest collections were assembled by the well-known scholar Josephus Justus Scaliger (1540-1609), who, although he never travelled in the Middle East, bequeathed an important collection of Oriental manuscripts to the University of Leiden, and Jacobus Golius (1596-1667), who travelled in the Maghreb and Levant himself. Levinus Warner (ca. 1618-1665), who worked and lived in Istanbul for twenty years, acquired around a thousand Arabic manuscripts on behalf of Leiden University. These early collections contained a wide variety of texts, such as treatises on mathematics, astronomy, medicine, geography, history, botany and literature, and some of these manuscripts were already hundreds of years old when they were acquired. With the arrival of Warner's manuscripts, three years after his death, Leiden became one of the most important centres in Europe for the study of Oriental texts.

[2] The history of Arabic studies and the subsequent growth of the Leiden Oriental collections is outlined by A. Vrolijk and R. van Leeuwen, *Arabic studies in the Netherlands* (2014).

In the following centuries, new acquisitions were added to the Oriental collections with varying frequency. Also, as the Islamic world expanded, the origin of the manuscripts can be retraced to a wider region. Although the majority of the manuscripts acquired originated from the heart of the Ottoman empire, peripheral regions such as Central Asia and the Balkans, and North and West Africa, are represented too, as well as the Arabian Peninsula, Persia, and the Indian Subcontinent. In addition, a substantial number of Islamic manuscripts produced in Southeast Asia reached the library.

The Leiden Oriental collections can be typified as a scholarly collection. Few manuscripts were collected because of their splendour and beauty, most volumes have been used: they were consulted, transported and annotated, and sometimes repaired or rebound, before they arrived in the Leiden collections. As a result, these items are physical witnesses of a variety of cultures and users, over several centuries. This signifies the importance of the Leiden Oriental collections as a valuable source for a book archaeological study.

The context

In Part One, the current state of learning with regard to the materiality of the Islamic book will be explored. It will demonstrate that our knowledge of Islamic binding structures is still in need of fundamental research. Some of the newly identified binding structures have been published in conservation journals, but none of these characteristics that are so important for our understanding of the technique of Islamic bookbinding are found in the standard reference books. As the secondary literature analysis in Part Three will show, a framework to actually locate and date bindings is lacking as yet. In some cases, there is a more or less limited idea of the origin of techniques used, based on findings that occurred during conservation or cataloguing projects; this sort of empirical understanding is important, but needs to be verified. A structured research specifically designed to examine physical aspects in relation to their origin has not yet been undertaken. It is hoped that the present research will fill part of that gap, and that it will provide at least some of the building blocks for the codicological framework. It will shed light on the developments in the manuscript production and diffusion of the techniques used, which are of interest to scholars in the field of codicology, provenance research, manuscript trade or the manufacturing of Islamic manuscripts in general. The results can be further used for the examination of manuscripts elsewhere, preserved in other collections, thereby enlarging the framework.

This research is also relevant for conservators working with Islamic manuscripts. It may help conservators trained in the Western tradition to step out of their usual reference frame (which is that of the history of Western bookbinding techniques), while conservators from an Islamic cultural background may be stimulated to recognise the distinctive aspects of the objects they are so familiar with. Regardless of the present location of the manuscripts, conservators need a sound knowledge of the manner in which the books were produced. Understanding of, and respect for, the manuscript's physical form is essential to ensure accurate documentation and a well-considered intervention treatment, the purpose of which should always be to preserve all information a manuscript has to offer.

The anatomy of the Islamic codex

The assessment involved the close observation of over a thousand original sewing structures and bindings, and provided information on Islamic bookbinding techniques and materials used during seven centuries and throughout the Islamic world. This generated many aspects of this manuscript culture, hitherto unknown or at least unreported. It brought to light a striking number of different constructions and characteristic features. For the first time, all these varieties have been grouped and described; representative specimens were photographed. For certain aspects such as sewing structures, drawings were added, since a simple line drawing helps to understand the sometimes not so photogenic sewing systems. All these particularities and differences have converged into a substantial section of the present

study, Part Two, which in itself bears witness of the richness of the Islamic bookbinding tradition. The features have been organised according to the regular sequence of binding operations. This was not only the most natural way of presenting the methods and characteristics, it will also promote the understanding of the structure of the book for those readers who lack the technical background. Additionally, this systematic presentation facilitates easy reference for those readers who want to compare the technical descriptions as presented in the literature analysis, Part Three, with the images of the structural components in Part Two.

Comparative study of the literature

History has left us five historic treatises on bookbinding in the Islamic world, and these are analysed first, before exploring the secondary literature on materiality and structure. Although the historic sources are well known among scholars working with Islamic manuscripts, a detailed comparison has never been made. My perspective as a craftsperson, which involved the testing of technical possibilities and practical work procedures, is also a novel approach.

The secondary literature is not a coherent group of publications. Very few books actually deal with the making of Islamic manuscripts as a composite artefact; often the structure is dealt with in the margin of another topic. Therefore, these secondary sources are not discussed chronologically, like the historic treatises. They are grouped according to their scope. Starting with general reference works so as to outline the broadly accepted characterisation of the Islamic book, a prominent place is given to the fundamental studies in Islamic bookmaking. The basis was laid by Gulnar Bosch et al. (1981).[3] Further learning is presented in two outstanding works on Islamic codicology, by François Déroche (2000) and Adam Gacek (2009).[4] These detailed studies are augmented by smaller contributions, which are often subchapters in studies with a different focus. They are arranged chronologically, with a few exceptions, for example to group the output of a single author (as in the case with Gacek), or when the importance of a particular publication required closer attention.

Some interesting details can be distilled from observations recorded by conservation specialists. As such information only became available in the last decades of the twentieth century, and because a development is noticeable in the approach of conservators, these contributions are arranged in pre-twenty-first-century and twenty-first-century material.

The way Islamic manuscripts as book structures or artefacts are generally perceived, however, is perhaps best represented by the cursory sentences on the making or characterisation of Islamic manuscript structures as found in several reference works or in the subchapters of books dealing with stylistic aspects of Islamic book design. It appears that *the Islamic manuscript* is often misrepresented or dismissed as a beautifully designed but weak object, its composition merely a case structure that does not really suffice as a protective and supportive cover. This general assumption is all the more interesting, since it does neither corroborate the technical details provided by the historical treatises, nor the results of thorough examination of many original manuscript structures. How widespread this perception is also becomes clear from the approach and attitude of conservation specialists. While the reasons for the misconception are explored in Part Two (on the anatomy of the Islamic manuscript) the last paragraphs in the literature analysis illustrate its detrimental consequences: reports from Western conservators clearly show how often they feel inclined to 'improve' the structure of Islamic bindings, thereby turning them into hybrid objects which no longer reflect the approach of their original manufacturers.

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[3] G.K. Bosch, J. Carswell, and G. Petherbridge, *Islamic bindings and bookmaking* (1981).

[4] F. Déroche, *Manuel de codicologie des manuscrits en écriture arabe* (2000); English translation *Islamic codicology: an introduction to the study of manuscripts in Arabic script* (2006); A. Gacek, *Arabic manuscripts. A vademecum for readers* (2009).

Surveying the collections

Examining the physical aspects of many bindings is a time-consuming task, and undertaking a study such as the present one requires a well-considered but at the same time pragmatic approach. The actual survey forms the nucleus of the study, and decisions made with regard to the inclusion or exclusion of binding elements therefore resonate throughout the results. As a consequence, one could be tempted to include as many elements as one can, in as much detail as possible, lest the omission of certain particulars be regretted later on. However, such an approach would be a pitfall that slackens the research considerably. On the other hand, pruning the survey too much would result in loose facts and an insufficient basis to establish relations between the different composite parts or methods. Compromising between too pragmatic and too careful, it was decided to exclude certain details of binding characteristics and a fair number of textblock elements in the present study. For example, the exact thickness of the boards was not measured, nor did I record the lay-out of the text-panel or the colour palette applied with each manuscript. An account for these decisions, as well as an explanation of the database, which was designed for the purpose of the survey, are given in Part Four, preceding the quantitative results of the assessment.

Whereas the results of the physical assessment of the manuscripts generated quantifiable data concerning predominant methods and materials, they also pointed out less frequently used techniques. To increase the value of these findings, they were further qualified by linking them to the available data on provenance, date and place of origin, while at the same time the manuscripts with replacement sewings were deselected. The outcome of this diachronic approach is found in Part Five. Bearing in mind the restrictions posed by the formation and focus of the Leiden Oriental collections, these results can only be a starting point for classifying Islamic binding techniques. Nevertheless, certain lines of development and trends came to light, pointing out avenues of interest for further study, which will be addressed in the last, recapitulating chapter, Part Six.

Terminology

In this study, the term *manuscript* refers to a codex; other, unbound manuscript materials such as letters or archival papers fall outside the scope of the present study. With the term manuscript I also denote a single physical entity, a volume. The item can easily consist of two or more texts, and in fact it often does. For the purpose of this study it would, however, complicate matters if such composite volumes were not referred to as one manuscript.

The bibliographical data is largely based on Jan Just Witkam's *Inventory* (2006-2007), and the catalogue of Turkish manuscripts by Jan Schmidt.[5] All dates are according to the Common Era (CE) calendar.

A codex is a complex artefact, and in order to describe its physical details, the use of terminology is indispensable. The technique of Islamic bookbindings warrants its own vocabulary. Indeed, Islamic manuscript structures and bindings have their own characteristics, unknown in books made in other cultures. In addition, some terms used to describe Western bindings proved to be inappropriate for Islamic bindings. Furthermore, even for relatively well-informed manuscript scholars, the differences in nuances between certain terms may be unexpectedly detailed, yet crucial for a good understanding of the functionality or composition of the objects described. For easy reference, a glossary is found in Appendix I.

[5] J.J. Witkam, *Inventory of the Oriental manuscripts in Leiden University Library (* 2006-2007). http://www.islamicmanuscripts.info/inventories/leiden/index.html (accessed January-August 2013); J. Schmidt, *Catalogue of Turkish manuscripts in the library of Leiden University and other collections in the Netherlands*, volumes 1, 2 and 3 (2000-2002-2006).

PART ONE MATERIALITY MATTERS
A detailed sketch of the current state of knowledge and outline of the research

1 The information value of binding structures

1.1 *General observations*

Although in general a binding mainly serves to protect the manuscript pages from handling, bad storage and intensive use, its design and manufacture can provide important information about ownership, historic circumstances or use.[1] In several fields of scholarship the relation between the content and the binding may be an issue, and the materiality of the book offers directions that helps us understand that relationship. For example, collectors who choose to have their books re-bound according to fashionable standards or had their coat of arms gold-tooled on the covers of an existing binding, left a distinct mark on the book that may prove valuable for provenance research. Even in the case of a rebinding often traces can be found that will hint at the former – original – binding. In the fold of the gatherings tiny holes may reveal the former sewing stations, and the amount, shape or position of such holes can provide clues as to what sort of sewing structure was applied originally and whether sewing supports were used or not. Other traces can be found in the outer textblock leaves. Even when the former covers are gone, indentations and sometimes discolouration of the outer pages caused by the relatively bulky mass of once existent fastenings also point at the materials of the original covers. Where Western bindings are concerned such fastenings would have been metallic clasps – usually on wooden boards – or leather or cloth straps, more often found on pasteboard. In the case of Islamic bindings the traditional 'fastening' is a pentagonal shaped envelope flap which is attached to a fore-edge flap, made as an extension of the back board. When the book is closed the envelope flap lays underneath the front cover, leaving some empty space along the edges of its front edge where the paper is left vulnerable to ingress by dust and insects, causing very specific deterioration. Such hints, together with slight discoloration caused by the leather turn-ins along the flap's edges, may make it possible to retrace the shape of a flap that is no longer there.

To understand how a book was bound and what materials were used may be important for several reasons. Apart from craftsmanship, tradition, personal preferences and aesthetics, economics will always have been an important factor of influence in book production. Thus the choice for more expensive materials or cheaper or more readily available alternatives can provide clues to the circumstances or wishes of either the owner or the craftsman. Even when the binder was a moderately skilled craftsman who did not aspire to produce highly elaborate bindings with costly materials, or rather precisely because of that, many bindings carry a significant amount of information visible to those who know how to look for certain characteristics and details. Thus the history of a specific item may be deduced or information retrieved about former ownership. On a larger scale, insight into the development of bookbinding in a certain tradition or region may shed light on the dissemination and transition of techniques and the mobility of peoples.

Paradoxically, the very function of the binding renders it susceptible to poor handling, unfavourable storage conditions and improper use. Extensive damage or

[1] At least until the eighteenth century it was customary in the Western world that, apart from categories such as almanacs and specific publications such as large atlases, textblocks were traded unbound. The gatherings were sold either unsewn or a sewing structure was provided to prevent the book from becoming disarrayed during the retail process. A cover was provided once the book was sold, when the buyer commissioned a binding according to his taste and budget. See N. Pickwoad, 'Onward and downward' (1994), pp. 61-68. Thus bindings reflect the intention of these first owners, either to impress with their assets and to display their wealth or status, or to provide protection for the content. The sewing structure may provide further clues as to the trade and dissemination of texts.

deterioration of the binding materials may have inclined someone at a certain point in time to repair or even replace the original binding, and possibly also the sewing structure. Of course, through such action the new binding becomes part of the manuscript's history, but at the same time possibly important information contained within the former binding is lost forever. Without written documentation it may remain unknown if such a particular item was rebound because of severe damages that would reflect intensive use or a calamity caused by water or fire, or if, indeed, a new binding was provided due to the esthetical wishes or whims of a certain owner in a particular time. Thus, for the sake of the information a heavily repaired binding may carry, even a shaggy, damaged book can be much preferred to a clean rebinding. Any textblock and its binding are always somehow related, even when they seem mismatched or from different worlds. The crux is to comprehend the connection between a bookbinding and the manuscript it covers.

1.2 *Recent developments in Western book history*

Most scholars in the field of codicology and philology are not binding experts. For want of a profound understanding of binding techniques and knowledge of the availability, properties or usability of certain materials, they mainly need to rely on clues provided by stylistic and art-historical elements in order to locate bindings in a certain period or geographical area. Of course such decorative elements can be informative and the qualification of a binding as either luxurious, or plain and simple, may be indicative as to former ownership and use of a specific item. However, as already sketched above, further information can be retrieved from the manuscript's construction and binding materials. When book conservation as a profession matured in the last quarter of the twentieth century, it appeared that conservation specialists could provide essential information on this aspect of the binding, as they get to see the most intimate parts of the book's structure when it lays open on the work bench in front of them. Furthermore, conservators already developed the discipline to record what they encountered, often in text and image, since conservation treatments are preceded by the making of condition reports. However, the facts and details recorded for conservation purposes did not (and still do not) always satisfy the needs of codicologists; not every book requires an exhaustive report and a conservator will focus on the damage and the object's condition problems when he needs to prioritise. So to increase the output of specialist knowledge by conservators and to benefit more efficiently from their opportunities to examine the materiality of the books they treat, it was essential that conservators themselves realised the broader significance of their documentation.[2] It seems that both parties have started to realise that, although the degree of complexity will differ from case to case, specialist input from various fields may be necessary to interpret the several and various aspects of the material data. In order to build a more comprehensive codicological framework, a joint effort is necessary.

In the field of Western book research this process took place in the past few decades, particularly from the 1980s onward.[3] It caused the materiality of the book as a subject of study

[2] It was not until the 1980s that writing condition reports and treatment documentation became a generally accepted and also expected thing to do. Both private commissioners and employers did not naturally value such treatment records nor did they always consent to pay for the time needed to assemble them. The need for recording the object's condition prior to treatment and to document treatment decisions grew while the profession developed. Initially the documentation served to support the daily practice of conservators themselves, while the value of the reports for other specialists regarding the state of the object was of minor importance. To more fully accommodate and exploit this 'secondary use' and improve access to conservation reports, the set-up of many documentation systems still leaves room for improvement.

[3] Concerted action is marked by symposia where both bibliographers and conservators-restorers participated, for example *The conservation of library and archive materials and the graphic arts*, held in Cambridge in 1980; see M. Foot, 'The binding historian and the book conservator' (1984), p. 77.

to gain more attention and to develop accordingly. But long before the awareness of the importance of binding structures evolved, other physical aspects of the Western book were studied. Historical paper research, starting with the study of watermarks, has been carried out since the beginning of the last century.[4] Although introduced more than hundred years after the first occurrence of paper in Europe around 1150, the use of watermarks was embraced quickly and very generally as a means to distinguish the products of different paper-makers.[5] Along with mapping out different types of watermarks, paper research involves the study of the visible imprints of paper moulds and descriptions of the paper itself. These studies provide resources for determining the history of individual pieces of paper produced in Europe primarily during the Middle Ages and the early modern period, as used for books, archival documents, or prints. Even though an exact match of a certain paper with one in the databanks will be rare, quite accurate comparisons can be made. Needless to say, the possibility to classify, date and locate the paper of textblocks with the use of this discipline profoundly added to the tools of codicologists, cataloguers and bibliographers.

Other specialists have examined the design and styles of the separate tools used to stamp leather or parchment bindings in order to classify bookbindings.[6] Although this subject is not as yet exhaustively researched, the knowledge generated does support codicological studies to a certain extent. One has to realise, however, that only a relatively small percentage of all books from the hand-made period were distinctively decorated or tooled with stamps that are identifiable and attributable to a certain bindery. Therefore the study of bookbinding design as a branch of art-history is a rather inefficient means to accurately date and locate books in general, since the majority of books were more plainly tooled and lack distinctive stylistic features. The study of book structures and seemingly small manufacturing details, however, offers a much richer gamut of information, since every book – from the most modest or clumsiest to the highly elaborate luxurious bound textblock – will provide physical characteristics and binding elements that are distinctive and gradable.

The examination of the materiality of the book as a separate discipline is now also referred to as *book archaeology*. For the Western book, studies go back at least to the early1980s, the period in which the interchange between book historians and conservators intensified. Mirjam Foot presented a paper entitled 'the binding historian and the book conservator' to the Institute of Paper Conservation in January 1982.[7] In the edited and somewhat expanded publication of that talk she stipulated the necessity for the two professionals in the title to exchange knowledge and discuss their views (for the benefit of the study of the physical book). Foot elaborated on the subject of the importance of the

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International symposia of interest to both conservators and curators took place in the UK in 1982 (Institute of Paper Conservation) and The Hague in 1983 (*5. Internationalen Graphischen Restauratorentag*, IADA). Cooperation is also illustrated by publications like L. M. Gimbrère and P.F.J. Obbema, 'Restaurator und Wissenschaftler' (1985), pp. 52-62; and H. Bansa, 'Die Protokollführung in der Buchrestaurierung. Ein Mittel der Zusammenarbeit zwischen Buchrestaurator und Codicologen' (1988), pp. 118-125.

[4] C.M. Briquet was the first to undertake the examination of watermarked paper; he seriously started collecting watermarks in the early twentieth century. His *Opuscula* (1955) and *Les filigranes: dictionnaire historique des marques du papier dès leur apparition vers 1282 jusqu'en 1600* (1907) are standard reference works. Another landmark publication is W.A. Churchil's *Watermarks in paper in Holland, England, France, etc., in the XVII and XVIII centuries and their interconnection* (1935). Recent developments, illustrating the enduring relevance of this type of research, are databanks on the web, such as http://www.memoryofpaper.eu:8080/BernsteinPortal/appl_start.disp (accessed 16-05-2014); http://watermark.kb.nl/ (accessed 16-05-2014).

[5] D. Hunter, *Papermaking* (1978, unabridged reprint of the second edition of 1947), pp. 260-261.

[6] Early examples are E.P. Goldschmidt, *Gothic and Renaissance bookbindings* (1928), and G.D. Hobson, *Blind stamped panels in the English book-trade*, ca. 1485-1555 (1944). One of the most recent contributions is by J. Storm van Leeuwen, *Dutch decorated bookbinding in the eighteenth century* (2006).

[7] M. Foot, 29 January 1982, published in *The Paper Conservator*, VIII (1984), pp. 77-83.

physicality of the book with the publication of her collected papers *Studies in the history of bookbinding* and *The history of bookbinding as a mirror of society*.[8]

Another acknowledged authority on the subject is Nicholas Pickwoad. He has been instrumental in the propagation of the idea that, apart from a book's textual content, valuable information can be provided by details of its construction and the materials with which it is bound. From this follows that, since materials and structure of the book – text leaves and binding – are inseparable components and unique for every individual book, the preservation of only the text is not equivalent to conservation.[9] Pickwoad's publications are directed to both collection keepers and specialists in the conservation and preservation field, as are his lecture courses on the subject. Another advocate for the book as an artefact is David Pearson, who lectured and published on aspects of book history, recently emphasising on the importance of materiality.[10] The significance of material characteristics is now more widely recognised, as is shown by two events in 2009: a conference on the topic organised by the International Federation of Library Associations[11], and the installation of the BookNET Research Cluster, a network for the technological study of the book and manuscript as artefacts.[12]

The study of the materiality of books obtained practical form when Janos Szirmai set a standard in the examination and description of the physical characteristics of books with *The archaeology of medieval bookbinding*.[13] He emphasised once more the importance of being aware that the book's physical structure is vital, both for its function and for the information it contains. Material characteristics are often the only means of verifying how these books were made, and therefore this evidence, preserved within books themselves, needs to be safeguarded. His message and the weight of the implicit responsibility was felt clearly, and as a consequence many conservators and curators now observe books in a different way, not solely as text carriers, but as information carriers in a much broader sense.

1.3 *Book archaeology and digitisation*

The development of book archaeology coincided with another major influence that changed the perception of books: digitisation. For the survival of *the book* in its physical form in general, the effect of accessible, increasing digital collections is probably crucial, since that development makes us aware of 'the other value' that an original book offers. Digitisation as a means for dissemination of the intellectual content is a blessing; many texts have been made available for countless more users over the globe at any time of day. This improvement in and of itself is not under discussion. However, in many libraries and similar institutions the future

[8] M. Foot, *Studies in the history of bookbinding* (1993) and *The history of bookbinding as a mirror of society* (1998).

[9] This specific statement is highly important because it is not solely directed to conservation practitioners, but to their commissioners and employing institutions as well. It requires commitment from all those involved and responsible to make the effort and, quite literally, invest in the conservation of books; N. Pickwoad, 'The development of the concept of artefactual conservation' (1997), p. 86.

[10] D. Pearson, *Books as history: the importance of books beyond their texts* (2008).

[11] The proceedings of the conference *Early printed books as material objects: principles, problems, perspectives* (München, 19-21 August, 2009) were published in the series IFLA publications, no. 149:
Wagner, Bettina, and Marcia Reed (eds.), *Early printed books as material objects* (2010).

[12] This Research Cluster is one of thirteen Clusters funded by the AHRC/EPSRC Science and Heritage programme, set up in 2009 to explore the potential for research into historical documents as physical artefacts and aiming to increase the valuation of the physical nature of the book (Arts & Humanities Research Councel/Engineering and Physical Science Research Council); see http://www.heritagescience.ac.uk/Research_Projects/projects/Cluster/Pollard (accessed 16-05-2014). The Cluster's activities resulted in a publication in 2011: S. Neate et al. (eds), *The technological study of books and manuscripts as artefacts. Research questions and analytical solutions* (2011).

[13] J.A. Szirmai, *The archaeology of medieval bookbinding* (1999).

of the 'paper book' is a matter of contention. Questions have risen like: "Why should books be kept and money spent on their shelving, and preservation and maintaining accessibility to them when digital formats are available?" The growing awareness that the physical book is not just the same as the digital surrogate, but has additional value as an artefact and contains more information than can be represented in the digitised images, is extremely important for this discussion. It may and ultimately should change policy-making on a high level and thus have an impact on the preservation of collections as a whole.

On a smaller level the acceptance of the artefactual function of the book affects the decision-making for individual objects. Indeed, when printed works or manuscripts are digitally available the need for physical consultation will diminish, but not vanish. What is more, *when* the original is requested there will often be a special need to examine the object itself, its physical form, which implies that the researcher wants the object in its most untouched state. The user wants to verify something the digital image cannot supply, which means that he will be grateful when the physical form of the book is undisturbed. When larger parts of our written and printed heritage will have undergone this transfer in function, there will be repercussions for conservation strategies as we know them. Moderate damage in an otherwise stable object does not pose a problem for the examination of the materials and the structure it bears; this new use of the book asks for commensurate preservation decisions. Indeed, for this type of research any interventive treatment might change the accessibility of the original materiality. Consequently, conservation treatment will have to be reconsidered as a means to preserve books. What purpose does it serve? Is the aim to guarantee accessibility and use, will the book continue to be used frequently, or will the function of the book as a physical object change towards that of a museum object?[14]

Although developments are not yet so advanced that these questions are actually pressing upon conservation specialists today, it is clear that conservators have to anticipate these changes. This may already result in alterations in daily practice; the involvement of conservators in analytical assessments of book structures certainly seems to be growing. As Mirjam Foot phrased it: "Conservators and binders who have studied medieval and post-medieval book structures [...] have made an invaluable contribution to the knowledge of librarians and binding historians. Their daily practical work increases their experience in a way that leaves 'theoretical' historians gasping with envy. Any binder, any restorer, any conservator has one tremendous advantage over any librarian or book historian".[15] The responsibility of conservators to safeguard these objects, preserve their integrity and to carefully and accurately record what they find, is evident. The shift in approach towards the book as a physical object may prove vital for the preservation of our written and early printed heritage.

1.4 *Preservation issues*

As the attention for the physical book increased over the last couple of decades, Western book conservators became progressively aware of their role in extending the lifespan of a piece of cultural heritage and knowing what to preserve and record. The general treatment objective is to protect the book against further damage, while altering it as little as necessary. The inclination to restore the object 'back' to its original condition has been abandoned.[16] Accordingly, methods of treatment have changed with this shift in attitude. Book conservators needed a wider palette of techniques, varying from different options for minimal interference to more thorough yet ethical treatments. A good conservator masters a

[14] These questions are further discussed by N. Pickwoad, 'Library or museum?' (2011).
[15] Quoted from M. Foot, 'Preserving books and their history' (1987), in the collection of essays *Preserving the past* (1993), p. 434.
[16] Many reports and articles on conservation treatments bear witness to this development; the change in attitude is summarised in K. Scheper, 'Considering book conservation. Developments in materials, techniques, and approaches' (2010), pp. 32-33.

broad repertoire of techniques and makes choices depending on the value of the book and its place and function within a collection. But in fact, these changes mainly apply to Western collections and Western conservators. Now why is that?

2 Present situation of the book archaeology of Islamic manuscripts

2.1 *Disadvantages in developments*

To answer the question why the recent changes in the book preservation ethics and techniques of book conservation appear to be confined to the West, we have to consider the situation in the field of Islamic book studies. One of the explanations for the differences in development is simply that the knowledge about the materiality of Western books is much more advanced than the knowledge about the materiality of other book cultures. Since the recognition of the value of the physical aspects of books generated in the Western scholarly world, the Western written and printed heritage was naturally the point of focus, not only because of the direct connection to Western cultural history, but also because these collections exceed the amount of Oriental collections (in the West) by far. As the secondary literature analysis in Part Three will show, most studies in the physical Islamic book are carried out by Western researchers, and notwithstanding their best intentions, there is a tendency to subsume the history of Islamic manuscripts within the scope of book history and production as they know it, which is a Western reference frame.[17] Although these contributions to the field of Islamic book scholarship are important, additional studies from scholars native to the field would be very welcome. The situation in the Islamic world however, has not stimulated circumstances for comparable research, and developments in conservation and preservation are in a less advanced phase. Political turmoil and poor economic circumstances over the last sixty years (the period in which the study of the history of bookbinding in the Western world expanded) impeded such developments and thus there is no tradition in conservation comparable to the Western one.

2.2 *The position of book archaeology and the consequences for preservation*

The fact that there is a vast amount of material to preserve while climatic conditions in large parts of the Islamic world are not ideal for collection keeping, certainly influences the general view on stewardship. High temperatures accelerate degradation processes and stimulate biological activity, while high relative humidity (one of the problems in Southeast Asia) increases the growth of mould and degradation processes like iron-gall ink-damage. Insect damage is the commonest problem, next to damage caused by intensive use. Preservation programmes therefore require a broad approach, and need to deal with climate control, the improvement of storage conditions in general, through boxing or similar protective measures, as well as active conservation treatments. Additionally, the way to handle the items should be an integral part of preservation measures, which includes the use of reading supports and cradles for exhibition purposes. The success of any preservation programme depends on this complex of factors; to disinfect and repair manuscripts only to return them to inappropriate storage rooms will, ultimately, be useless.

Considering the scope of preservation-related actions and investments needed to safeguard the manuscript heritage in the Islamic world, it is not surprising that choices have to be made and approaches differ from place to place. Choices are dependent on the available level of knowledge, access to materials, technical equipment and tools, and naturally financial means. The perception of manuscripts, however, is decisive for the decision-making. How are

[17] Some of the literature discussed in Part Three illustrates that the Western point of reference does influence the perception of non-Western book structures. Instead of judging the structures on their own merits, often comparisons are made in which Western book-structures are the benchmark for qualifying the 'other' characteristics.

they valued? Are manuscripts carriers of text, or are they transmitters of more than that? And if they are valued as artefacts, as representatives of a culture and material witnesses of a tradition, is it feasible to preserve them as such? Given the large number of manuscripts in need of treatment or better storage conditions, the favoured approach seems to be mass treatment, which means that the interest of the individual manuscript is sacrificed, or at least at risk. To make conservation decisions is to operate in the area of tension between access and preservation. It is therefore understandable, on the one hand, that priority is given to improve accessibility and to focus on content or to facilitate digitisation. Nevertheless, it is important to stress the significance of the additional information manuscripts as objects have to offer, and to realise what information will be lost for ever when certain decisions are made.

So far in this respect developments in the Islamic world evolve unevenly. In some institutions the approach is to preserve both content and the artefact, and efforts are made to set up training programmes for conservators.[18] There are also examples of conservation programmes where the primary aim is to preserve the textual content, not the manuscript as an object. This may result in rather drastic intervention, in which many manuscripts are dismantled in order to be able to wash and leaf-cast the folios. Such paper treatments interfere with the paper structure, the pages' format and the chemical substances of the paper fibres and pigments (apart from putting them at risk of dispersing), thus prohibiting future analysis. In the procedure many original binding structures are disposed of, often without proper documentation of the manuscript's condition and structure prior to the intervention.[19] To protect the textblocks, after the paper treatments are carried out they are resewn and rebound in what could be called a standard library binding with features of an Islamic binding like the envelope flap.[20] But, since the Islamic bookbinding tradition has eroded throughout large parts of the Islamic world, new bindings are often hybrid structures which also include modern Western binding influences.[21] Such treatments alter the

[18] Far from intending to give an exhaustive overview, recent examples are conservation projects in the Mevlana museum (Konya), the National Library in Ankara, and a large preservation programme in the National Library in Cairo. Such projects can be combined with training programmes, like the 'cultural assistance project' in Kairouan which started in 1985. See for details of that education programme: R. Ketzer, 'A conservation project in Kairouan' (1991). Much more recently, a conservation and training project was set up in Mauretania, see: A. Giacomello et al., *Sauvegarde des bibliothèques du désert: matériaux didactiques* (2009). Over the past few years, education courses in several disciplines including book and paper were initiated in Erbil (Iraq), by the Iraqi Institute for the Conservation of Antiquities and Heritage. The consequences of the scarcity of regular conservation training programmes are addressed by P. Ngulube, 'The Achilles heel of the preservation of documentary materials in Sub Saharan Africa: knowledge and skills or funding?' (2007), pp. 159-168.

[19] Several restoration departments in different centres approach conservation of printed works and manuscripts in this manner and the method of leaf-casting and laminating is, unfortunately, an on-going process.

[20] Typical Islamic binding features will be explained briefly in paragraph 4.2 below and more thoroughly in Part Two.

[21] Products of many binders today attest to this practice: covers often extend the edges of the textblock and the spine may be rounded, doublures frequently have been replaced by Western style endleaves. J. Pedersen already mentioned the decline of the profession in 1946, translated as: "in our day bookbinding has gone the way of all other handycraft arts of Islam; mere pathetic remnants of its former glory have survived". J. Pedersen, *The Arabic book* (1984), p. 112. See also H. E. Wulff, *The traditional crafts of Persia* (1966), pp. 236-238. Wulff's account of the bookbinding practice describes the situation of the 1930s. The process involved the sewing on cords or bands at a bookbinding frame, the application of animal glue on the spine, the application of the endbands with glue (instead of sewing), and finally the making of the case and its subsequent application. While Wulff refers to the historic treatises of Ibn Badis and al-Sufyani, he also states that "the craft's present situation in Persia shows that it has not changed much since the Middle ages". However, what he describes clearly is not the traditional method of bookbinding. In fact, it reflects the change in bookbinding due to European influence.

manuscripts thoroughly and forever shut the door to a material assessment of the 'restored' items. A variety of such destructive measures is a reality in several places in the Islamic world. This situation will not improve if the awareness of the book's physical value is not realised by the professionals involved.[22]

The absence of thorough knowledge about the particulars of the physical Islamic book structure will have devastating implications for their preservation as physical objects and the potential to study the material aspects of these artefacts. This is true for both the manuscripts kept in Western institutions and for manuscripts kept in libraries or private collections or still circulating in the Islamic world. Although Islamic manuscripts in the care of Western conservators will be treated with consideration and according to ethical standards, the lack of essential specific knowledge about structure or other physical aspects may cause loss of information nonetheless. Characteristics are falsely interpreted quite easily, especially since the damage may obscure a clear view of the original construction, and some treatment methods based on Western binding structures interfere with the Islamic binding's features. Moreover, it appears that Western conservators tend to disqualify the original Islamic manuscript structure as inadequate and weak. Therefore the structure is often changed, incorporating cloth in the sewing structure or adding sewing positions. The minimal intervention techniques, as favoured lately for the Western written and printed heritage, do not always seem to apply to Islamic manuscripts. Instead, there is a tendency to 'improve' these objects.[23]

In the Islamic world, those involved in the care for manuscripts will probably quite naturally accept the material aspects of the manuscripts without being explicitly observant to the characteristics and particularities, and, missing a deeper understanding of the importance of those physical characteristics, the preservation of these manuscripts including their bindings and structural characteristics is not guaranteed. To minimise the risk of loss of information one needs to be perceptive and have a thorough understanding of the physical object. Indeed, when the value of the distinctive differences in individual bookmaking is not recognised there may seem to be little reason to spend much time, effort and money on the preservation of the items. Damaged bindings will then be much more prone to being discarded and replaced. Even when they are spared, the selected repair techniques are likely to serve the purpose of accessibility and will not necessarily respect the characteristic elements of the book's structure and binding. In short, the loss of information is bound to be massive.

3 Obstacles in the study of Islamic book making

3.1 *Decoration*

Islamic manuscripts have been studied for hundreds of years by orientalists; by comparison it is only very recently acknowledged that a better understanding of the physical manuscript may help to relate other aspects of the history of the book and its production, distribution and consumption. It follows that the need to preserve these manuscripts as the artefacts that

[22] Another issue is that most of the destructive restoration treatments originally developed over thirty years ago and have lost long since their significance or urgency, which is especially the case for 'mass treatment methods' such as paper de-acidification and disinfection of manuscripts. Preferable alternatives are now available, and issues as paper quality and mould or insect infestation have been better researched which diminished the immediate threat of certain problems and for example proved the ineffectiveness of preventive disinfection. See for example: Chr. Meier, K. Petersen, 'Behandlungsmethoden von Schimmelpilzen auf Archiv- und Bibliotheksgut', in *Schimmelpilze auf Papier. Ein Handbuch für Restauratoren* (2006), pp. 118-163; P. Calivini and A. Gorassini, 'On the rate of paper degradation: lessons from the past' (2006), pp. 275-290.

[23] This approach is discussed in Part Three, paragraph 6.1-6.3.

they are, was not realised before. It is now gradually becoming more widely accepted that specialist knowledge is necessary for the preservation of these manuscripts. Still, although the subject is receiving more attention, it is just surfacing; in-depth studies are lacking.

Traditionally, studies of the bindings focussed on aesthetical and art-historical aspects and as a consequence, these studies were directed exclusively at the elaborately tooled and luxurious bindings. Although over the centuries geographical borders changed and political instability caused transfer of peoples, it has been possible to place certain binding designs in an art-historical or cultural context.[24] Bindings have been categorised according to decorative patterns and styles, or techniques. Quite often these categories are related to periods of the reign of specific peoples, which also involves a certain geographical region, like the Mamluk period (Mamluk binding decoration shows strong geometrical designs, finely tooled using gold and sometimes the use of blue pigments), or the Safavid period (two techniques are associated with this culture; leather filigree or fretwork, and lacquered covers).

Much more detailed research has been carried out by Max Weisweiler, who classified the specific decorative schemes of the finely tooled bindings from the Mamluk period, also described as mediaeval Islamic bookbindings.[25] Weisweiler included a description of a great many tools, unfortunately without including their images. François Déroche elaborated on these principles, and initiated a classification for the panel stamps used from the early Ottoman times onwards.[26] Déroche is very much aware that more research is needed to be able to date and locate the use of certain stamps, motives or the decoration schemes as a whole, but he stipulates that already it is apparent that regional differences exist.[27]

Important as these studies are, it must also be understood that the decorative aspects are only partly functional as an indicator in the said codicological framework. Firstly, because a comparatively small part of the total number of bound manuscripts is extensively or sophisticatedly decorated in such a way that the decorative schemes allow for reliable dating or locating. Many of the luxurious bindings from the Ottoman period were produced in court workshops, and although book production in these workshops was leading with regard to aesthetic preferences and technical possibilities of decorative techniques in certain times, many more manuscripts were produced outside the courts and the majority of those were decorated more simply and sparingly. Thus, a large part of all manuscripts produced is disregarded in the art-historical studies. Also, since the court styles percolated through society, artisans were itinerant and tools for decoration had a rather wide circulation, even the more elaborate bindings made for the higher social class developed a certain uniformity. Moreover, the custom to frequently reuse old covers for other manuscripts obscures the potential for dating or locating manuscripts by their cover design.

The bulk of manuscripts were made in commercial workshops and by individual book craft practitioners. These manuscripts, created for mosques, *madrasas*, intellectuals and the upper-middle class, are interesting as a means to study other aspects of the book trade or the culture because of the interaction between binders, the exchange of techniques or transmission of methods, as well as the economic motives that must have played a part. It is not so easy to categorise many of these manuscripts, because, although splendid and luxurious books were made outside the court ateliers as well, the bindings were usually less distinctively decorated. The tooling may be more conservative or even very plain, using the

[24] See for an overview of these studies G. Bosch et al., *Islamic bindings and bookmaking* (1981), pp. 1-2, who summarise the contributions from Paul Adam (1890) to Max Weisweiler (1962). J. Pedersen, *The Arabic book* (1984) also gives an overview of the decorative aspects and its innovation, but because the English translation of the original (1946) was published after *Islamic bindings* it is not yet mentioned by Bosch et al.

[25] M. Weisweiler, *Der islamische Bucheinband des Mittelalters* (1962).

[26] F. Déroche, *Islamic codicology. An introduction to the study of manuscripts in Arabic script* (2006), pp. 300-309.

[27] Ibid., p. 300.

cheapest materials. Nevertheless, several traditions in styles and usage of materials are discernible, and techniques to construct these bindings may have varied from region to region, while being susceptible to change over time. And this is significant, because changes in the bookbinding tradition reflect changes and developments of techniques, the availability of materials and cultural expansion or exchange. A solid understanding of binding characteristics and variations in structures can therefore contribute to a better understanding of book production and trade as a whole, but in order to acquire that knowledge we must look further than the decorative aspects alone.

3.2 *Ink*

As manuscripts are composite objects, technical analysis of the different materials they are made with may shed light on their origin. Pigments, for example, may be indigenous to some places while they are rare in others. And although their use will mainly be dictated by availability and cost, combinations of pigments may be common in certain traditions, while other cultures use a different palette. When sufficient information on a large enough and representative sample of manuscripts can be found, such analysis may help to date and even locate the making of manuscripts. Recently several projects have been carried out, in which Raman-technology and microscopic analysis were used to examine the inks and pigments.[28] However, results of the research projects undertaken so far are too limited to draw even tentative conclusions. On the whole, chemical analysis of the writing media and examination of the paint layers is time-consuming, costly and requires high-tech equipment.[29] Also, only the more elaborately illuminated manuscripts offer possibly useful clues since modest and scholarly manuscripts are simply written with either a black ink or brownish black ink. Carbon-black ink was the most common writing substance throughout the larger part of the manuscript period and in most geographical regions, although in the first centuries of Islam iron gall ink appears to have been the medium preferred to write Qur'anic texts. In later times iron gall ink has also been used, but far less frequently. Moreover, scribes have used inks that were a combination of the two ink types. Red ink was regularly used too, but the identification of these pigments will not be particularly informative since the reds are obtained from a variety of widely available substances.[30] Examination of the paper, used as the writing support, appears to be a more useful material to assess.

3.3 *Paper*

Although parchment was used to produce manuscripts in the earliest centuries of Islam, shortly after paper was introduced in the Arab world in the eighth century it became the predominant writing material.[31] It is generally assumed that the paper substrate does not predate the writing of a manuscript by many years; that a scribe used much older stacks of paper supplies is possible but not probable.[32] Therefore, when the colophon provides a date or

[28] Results of two of these projects are published in the *Journal of Raman spectroscopy*: T.D. Chaplin et al., 'Raman spectroscopic analysis of selected astronomical and cartographic folios from the early 13th century Islamic "Book of Curiosities of the Sciences and Marvels for the Eyes"' (2006), pp. 865-877, and L. Burgio et al., 'Pigment analysis by Raman microscopy of the non-figurative illumination in 16th- to 18th-century Islamic manuscripts' (2008), pp. 1482-1493. See also T. Espejo Arias et al., 'A study about colourants in the Arabic Manuscript Collection of the Sacromonte Abbey, Granada, Spain. A new methodology for chemical analysis', (2008), 76-106.
[29] An overview of the current possibilities is provided by S. Neate et al. (eds.), *The technological study of books and manuscripts as artefacts* (2011).
[30] Common organic and mineral sources for red ink or dye are Brazil wood, cochineal, vermillion and minium.
[31] J. Bloom, *Paper before print* (2001), pp. 47, 106-108; P.F. Tschudin, *Grundzüge der Papiergeschichte* (2002), pp. 87-90.
[32] F. Déroche, *Islamic codicology* (2006), p. 50.

even a location, it also gives an indication for the origin of the paper, from which it follows that manuscripts written on similar paper may have been produced around the same time or place. Unfortunately, Arab paper is extremely difficult to date and locate, since it is not watermarked. Watermark research has been the axis of Western paper research, and the examination of watermarks in paper sheets within an undated manuscript often provides the necessary clues to date and localise its production. It became the habit of Western papermakers to use watermarks in their papermaking process quite soon after the introduction of papermaking in the south of Europe and they continued to do so thereafter. Other paper characteristics, such as the unevenness or proportions of the sieve, the number of chain lines and the transparency of the paper or the flocculence of the fibres have also been important to establish a paper's quality, but the watermarks are particularly useful to locate and date its production. The date of the paper production then marks the earliest possible date for the production of a particular printed work or manuscript in which the paper is found. However, in the lands where papermaking originated there was no tradition to mark the moulds with the aim to leave an identifying mark in the paper sheet; nor did such a practise develop subsequently in Islamic lands.[33] Consequently, the study of Far-Eastern and Middle-Eastern paper production needs to rely on other characteristics such as paper format, the fibres used and the visible imprints of mould characteristics such as the chain lines and laid lines.[34] With visual assessment alone this type of research is quite limited, and because more sophisticated research to identify papers, based on chemical and technical analysis, is both costly and not widely accessible, we must accept that the use of Islamic paper research for Islamic codicology will remain restricted for some time.

However, although Islamic paper does not provide straightforward clues for dating or locating manuscripts, many Islamic manuscripts are written on paper produced in Europe.[35] Since these papers are recognisable by their watermarks and mould structure, are these Western papers not then informative for codicologists? It is true that from the fourteenth century onwards watermarked paper made in Europe was used, first in the Maghreb and later also in the Ottoman Empire. But, since these papers were obviously imported from different regions in Europe it is difficult to determine what time passed between production of a particular paper in the West and its arrival in the Islamic world. They therefore provide uncertain clues to identify the origin of a written manuscript, but they do give a terminus post quem for the manuscript written on them. Additionally, study of these Western

[33] Both in Japan and China as well as in the Islamic world paper moulds were made of bamboo, oiled flax or grass reeds or similar vegetable fibres; these moulds were flexible and could not have contained a metal shape to produce the watermark image as did the rigid paper moulds in Europe. European papermakers used moulds made of copper or brass wire, onto which three-dimensional shapes were knotted so as to leave the watermark impression in the paper, to distinguish one papermill from another.

[34] D. Baker, 'Arab paper making', (1992), p. 31. See also H. Loveday, *Islamic paper. A study of the ancient craft* (2001); she suggests a protocol for paper classification in chapter five and summarises paper characteristics of Persian papers and Syro-Egyptian papers in chapter six.

[35] The Arabs introduced papermaking technology to South Europe in the eleventh century when they established papermills in Spain, and Islamic papers were imported in the Byzantine Empire as well as other areas in Europe. However, from the fourteenth century onwards the paper trade changed direction. First Italian, then French and other European papers were imported by the Islamic world, eventually causing a decline in the Islamic paper industry. G. Bosch et al., *Islamic bindings and bookmaking* (1981), pp. 32-33. See also F. Déroche, *Islamic codicology* (2006), p. 57; J. Bloom, *Paper before print* (2001), pp. 86 and 212; P.F. Tschudin, *Grundzüge der Papiergeschichte* (2002), p. 91. For the use of Western paper in Southeast Asia, see R. Jones, 'European and Asian papers in Malay manuscripts; a provisional assessment' (1993), 477-485.

watermarked papers shed light on trade routes and contacts between the two regions and thus provide interesting information in a different respect.[36]

3.4 *Textblock*

As a material informant, the manuscripts' sewing structure is the next important aspect. Some caution needs to be expressed as to the reliability of this part of the book as an indicator for codicologists, though; it is quite possible that gatherings were not immediately sewn after being written. Several factors may have influenced the amount of time that passed between the production of the text and the actual binding of the book. However, it can still be assumed that for most books the gatherings were bound relatively soon after they were written, given the cost of paper and writing and the wish to turn such a product into an useful object and protect it with a proper binding.

A second reservation should be made with regard to the authenticity of the encountered sewing. It is not always easy to establish if the present sewing is the original one; traces of other sewing stations can be hidden underneath the present thread or former holes may have been reused. Heavily trimmed margins, perhaps even slicing through text written in those margins, might hint at a rebinding at which time the textblock would have also been resewn. Other evidence may more clearly indicate a second or third sewing, such as paper repairs in the gathering fold underneath the present sewing thread or remnants of old thread. However, when it can be established that the sewing structure appears to be the original one *and* there are ways to date or locate the manuscript, be it by information retrieved in the colophon or elsewhere in the text, characteristics of the sewing structure may be used as building blocks in the framework of material aspects. Many such building elements are needed to produce a reliable framework in this way, but it can be done.

Thirdly there is the binding itself, which can be regarded as a container of many clues, though the trustworthiness of the indications it provides need to be explored with caution. This seems to be especially true for Islamic manuscripts, since the rebinding of damaged items was, and is, common practice and the reuse of old boards – whether or not adjusted to the size of the manuscript – is customary.[37] Therefore one has to be careful to demonstrate direct connections between provenance information and binding decoration or materials and techniques used. But, once the authenticity of a binding has been established every physical detail may play a part in the framework. On the other hand, even when examination shows that a binding is not the manuscript's original one, the information carried by the material aspects of that binding may still be valuable. They could reveal the period or location in which the manuscript was repaired or re-bound, signifying perhaps a transition in the specific history of the item.

4 Linking physical analysis, catalogue data and literature

4.1 *Brief outline of the primary and secondary literature*

In order to derive a typology from the autopsy of original manuscripts, it is useful, if not necessary, to compare the particulars found with descriptions in the historic sources on the

[36] As an example, the 'Centre Francais d'archéologie et de sciences sociales' initiated a project in Yemen in which one of the objectives was to survey the watermarks in private manuscript collections. See, A. Regourd, *Catalogue cumulé des bibliothèques de manuscrits de Zabid, fascicule I – Les papiers filigranés* – (2006).

[37] The manuscript culture in the Islamic world is exceptional since printing came into use only in the eighteenth century. As a consequence the manuscript book was the vehicle for transmitting knowledge for many more centuries than in the West, which not only explains the enormous number of manuscripts produced, but also their intensive use; there were no printed substitutes for these items. This accounts for the damage many manuscripts suffered, and it must also have pressed binders to reuse materials when possible.

making of Islamic manuscripts. In addition there is a need to see if more recent publications corroborate with the findings. The literary sources, both historic and modern, are examined in detail in Part Three. However, a short introduction to these sources is useful at this point to explain the set-up of the assessment and the aims of the research.

On the making of Islamic manuscripts, five historical sources in Arabic are known; they describe the techniques and materials used from the eleventh to the seventeenth century.[38] Apart from those, one historical source in Indo-Persian is known, albeit a relatively recent text from the early nineteenth century.[39]

The Arabic treatises are sufficiently detailed to help one understand general techniques for book production, however, the absence of a structured account prevents a thorough understanding of the process and all its details or variations. They could never have served as a manual for bookbinders. Nevertheless, the study of individual manuscripts during conservation treatments in the UBL has shown that Islamic bindings generally correspond to the historical descriptions. That is noteworthy since it points to an enormous consistency in the Islamic bookbinding tradition that covers a vast area (from the North African region to the Indonesian archipelago) and an extensive period of time (from the seventh century onwards).

As explained above, the first Western studies of book-historical aspects of Islamic manuscripts date from the late nineteenth century, and initially the material aspects were looked at from an art-historical perspective. Over the course of the twentieth century the scope of publications widened from aesthetics, design and art-historical features of bindings to the structure and the materials used to produce Islamic manuscripts. Martin Levey, Gulnar Bosch, Adam Gacek and François Déroche have made important contributions in this respect. The technical details on bookbinding provided by these scholars will be discussed in Part Three. In short, Levey and Gacek made the Arabic texts accessible in English; Bosch devoted a chapter to structure and techniques, departing from two of the primary sources, in a catalogue which accompanied an exhibition on Islamic manuscripts. Déroche wrote a general introduction to the codicology of Arabic and Islamic manuscripts, in which he also presented a subdivision for the outer form of the book in three categories. Thus the basis for the subject as a defined field of study was established. Furthermore, over the last few decades several publications on the preservation of Islamic manuscripts followed, providing a different angle to reflect on the structures and materials.[40]

From the more recent literature it appears that the Islamic binding is often perceived as a case-binding structure, meaning that the binding is prepared as a separate entity and

[38] Ibn Badis, 'Umdat al-kuttab wa-uddat dhawi al-albab', translated in M. Levey, *Mediaeval Arabic bookmaking and its relation to early chemistry and pharmacology* (1962), pp. 6-50; A. Gacek, 'Arabic bookmaking and terminology as portrayed by Bakr al-Ishbili in his 'Kītāb al-taysīr fī şinā'at al-tasfīr'' (1990-1991), pp. 106-113; A. Gacek, 'Ibn Abi Hamidah's didactic poem for bookbinders' (1992), pp. 41-58; A. Gacek, 'Instructions on the art of bookbinding attributed to the Rasulid ruler of Yemen al-Malik al-Muzaffar' (1997); al-Sufyani, *Art de la reliure et de la dorure*, ed. P. Ricard (Paris, 1925), translated in M. Levey, *Mediaeval Arabic bookmaking and its relation to early chemistry and pharmacology* (1962), pp. 51-55. Recently a previously unknown and even older treatise came to light with a title that suggested it covered bookbinding as well. However, it contains information on inks and preparation of the paper and some tools, but nothing on sewing and binding. See M. Zaki, 'Early Arabic bookmaking techniques as described by al-Razi in his recently rediscovered *Zinat al-Katabah*' (2011). As this treatise lacks any information whatsoever on bookbinding, it is not included in the current list. Although unknown treatises may lay hidden, waiting to be discovered, so far we have to make do with the five listed texts.

[39] *Resâle-ye jeld-sâzi* (1812), partly translated and explained in: Y. Porter, *Peinture et arts du livre. Essai sur la littérature technique indo-persane* (1992). As the text is such a late one it is not, in the current study, analysed in the first part of Part Three, together with the other historic sources. Instead, it is elaborated on in Part Three, paragraph 5.3, where Porter's study is discussed. This seems all the more logical as the text is only accessible through his interpretation which in some ways hampers its clarity.

[40] An overview of this literature is provided in Part Three.

only then applied to the textblock. However, during treatment and close examination of Islamic manuscripts in the UBL over the last ten years, it appeared that many of these manuscripts have rather different structures. In fact, the definition of a case-binding in many cases does not accord with the manuscripts examined, and the term seems inappropriate for most – if not all – Islamic manuscripts. The encountered structures are, however, consistent with the descriptions in the five historic sources. Consequently the intriguing question arises why the Islamic manuscript structure is currently falsely perceived as a case-binding structure. Moreover, instead of one archetypical construction several distinctive techniques can be distinguished and it may be assumed that certain methods or materials used do point to specific regions of production. Part Two deals with the different structures and provides details and illustrations.

4.2 *The predominant Islamic manuscript type*

Islamic manuscripts are quite easily recognised by their outer form; we usually think of a leather or partial leather binding with an envelope shaped flap extending from the back board. The boards are flush to the textblock, the gatherings are sewn without supports and the spine is flat. When the endbands have a chevron like pattern they are generally said to be typically Islamic.

In his *Islamic codicology*, a book that has become a standard for this field of research, François Déroche distinguishes three main categories of bindings.[41] The first is the 'binding-cum-case' or box-binding, which only occurs in the early stages of Islam (eighth to tenth centuries). Only a few examples have survived and this type appears to have been used exclusively for Qur'ans, and more specifically, for those made in the oblong format.[42] As this type belongs to the earliest bindings (the oldest examples date back to the eighth and ninth centuries) unfortunately only very little original material has survived, and merely fragments of bindings.[43] Only one historical source (Bakr al-Ishbili, d. 1231) indirectly refers to the box-binding, because it describes the possible usage of wooden boards for bookbinding, which is associated with the box-binding. This in itself is remarkable because it suggests that this type was still produced in the twelfth or thirteenth century, when this author was writing. Because of its rather isolated position in the Islamic bookbinding tradition and the fact that the box-binding is not present in the UBL Oriental collections, the type is not discussed in this thesis.

While the first category indicated by Déroche, the box-binding, is clearly a separate group, the second and third types are rather closely related. The second category, the one roughly sketched at the beginning of this section, is regarded as the archetypal Islamic book. The third type is similar in structure but lacks the fore-edge flap and envelope flap; however, it contains characteristics like the boards being flush with the textblock and the use of a link-stitch sewing without supports. Stylistic aspects of the bindings are not included in the typology of Déroche, so the basis for these three groups is confined to the basic binding elements; structural elements such as sewing and board attachment or the materials used are also excluded.

From material evidence we know that binding techniques belonging to the Type Two and Type Three have at least been used from the thirteenth century onwards. Written evidence, however, points at an earlier introduction of these types, for they are mentioned in the oldest historical treatise (Ibn Badis, d. 1065). It is worthwhile to have a closer look at the division between manuscripts with and without a fore-edge flap and envelope flap, the feature that separates Types Two and Three. Since the envelope flap is such a distinctive characteristic of Islamic style bindings it is an obvious binding element to record. But the

[41] F. Déroche, *Islamic codicology* (2006), pp. 256-262 and 286-290.
[42] A. Gacek, *Arabic manuscripts. A vademecum for readers* (2009), p. 24; in the course of the tenth century the codex format changed into a vertical format.
[43] M. di Bella, 'An attempt at a reconstruction of early Islamic bookbinding: the box binding' (2011), pp. 99-102.

absence of a fore-edge flap and envelope flap (or traces of such flaps) in and of itself does not disqualify a binding from being Islamic. Indeed, that is why the third category is introduced. Clearly other evidence such as sewing structure, type of endbanding, whether or not boards are flush with the textblock and the decorative scheme is then decisive for classification. It is significant to note that many distinctive characteristics are found in other details than the presence or absence of flaps. Details such as the application of the leather covering material, the presence or absence of boards, variations in endband finishing and the constitution of the spine-lining do make further distinctions, while such details occur in both Types Two and Three. Therefore it seems necessary to use a finer system of classification in which the direction should be given by structural characteristics and binding elements that reveal 'the hand of the binder'. For example, initial research made clear that there is a practice to produce unsewn textblocks, kept within wrapper bindings with an envelope flap. This unbound manuscript in a wrapper binding does not visually differ from bound manuscripts with an envelope flap.[44] With the current subdivision both types would be grouped in Type Two. However, it seems prudent to single out the unsewn manuscripts with wrapper bindings as a specific group rather than to put them together with the sewn textblocks, because the very fact that they deliberately remained unsewn and were clearly produced like this seems to indicate a specific use, although that use is as yet unidentified. The best way to investigate this practice is of course by first identifying many of such artefacts and then examining corresponding factors.

4.3 *The need for a typology*

To sum up, it can be stated that this specific discipline, the study of the materiality of Islamic manuscripts, is still in its infancy. The lack of refined knowledge of the use of different techniques and methods, and additionally of the materials used, is evident. Rich and diverse collections like the UBL collection confront us with the limited tools we have to describe and classify them. Given the large region in which Islamic manuscripts were produced and the timeframe in which the tradition developed, it is not too farfetched to presume that certain varieties of the archetype or certain materials and methods – apart from decorative schemes – can be related to local traditions of book production. It is my hypothesis that careful examination of many specimens will supply enough information to refine the typology of Islamic manuscript structures. There certainly is a need for such a typology; it will provide material for the codicological framework and new anchors for further binding-research.

A thorough understanding of the differences in structures is also needed for preservation purposes. Only when conservation specialists working with Islamic manuscripts have a solid understanding of the techniques and materials used to manufacture these manuscripts, can they assure accurate documentation and well-considered intervention. Awareness of the differences in structures and characteristics is essential for the preservation of binding elements which may help to classify manuscripts. Although many techniques and treatments used for the preservation of Western written and printed heritage are to a large extent applicable to Islamic manuscript collections, there definitely is a need for treatments specific to this other book tradition. Moreover, the very structure of Islamic manuscripts poses particular technical and ethical issues which can only be addressed properly when the conservator involved has a sound knowledge of how these manuscripts were produced. It is good to keep in mind that until just a few decades ago conservators overlooked (and consequently removed, covered or destroyed) all sort of non-textual information hidden in the construction and physical appearance of Western books simply because at the time they did not know that these details were of importance. It is equally possible that information

[44] During the pilot survey and a separate boxing programme for the Islamic manuscript collection in the UBL, both carried out in 2010, over twenty wrapper bindings were registered. Findings were published in K. Scheper, 'Refining the classification of Islamic manuscript structures' (2011).

carried by Islamic bindings, which could prove valuable for Islamic manuscript research, might be disturbed during treatments.[45]

4.4 *Point of departure for the survey*

The present research focuses on the physical and technical characteristics of the sewing structures and the bindings in relation to the origin of the manuscripts, with the aim to increase the understanding of this particular bookbinding tradition and to work up to a typology. Analytical examination of a large corpus – in casu the Oriental Collection of Leiden University Library – offers objective facts and these data can then be related to catalogue information, so as to link dates and locations to the data. Thus, it might become possible to not only establish a typology, but also to put dates and places to the different types and structures identified.

The research questions which this study addresses are: How can the classification of the Islamic manuscript structures best be refined, what are the main techniques used to manufacture Islamic manuscripts and how are these bindings best characterised? Additionally, what distinctive characteristics are indicative of the origin of manuscripts, both in time and place? In other words: is there a strong suggestion or solid evidence for local traditions within the vast geographical area of the Islamic world and the long time during which this manuscript tradition has existed? And lastly, can a connection be established between the type of structure or material chosen by the binder and the subject of the text that the binding is protecting?

In order to answer these questions the research approach has been as follows. The starting point was the analysis of the historic sources, while the autopsy of the selected Islamic manuscripts was carried out at the same time. The technical information from the sources was used as a mirror for the data generated by the physical survey. This *structure-and-composition*-survey includes all Islamic manuscripts in codex form in the UBL collection which either contain their original binding or a later, but indigenous rebinding. Repaired manuscripts were included when enough authentic material in their structures still provided evidence for their method of making. A database was designed for the purpose of recording each assessed manuscript and the subsequent cross-searching of the data. Then, with the aid of existing catalogues and inventories, the database entries were supplemented with the available provenance information, the language in which a manuscript was written and its subject. Gaps in the catalogue data were filled by individual assessment with the assistance of the collection's curator, Dr. Arnoud J.M. Vrolijk, in so far as possible. Subsequently, the information thus generated was explored and all fields in the database were used to cross-search for related data. This has resulted in different groups and categories, which can or cannot be mapped, placed on a timeline, or linked to distinct cultural groups or traditions.

5 Selection and justification of the corpus

5.1 *The Islamic collections in Leiden*

Early in the seventeenth century the first important collection was left to the library by the scholar Josephus Justus Scaliger (1540-1609). Scaliger's legacy comprised about forty manuscripts in Middle Eastern languages, which turned the university library into one of the

[45] For example, manuscripts with "wrapper bindings", covers that were intentionally not attached to the textblock, are prone to interference. With these manuscripts, the textblock remained unsewn, the protective cover was just wrapped around it (see for a thorough description Part Two, paragraph 2.6 and figs. 67-68). The scope of this practice is unknown, and many such manuscripts may have been sewn later on, in 'repair' treatments, during the process of which the loose covers were subsequently attached. That such interventions are not only a potential risk but a reality is confirmed by N. Baydar, 'Newly identified techniques in the production of Islamic manuscripts' (2010), p. 70.

best equipped libraries with regard to Oriental studies at the time in Northern Europe.[46] Not much later, in 1626, Leiden University acquired ten Middle Eastern manuscripts from the estate of Franciscus Raphelengius (1539-1597). Together they form the core collection of Leiden Orientalia (Cod. Or. 212-268). Jacobus Golius (1596-1667), the second professor of Arabic at Leiden, managed to collect 211 Middle Eastern manuscripts for the University during his travels in Morocco and the Ottoman Empire in the 1620s (Cod. Or. 1-211).[47] His manuscript collection is particularly rich in Islamic science. From 1669-1674 the library received its most important collection from Levinus Warner (1619-1665), a student of Jacobus Golius and resident of the Dutch Republic to the Sublime Porte. During his stay in Istanbul, from 1645 until his death, he collected an impressive number of manuscripts; his private library of Middle Eastern manuscripts consisted of circa 930 volumes, which he bequeathed to his *Alma mater* (Cod. Or. 269-1199).[48] Thus, at the end of the seventeenth century the library's Oriental collections had a solid basis, comprising works on science, local histories, biographies, dictionaries, literature and religious texts. Over the next centuries the UBL acquired many more manuscripts, although the eighteenth century was a quiet period in terms of acquisition.[49] From the nineteenth century on, however, the number on Oriental manuscripts increased once more. To name but a few important purchases, in 1883, a collection of more than 660 manuscripts from the Medinese scholar Amin ibn Hasan al-Halawani al-Madani (d. 1898) was acquired through the efforts of Michaël Jan de Goeje (1836-1909, Cod. Or. 2363-3025 and 8409),[50] and in 1936 Christiaan Snouck Hurgronje (1857-1936), the Dutch orientalist and advisor on Native Affairs to the colonial government of the Netherlands East Indies, left his entire private library and archive to the library.[51] Apart from Snouck Hurgronje's collection, the Dutch colonial presence in the East Indies (now Indonesia) accounts for most of the growth of the collection in the nineteenth and first half of the twentieth century. Next to the aforementioned sizeable acquisitions, of course, smaller collections or even single items were bequeathed or purchased over the centuries.

The items in the Oriental collections in the UBL all have a classmark starting with the abbreviation *Or.* (for Oriental), irrespective of language or origin. Since 1864, when the first substantial collection of materials in Southeast Asian languages entered the library, all accessions receive a supplementary shelfmark according to very roughly defined linguistic or regional categories. Thus, the majority of the Islamic manuscripts relevant for this study are shelved in the 'Middle Eastern' collections, and they have an *Ar.* number (for 'codex Arabicus'). Practically all of these are in the Arabic script and they are written in the 'classical' Islamic languages Arabic, Persian and Ottoman Turkish. The 'Middle East' in this context (as one of the four sections of the Library's Oriental collections) is a rather broad notion and the name designates a cultural area rather than a geographical one; manuscripts from Central Asia and even the western part of China are part of it as well.[52] Moreover, and perhaps confusingly, a relatively small group of Southeast Asian manuscripts in the Arabic language, such as Qur'ans from Aceh, have traditionally been classified as *Ar.* numbers. Generally

[46] A. Vrolijk, K. van Ommen (eds.), *All my books in foreign tongues* (2009), p. 17.
[47] G.W.J. Drewes, 'The legatum Warnerianum of Leiden University Library' (1970), pp. 4-5.
[48] Ibid., pp. 5-6, 16. See also: A. Vrolijk, J. Schmidt and K. Scheper, *Turcksche boucken* (2012).
[49] The effects of it are reflected in the results presented in Part Five; in several charts the fewer number of eighteenth-century manuscripts as in comparison to the numbers from the seventeenth or nineteenth century is noteworthy. This acquisition-scarcity is described in: A. Vrolijk and R. van Leeuwen, *Arabic studies in the Netherlands. A short history in portraits, 1580-1950* (2014), p. 82.
[50] Ibid., p. 113.
[51] http://www.library.leiden.edu/special-collections/oriental-collections/intro-middle-east.html (accessed 16-05-2014).
[52] The other three areas are South and Southeast Asia, predominantly from the Indonesian archipelago; the Japanese and Chinese collections; and the Hebraica, Judaica and Semitics, manuscripts in Semitic languages other than Arabic and smaller collections in languages like Armenian.

speaking, this part of the Oriental collections comprises c. 6,000 manuscripts and it forms the pool from which most of our samples were selected (1056 volumes, 18% of the total 'Middle Eastern' collection). Additionally, since the Islamic world extends to Indonesia, and because Leiden University Library houses the largest collection of Southeast Asian manuscripts outside Indonesia and Malaysia (c. 16,500 items), it was decided to include some items contained within the Southeast Asia collections in this study; these manuscripts have a shelfmark preceded by *Mal.* (for Malay). Instead of assessing every volume in the section, as was done with the Middle Eastern section, a preselection was made; manuscripts were selected when written in Arabic script, which indicates their place within the Islamic heritage, and when their bindings passed the criteria used for the survey. This resulted in a relatively small group of 29 items, and the examination of their physical characteristics first and foremost served to substantiate the findings related to the assessment of the Southeast Asian manuscripts contained within the Middle Eastern section (see also Part Four, paragraph 3.1). As we will see, noteworthy variations can be found in the manuscripts' structures and bindings from this part of the Islamic world, and given the collection's strength in this area, it proved interesting to examine and further verify the development and spread of the bookbinding tradition in this region that is geographically so remote from the heartland of Islam.

5.2 *Criteria for selecting bindings*

To establish whether a binding is the manuscript's original one, several aspects of the book offer relevant clues. Examination of the manuscript structure may reveal traces of previous sewing, such as former sewing stations or the presence of remnants of thread in dissimilar colours or texture as the present sewing thread. Paper repairs in the gutter are equally indicative for a second sewing and rebinding. [fig. 1] Partially folded front edges of some of the leaves may also point towards a rebinding. When a manuscript is freshly written, it can be assumed that the annotations or glosses in the margins are not so close to the edge that the binder had to take special precaution to safeguard them, for he would only have to cut a small part of the edges to finish the textblock. However, when a manuscript needed resewing – because of substantial damage to the structure – one can also assume that the edges of the textblock may have been no longer pristine. A second trimming of the edges may cause losses to annotations in the margins. To prevent this, some binders undertook the effort to prepare each annotated leaf by cutting the paper perpendicular to the front edge, just above and below the inscription, and then folding this part of the front edge inward towards the spine-fold. [figs. 2, 3] Thus, when the edges of the textblock would be trimmed, these particular parts of the paper are spared. However, their presence does not prove rebinding; the texstblock may have circulated without a binding, and when it was eventually bound the binder may have decided to cut the edges to take away traces of use and dirt.

The presence of double spine-lining strips or additional inner joints or doublures are also suspicious, as they point at a rebinding or at least a thorough repair. Alternatively, discolourations that cannot be explained by the present materials may reveal characteristics of a former binding, such as the brownish stain-pattern caused by leather doublures. [fig. 4] The leather spine often offers clues that indicate interference. Some of these clues are quite easy to detect, such as the application of clumsy patches of repair leather or a complete rebacking in diverging leather. But when the repairs have been conducted with great skills and precision, a well-trained eye and meticulous examination of the manuscript is required, apart from technical knowledge of bookbinding techniques.

Other characteristics may lead immediately to the suspicion that the covers do not belong to a certain textblock. Since the covers of Islamic manuscripts are usually flush with the textblock's edges, if boards protrude beyond the edges that is a clear sign that manuscript and covers have been assembled and that the boards initially belonged to a different – and larger – manuscript. Sometimes boards have been manipulated or adjusted to make them

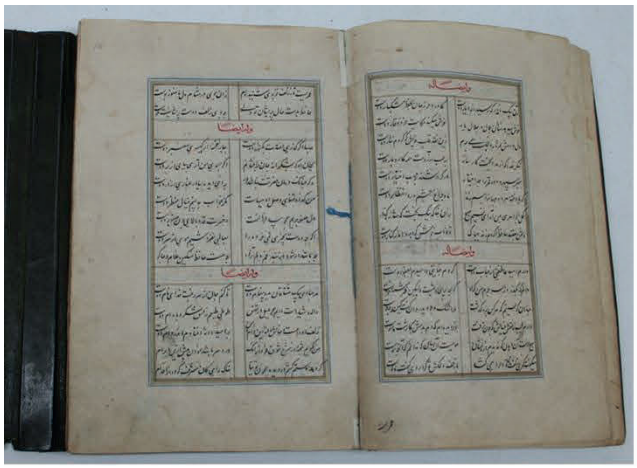

Fig. 1. Or. 1570. The paper repairs at head and tail, underneath the tiedowns of the primary endband sewing, indicate that the textblock is resewn.

Fig. 2. Or. 2747. A resewn manuscript; several leaves have two parallel cuts in the front edge of the paper, made by the binder in order to prevent the trimming of the text written in the margin.

Fig. 3. Or. 2747. Detail of the same margins as in fig. 2, the parts of the paper margin that were folded towards the centre now unfolded, so that the annotations are visible.

Fig. 4. Or. 428. The discolouration on the outer textblock leaf (r) cannot be produced by the paper doublure (l), therefore it indicates that the manuscript was formerly bound in a binding with leather doublures, which were probably block-stamped.

Fig. 5. Or. 26.679. Back cover; the tail edge was trimmed to fit the manuscript, but the board was originally made for a larger manuscript.

Fig. 6. Or. 11.828. Front cover, its edges refurbished; the fore-edge and envelope flap are covered in a different leather which tooling does not match the covers.

even with the dimension of the textblock. Covers that were too small could have been extended with strips of board; neatly shaved strips of leather may disguise this intervention. Conversely, existing covers may be quite bluntly cut to size, thus revealing the intervention. [fig. 5] The imbalance thus created in the binding design is a give-away, whereas boards that are carefully adjusted to fit another manuscript may be harder to recognise. In other cases, a diverging tooling pattern on the flap or one of the boards may hint at the reuse of existing binding parts. [fig. 6] It is, however, sometimes difficult to establish whether the adjusted boards were used for the original (that is, first) sewing of the manuscript involved, or if they replace now missing covers. Therefore, the alterations and re-use of materials do complicate the dating and locating of the manuscript.

Obviously, to build a framework, manuscripts with authentic bindings, contemporary with the manuscript, holding clear information on their origin in their colophons, are preferable. However, if the survey would be confined to those criteria alone the sample would be very limited, as many manuscripts were locally resewn while still in circulation in the Islamic world, or they lack a date or place of origin. Therefore the scope of the survey was widened to manuscripts containing original Islamic bindings, whether these bindings seem to be contemporary with the manuscript or not, and notwithstanding the lack of a written indication to the origin in the textblock. For the purpose of this research, the fact that a manuscript is resewn or repaired did not necessarily disqualify the item from the survey. The criterion used was that the intervention be 'local' or 'native', that is (in this context), carried out in the Islamic world.[53] The term *native repair* was coined by Evyn Kropf, who defined it as "executed by craftsmen or laypersons from the Islamic tradition".[54]

When a manuscript is locally resewn and provided with a new binding the information about techniques and use of material is still relevant. Of course, for the primary objective of this research the information found in the colophon was then not useful, since the second binding is evidently produced in a different period, and possibly in a different region. However, information provided by such bindings was recorded and included in the general results on the use of the different techniques and materials. Of course, in such cases no conclusions have been drawn with regard to the connection between origin and binding characteristics.

Bindings or constructions with evident repairs were a slightly different case, and the usefulness of such bindings depended on the extent of intervention. When the repairs did not prohibit the analysis of the construction the items were included in the survey. However, those parts of the binding that are meddled with or covered by the repairs to such an extent

[53] Since the basic materials used to produce codices in the Orient differ from those used to make Western books, this distinction can be made on the basis of visual observation. For example, repairs carried out with coloured silk thread or goat leather are generally found to be executed by an Oriental binder. Fifteen years of working experience with Western bindings – both manuscripts and early printed books – provided me with a substantial familiarity with Western repairs, regarding their materials and techniques, and it has also taught me that binders in general are inclined to use methods and materials they would use to produce a new binding, without paying much attention to the authentic structure or materials. As a consequence, Western repairs of Oriental manuscripts are fairly easily distinguishable: neither the techniques used nor the materials applied match the Islamic bookmaking tradition. And in those sporadic cases that an attempt was made to reproduce a flap, the item betrays itself as being interfered with by a Western binder because the rigidity of the new board or the angularity of the corners of this board, or the fact that the boards are square and not flush with the textblock. Furthermore, the grain pattern of the leather used in the West does not conform to the tactile characteristics of leather used in the Islamic world, and, although a Western bookbinder may have tried to imitate the decoration pattern, the tools at his disposal are recognisably different. Most conspicuous are bindings whose covers were reattached the wrong way around, so that the flap is now attached to the front cover.

[54] E. Kropf, 'Historical repair, recycling, and recovering phenomena in the Islamic bindings of the University of Michigan Library' (2013), p. 13.

that their original appearance is no longer visible, were not included in the statistics. A positive side effect of the decision to include repaired bindings in the research is that some light is shed on the favourite ways and techniques binders used to repair manuscripts. Although the survey in itself does not focus on repair methods, notes were taken of remarkable techniques and material characteristics of the repairs; in Part Six these are discussed. With regard to the ratio of the findings, however, some caution is advised, as the generated information is not necessarily representative of the overall bookbinding and repair practice in the Islamic world.[55]

The survey itself focussed on 'objective' data on the manuscript's construction: varieties in the used materials and techniques. However, occasionally a remark was made on art-historical aspects or other qualifications such as quality of craftsmanship. Although there is a considerable subjective element to the designation of these qualities, they are of interest for the book-historical framework as they shed some light on specific choices that were made, whether for economical or other reasons. Furthermore, sometimes these aesthetical elements helped to 'group' certain bindings. When some of the bindings in a certain group were dated or located while others lacked such data, the clustering was useful, as the dated or otherwise identified volumes provided information on the possible origin of the manuscripts with unknown provenance.

5.3 *Possibilities and restrictions*

For the autopsy of the manuscripts a survey form was designed and the results assembled in a database.[56] All selected Islamic manuscripts were examined, every encountered variety in structure registered and the materials of which the bindings constitute were investigated and recorded in detail. As explained above, the objective was to not only to study the materiality of the manuscripts, but also to relate these facts to the origin of the artefacts in order to work towards a typology of Islamic manuscript structures and binding characteristics. The UBL collections offer a unique opportunity to do so; firstly because the collections have been acquired over approximately 350 years and from the total breadth of the Islamic world. Therefore, the collections are extremely rich in terms of varieties of specimens from different eras and regions. Secondly, because of modest use of the collections, many of the manuscripts have retained their original bindings.

In comparison with some other Western institutes holding Islamic manuscript collections, intervention in the physical condition of the manuscripts has been relatively limited in the UBL. A conservation workshop was set up only in October 2000; in the decades prior to that date treatments were carried out only occasionally. Unfortunately there have been periods when a budget to deal with heavily damaged manuscripts was more readily available, while the knowledge to do so properly was deficient.[57] Also, not long after acquiring

[55] It is inevitable that the decision to include only those bindings that contain most of their original structure, affects the results. Luxurious items will have survived the centuries differently from low-profile bindings, but how that influences their representation in the survey is hard to establish. It seems quite possible that high-market manuscripts were not intensively used and that, as a consequence, they hardly suffered from mechanical damage, whereas books from the other end of the market had to endure intensive use. It also seems likely that the latter were repaired to maintain their functionality, repetitively when necessary, rather than that they were rebound. Accordingly, their outer form and structure may have been altered in such a way that they were deselected for the survey; thus the lower part of the market may be under-represented. On the other hand, the more prestigious the binding, the bigger the chance that, when repair was required, only the beautiful boards were preserved and that the structure and spine were replaced in order to make the binding 'neat' again, which could now result in de-selection.

[56] The database programme Filemaker Pro 10.0v1 has been used.

[57] In the 1960s and early 1970s nearly fifty manuscripts were dismantled, resewn and bound in plain linen case-bindings. However, a sense of the intrinsic value of the original covers apparently led to the

the core collections quite drastic measures were taken by rebinding a significant number of manuscripts in plain calf bindings, sewn on supports and with all other characteristics of proper Western bindings. The original bindings once protecting these manuscripts are lost forever.[58] Various manuscripts acquired in more recent times have rather different restrictions with respect to this research. Since many of these items have been in circulation for a long period of time in not the best of circumstances, the materials have deteriorated and intensive use or old age has taken its toll on the constructions. Often these bindings are repaired, sometimes over and over again, and even though these occasionally rather unorthodox methods of repair are highly interesting in and of themselves, they do obscure the original structures to such an extent that they no longer bear witness to their initial production. As a consequence, a considerable number of the manuscripts in Leiden are too much interfered with to provide accountable information as to their original constructions. However, a significant number have retained their original bindings and structures, or have been altered only slightly. It is this part of the collection that was selected for the physical examination. In the Arabic collection 1056 volumes were examined; from the Malay collection 29 manuscripts in Arabic script were selected.

The Oriental collections in the UBL are very much a 'users' collection', which in this case does not so much refer to the current use of the manuscripts, but to the fact that the collected manuscripts were meant to be used rather than that they were produced to reflect the commissioner's status, wealth or wisdom, although manuscripts of art-historical importance are present. But generally, they are and were objects of study, made to be used and not to impress. The materiality of the manuscripts reflects that use; the paper is not necessarily of the highest quality, the bindings are functional and modestly decorated. Consequently the collected manuscripts do not represent the complete spectrum in a balanced way. The core collections were bequeathed by scholars who collected manuscripts for their intellectual value. Also, the religious disputes in the seventeenth century impelled the University to acquire material in order to promote the study of Arabic as a language related to Hebrew. But not for religious purposes alone; a further aim was to obtain manuscripts to support the study of both the religious and secular aspects of the Islamic world since this part of the world had become an important political and commercial player. Therefore not only Arabic but Persian and Turkic too were considered essential languages. These considerations resulted in the acquisition of many religious and academic tracts covering a broad range of learning. Although manuscripts with fine illuminations and befitting richly elaborated covers are present, the amount of luxurious bindings is relatively low. Consequently, there is a certain limitation to the results of the survey in this respect on the statistic side; percentages of techniques and materials used cannot just be projected on other collections of different composition.

Notwithstanding this shortcoming, the core collections have been preserved for three centuries or more; the original bindings of these manuscripts are preserved in advantageous circumstances compared with many of their counterparts that remained in the Islamic world. Therefore the UBL collection provides the possibility to examine a substantial number of old manuscripts in their first or second binding. Additionally, the acquisition of manuscripts has continued steadily and still does so today, bringing manuscripts into the collection from the total breadth of the Islamic world. In sum, the collection comes close to representing the essence of what is produced in the Islamic manuscript tradition, albeit that some subjects or aspects of the book-arts are less well represented.

decision to keep those covers (stacked in a cardboard box), the classmarks of the manuscripts belonging to them written in ballpoint on the inside of the front cover.

[58] Unfortunately, an account of this rebinding campaign could not be found in the University's archives.

PART TWO THE ANATOMY OF THE ISLAMIC MANUSCRIPT
A detailed overview of the different methods of construction

1 Vocabulary and images as tools

1.1 *Terminology*

With the exception of the simplest one-gathering structure covered with a paper wrapper, all bookbinding constructions are rather complex, and even in describing the simplest structure some terminology is unavoidable. It is therefore necessary to use a common vocabulary, irrespective of the exact context in which books are described; a common vocabulary is relevant for cataloguing, for writing condition reports and conservation treatment reports, as well as for texts accompanying exhibited items and catalogue texts.

Terms to describe Islamic manuscripts originated in several languages, of which Arabic, Persian and Turkish are the most prominent. This complicates the matter of vocabulary. Moreover, even the terminology in the primary Arabic sources is not unequivocal and leaves room for interpretation. These differences in vocabulary and its falling out of use in modern Arabic works on bookbinding have been pointed out by Adam Gacek several times.[1]

Some of the binding elements are so characteristically Oriental that they do not occur in Western binding structures or decorative schemes. Hence, not every term has an equivalent in English. However, since English has become the vehicle for international communication in this field, a more pressing need for a common vocabulary has arisen. For want of such a terminology, many have resorted to terms widely used for Western books. Such terms originate from Western primary sources on bookbinding or were developed to facilitate Western bookbinding description. Therefore, some of these borrowed terms have such strong connotations of techniques or decorative forms typical of Western bindings, that they are not functional or suitable for describing Islamic manuscripts.

We can see this for example when the covering schemes of leather and partial leather bindings are discussed. Full leather bindings were the most common in the early centuries of Islamic bookbinding, but from the sixteenth century onwards and perhaps even earlier, binders started to combine leather with other materials like paper or textile. The majority of these partial leather bindings have leather strips on all board edges, a leather spine and a leather fore-edge flap, although sometimes leather strips on the front-edge of the flap or the horizontal edges are omitted. [figs. 7-9] The term *half leather* should be avoided because it brings to mind the Western half leather binding which has a very different layout, with a leather spine and leather corners. That design is almost never found on partial leather bindings in the Islamic bookbinding tradition. In contemporary Turkish bookbinding the term *Çaharkuşe* (shortened form: çarkuşe) is used, from Persian chahâr, 'four', and gûsheh, 'corner': four-cornered, quadrangular. The term is found in *Türk hattatları* ('Turkish calligraphers'), a work by Şevket Rado (1984): "Cildin kenarları deri ile kaplanmış ve ortası 'ebrî' denilen kâğıtla örtülmüşse, bu cilde 'çarkuşe cilt' ... denilmiştir." ("If the edges of a binding were covered with leather, and the area in between was covered with the paper called 'ebrî' ['marbled'], this binding was called 'four-cornered'.")[2] The use of the term çaharkuşe is also quite common in the Union catalogue of manuscripts in Turkey, *Türkiye yazmaları toplu kataloğu*, but it is

[1] See A. Gacek, 'Arabic bookmaking and terminology as portrayed by Bakr al-Ishbili in his *Kītāb al-taysīr fī ṣināʿat al-tasfīr*' (1990-1991), pp. 106-107; and 'Ibn Abi Hamidah's didactic poem for bookbinders' (1992), pp. 41-43. Furthermore, in his *glossary* Gacek gives the different Arabic terms for the envelope flap to illustrate the existence of synonyms: "we find *udhn* (Andalusia, North Africa), *marji* (Morocco), *lisān* (central Arab lands), *miqlab* (Levant, Iraq), *raddah* (Levant), and *sāqiṭah* (Yemen)"; A. Gacek, *The Arabic manuscript tradition. A glossary of technical terms and bibliography* (2001), p. xv.
[2] S. Rado, *Türk hattatları* (1984), p. 162.

Fig. 7. Or. 206. A çaharkuşe, or partial leather binding. All board edges are covered with leather, the board panels are covered with dyed paper and leather overlays, with blind tooled medallions.

Fig. 8. Or. 872. A partial leather binding, without a leather strip covering the edges of the envelope flap. The boards are covered with marbled paper, for the envelope flap two pieces were used.

Fig. 9. Or. 795 (1635, Damascus). A partial leather binding without leather strips covering the head and tail edges. The fore-edge of the front board is covered with a strip of leather, however, the fore-edge of the envelope flap is not, instead, the paper covering is turned-in.

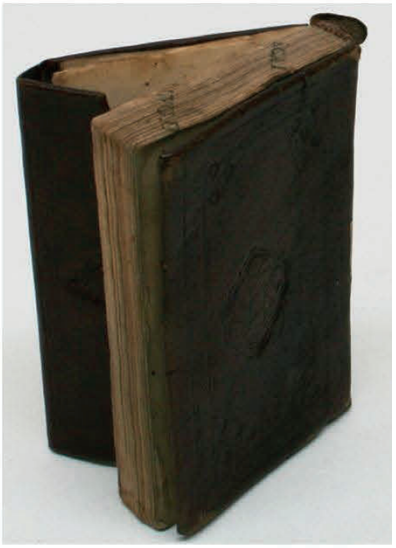

Fig. 10. Or. 2089. A full leather binding, with a tab extending at the head of the spine.

Fig. 11. Or. 1210. A full leather binding, detail of the tabbed spine.

Fig. 12. Or. 1070. A full leather binding; the leather of the spine-end at the head shows a straight cut edge.

apparently used for the leather edges only, not as a term for this particular type of binding.[3] It appears to be absent in other twentieth-century Turkish catalogues, as well as in recent reference works such as Duncan Haldane's *Islamic bookbindings in the V&A* (1983) and a work that features quite a few çaharkuşe bindings with textile panels, *Turkish bookbinding in the 15th century*, by Julian Raby and Zeren Tanındı (1993).[4] When the word's currency is checked in dictionaries it appears that neither Steingass (Persian) nor Redhouse (Ottoman Turkish) mentioned it as a technical term connected with bookbinding.[5] However, Adam Gacek affirmed the term *çaharkuşe cild* for bindings with spine and edges covered in leather.[6] It is also mentioned by the Turkish conservator Nil Baydar in an overview of binding types.[7] In the case of this specific term, a direct English translation would not be accurate; 'four cornered' is precisely what these bindings are not. A descriptive phrase such as 'leather frame binding' is an option and 'leather-edged binding' has been used,[8] though I prefer 'partial leather binding' as many bindings with this type of covering do not have all their horizontal edges covered. As a consequence, with those bindings the leather does not actually form a frame nor are the boards fully edged.

Another example of the inappropriateness of Western terminology is the use of the term 'cap' or 'endcap'.[9] It points at a technique used in Western bookbinding, where caps are formed when the leather covering material at head and tail of the spine is turned in, not only over the board edges but also on the spine itself.[10] However, in the Islamic binding tradition the leather at head and tail of the spine is not turned in, but either extends or is cut flush with the board edges.[11] [figs. 10-12] Therefore, the term cap is not appropriate and when a glossary

[3] S. Bayoğlu, *Türkiye yazmaları toplu kataloğu* (1979-2002). I am thankful to Arnoud Vrolijk who explored these Turkish sources and kindly made the translation.

[4] D. Haldane, *Islamic bookbindings in the Victoria and Albert Museum* (1983); J. Raby, and Z. Tanındı, *Turkish bookbinding in the 15th century: the foundation of an Ottoman court style* (1993).

[5] F. Steingass, *A comprehensive Persian-English dictionary: including the Arabic words and phrases to be met with in Persian literature* (1977); J.W. Redhouse, *A Turkish and English lexicon: shewing in English the significations of the Turkish terms* (1978).

[6] A. Gacek, *Arabic manuscripts. A vademecum for readers* (2009), p. 27 and pp. 118-119 deal with 'half-bound books'. Although it is true that books in the eighteenth and nineteenth centuries are frequently covered in partial leather, according to the survey findings the occurrence of çaharkuşe bindings is already significant in the sixteenth century; see Chart 6, Part Five, paragraph 4.1.

[7] N. Baydar, 'Conservation aspects of Ottoman period manuscripts: binding decoration and hand tools for making bindings' (2005), pp. 194, 206.

[8] Nicholas Pickwoad introduced the comparison to a frame, when he describes the occurrence of a similar covering style in the eighteenth century in England, for which first parchment was used and later on also leather, to cover the spine, fore-edges ('foredges' is used by Pickwoad) and head and tail, "to create a frame filled in with marbled or coloured paper", see: 'Bookbinding in the Eighteenth Century' (2009), pp. 274, 280. Jake Benson uses the phrase 'leather-edged', see: 'Satisfying an appetite for books. Innovation, production, and modernization in later Islamic bookbinding' (forthcoming).

[9] The term 'endcap' is employed in the much used and reproduced "diagram giving the terminology for the constituent parts of Islamic books in codex form" in G. Bosch et al., *Islamic bindings and bookmaking* (1981), p. 38; it is also included in the present study, Part Three, paragraph 3.1.

[10] M.T. Roberts and D. Etherington, *Bookbinding and the conservation of books. A dictionary of descriptive terminology* (1982), p. 130: "headcap: The leather covering at the head and tail of the spine of a book, formed by turning the leather on the spine over the head and tail and shaping it"; B.C. Middleton, *The restoration of leather bindings* (1998), p. 26: "headcap: The visible portion of the fold of leather where it turns in at the head and tail of the spine"; J. Greenfield, *ABC of bookbinding. A unique glossary with over 700 illustrations for collectors and librarians* (1998), p. 36: "headcap: The leather turned in and shaped at the head and tail of the spine"; W.K. Gnirrep, J.P. Gumbert, J.A. Szirmai, *Kneep en binding* (1992), p. 85: "kapje: De omgezette rand van de rugbekleding (met ruginslag)" ("cap: The folded edge of the covering spine with turn-in").

[11] The only exception is found in Indonesian bindings, where turn-in leather spine-endings are fairly common. This will be further discussed in Part Five, paragraph 5.3.

for conservators of Islamic manuscripts was compiled (which will be elaborated on below), the term 'tab' was introduced to describe the typical Islamic spine-endings with extending pieces of leather.[12]

A further problem is that some terms are used differently in related fields, consequently causing much confusion. The term 'textblock', for example, indicates to conservators the whole volume without its binding, while art-historians usually apply the term to indicate just the part of the page that actually contains text, without the margins, the part which conservators would call the text-panel or text area.[13] Misunderstandings also originated from inaccurate use of certain terms. This is illustrated by Paul Hepworth:

> In a condition problem familiar to scholars of Islamic manuscripts, the green paint used in the framing lines around the text or miniatures in numerous Islamic manuscripts causes breaks and losses in the support below the paint. Such green paint is often referred to as Verdigris [...] in conservation reports. This designation seems to be a carry-over from the conservation of Western manuscripts, since verdigris is a green paint used in miniatures in these manuscripts where it causes the described damage. Moreover, the manufacture of verdigris is also described in Western primary sources, so its use in the West is well documented. Accordingly, it must have seemed logical to assume that damaging green paint in Islamic manuscripts was also verdigris. However, verdigris is the name given to paint made specifically from copper acetate. In the past 15 years or so, analysis of paint has become much more sophisticated and informed and many green paints have been found that do contain copper and do cause damage to the support but are not necessarily copper acetate. A piece of copper buried in camel dung over which vinegar is poured would undergo complex chemical reactions different from copper treated with yoghurt. Yet these are two recipes for preparing the green pigment used in Islamic manuscripts listed in primary sources. Consequently, in writing condition reports, the impulse to give a definite name to some material should be resisted unless analysis has actually been carried out to warrant the use of that name. It is more accurate and consistent with what is known at present to say that a copper-containing green pigment caused the damage observed in a manuscript than that this green paint is necessarily verdigris.[14]

The importance of identifying materials correctly for conservation purposes may be evident (lest an ineffective treatment were chosen), but for codicologists relying on these technical descriptions of paper, inks and binding structures, a precise description is just as crucial. Indeed, when conclusions are based on characteristics described with terminology that can be explained in different ways, they are not reliable. In order to promote clear, accurate and consistent communication, a glossary has been developed under the aegis of The Islamic Manuscript Association (TIMA), initially as a tool for conservators, but the project evolved as an instrument for effective communication with a wider applicability. Almost every descriptive term used in the present study is found in this Glossary.[15] An alphabetical list of

[12] The term is included in the 'Glossary for the conservation and description of Islamic manuscripts' (see footnote 15 below), and has been used in several publications since 2011.
[13] An example of this other use of 'textblock' is found in A. Teh Gallop, 'An Acehnese style of manuscript illumination' (2004), p. 197.
[14] P. Hepworth and N. Baydar, 'Islamic manuscript conservation and its vocabulary' http://www.docstoc.com/docs/55820832/Islamic-Manuscript-Conservation-and-Its-Vocabulary-Paul-Hepworth (accessed 22-05-2014)
[15] P. Hepworth and K. Scheper, *Glossary for the conservation and description of Islamic manuscripts*, an illustrated and multi-lingual glossary of which the English version, for an interim period, is available at http://www.hepworthscheper.com/lexicon/lexicon-en.html. (accessed 08-09-2014) When the glossary's translation in Arabic, Persian and Turkish is ready, it will be available on TIMA's website. This glossary is not static and remains a work in progress, to be added to when the addition of

the terms and their definition, frequently used in this thesis, is included in Appendix I, *Glossary*.

1.2 *Illustrations*

The illustrations in this Part serve to clarify and enhance the understanding of the technical descriptions. Because there are several ways to construct the predominant manuscript type, and the structural differences are precisely the characteristics we are looking for, multiple drawings of that type with slight but important dissimilarities are provided. The outward appearance falls into two categories: full and partial leather bindings. The full leather bindings, however, need to be divided in two groups as well, for clear technical differences. This results in a group of bindings covered with one piece of leather, and bindings covered with two pieces of leather which overlap on the spine. [figs. 13-16] The technical distinction, its rationale and the importance of these techniques to our understanding of the making of Islamic bindings are further discussed in paragraph 3, 'Covering and board attachment'.

Apart from the method used to apply the covering material, the construction of a manuscript is defined by sewing structure and spine-lining. This idea will be set forth in paragraph 2 below, 'Techniques used to construct the textblock'. Technically, a division can be made based on the function of the extending sides of the spine-lining. These flanges are often used to strengthen the board-attachment, in which case the extending parts of the lining are pasted on the inside of the boards (although there are a few exceptions, when the lining extensions are adhered onto the outside of the boards). [figs. 20, 21, 23] However, a substantial number of books have flanges that are pasted onto the outer leaves, in which case they do not support the board-attachment. [fig. 24] The choice of material – leather or cloth – appears to play a role in this phenomenon. The difference is elaborated on in paragraph 2.5; the technical and structural differences in board-attachment are explicated in paragraph 3, 'Covering and board attachment'. To introduce terminology, however, drawings of the different covering schemes and drawings of the diverse use of the spine-lining extensions are given below. [figs. 13, 14, 17-24]

2 Techniques used to construct the textblock

2.1 *Link-stitch sewing*

Typically the gatherings consist of four or five bifolios but of course, a range of variations is possible. We find gatherings with more or fewer bifolios, with additional tipped on single folios or guarded leaves. Regardless of their composition, they are sewn in such a way that a compact, flat and straight textblock with a minimum of swelling in the spine is the result. Unsupported sewing structures are predominant in the Islamic binding tradition, and a link-stitch sewing on two stations with a thin thread is by far the commonest sewing structure encountered. [figs. 25-27]

This link-stitch usually passes over approximately a third of the spine-fold in the middle of the gathering, although exceptions are regularly found. Some manuscripts have remarkably long or very short link-stitches and these anomalies are not necessarily related to an exceptional size of the book. Variation is also encountered in the choice of sewing thread. Whereas the predominant thread is thin and often a coloured silk, some binders favoured, or were compelled to use a thread of different quality, thickness or other material such as linen

terminology is appropriate. Already during the process of publication, it appeared that a few terms were missing from the list. These are included in Appendix I of the present study and will be uploaded on the web as soon as possible.

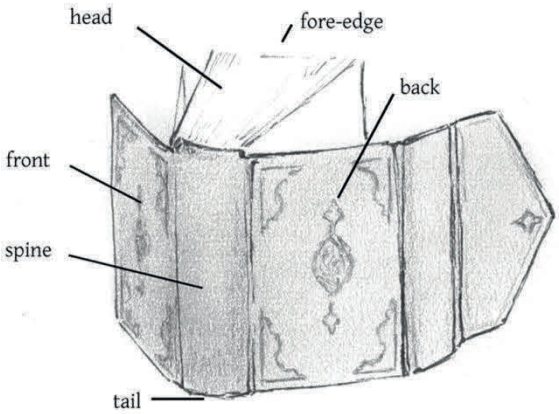

Fig. 13. A full leather binding made with one piece of leather, showing both covers and the fore-edge and envelope flap to illustrate the vocabulary regarding positions.

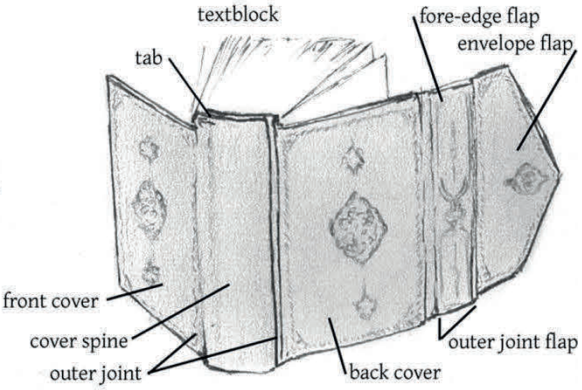

Fig. 14. A full leather binding made with two pieces of leather, illustrating the basic components. Evidence for the usage of the two-pieces technique is found on the spine, where the two pieces overlap; the seam runs parallel to the joint. The two layers may also be discernible in the tab.

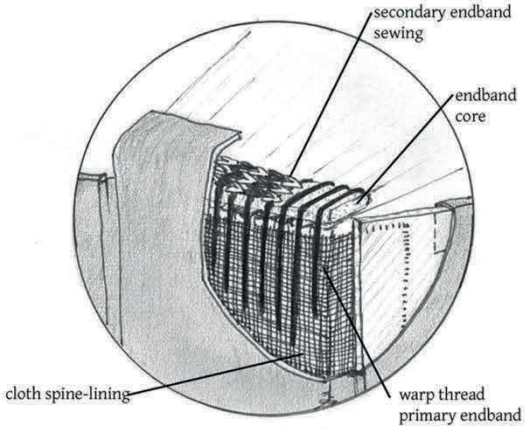

Fig. 15. Detail of the spine of a full leather binding made in one piece. Visible are the cloth spine-lining with flanges, the warp threads of the primary endband and part of the secondary endband.

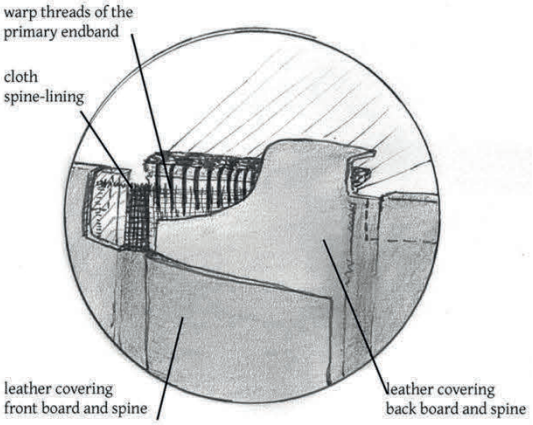

Fig. 16. Detail of the head of the spine of a full leather binding for which the two-pieces of leather technique is used.

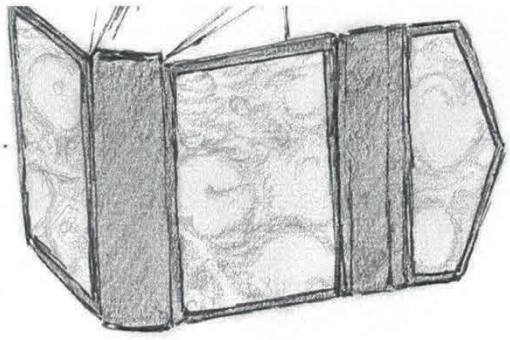

Fig. 17. A çaharkuşe, or partial leather binding. Spine and fore-edge flap are covered with leather and in this case all board edges are covered with separate strips of leather, thinly pared. The central panels are covered with paper.

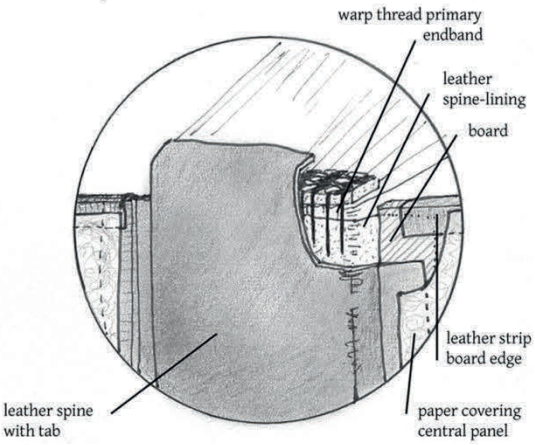

Fig. 18. Detail of the spine of a partial leather binding. It shows a leather spine-lining with flanges (used as board attachment), the warp threads and part of the secondary endband, plus the strips of leather on the board edges and decorative paper covering material.

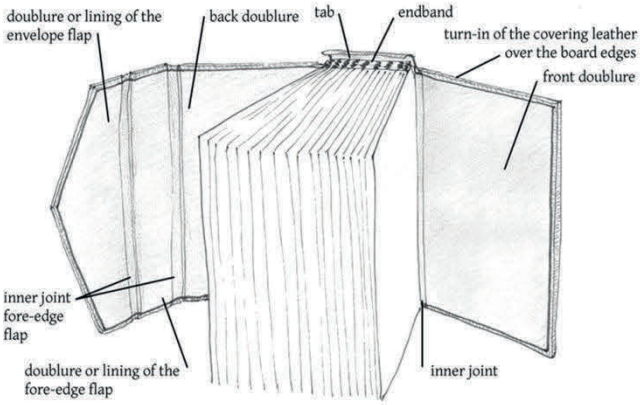

Fig. 19. Inside of a binding with a leather textblock spine-lining of which the extended sides are attached to the inside of the boards. The main technique used for this structure combines the lining flanges with a separate doublure. Less common is a leather spine-lining with extending sides that actually form the doublures. Details are given in fig. 20 and fig. 21.

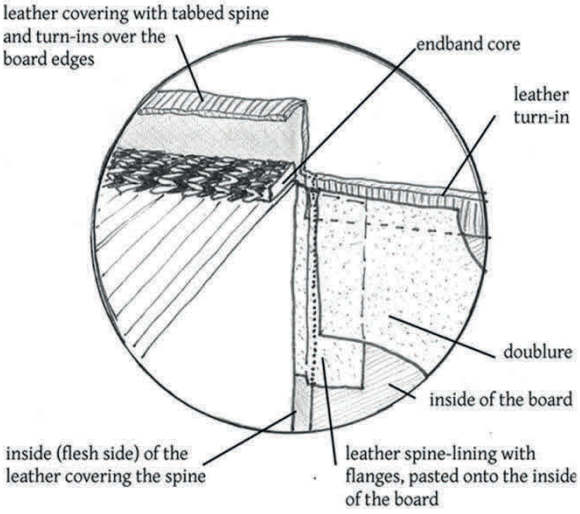

Fig. 20. Detail of the spine and inner joint of a manuscript with a leather spine-lining, which is used for board attachment and forms the inner joint. When the doublure consists of leather as well the seam between the two components may be very subtle and hard to distinguish.

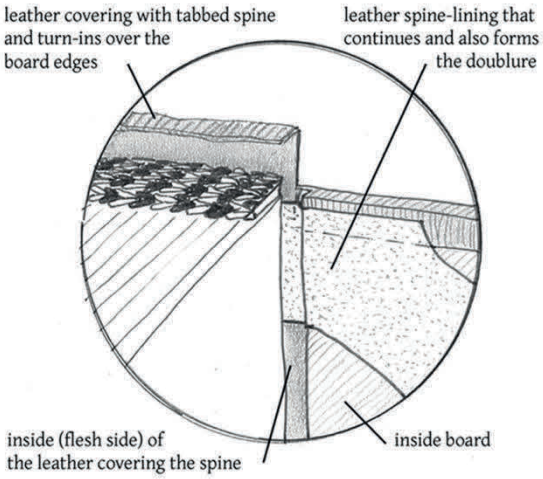

Fig. 21. Detail of the spine and inner joint of a manuscript with a leather spine-lining that is also used as doublure. It does not necessarily indicate that this lining-doublure consists of one piece of leather. Two pieces may have been used, overlapping or abutting on the textblock spine.

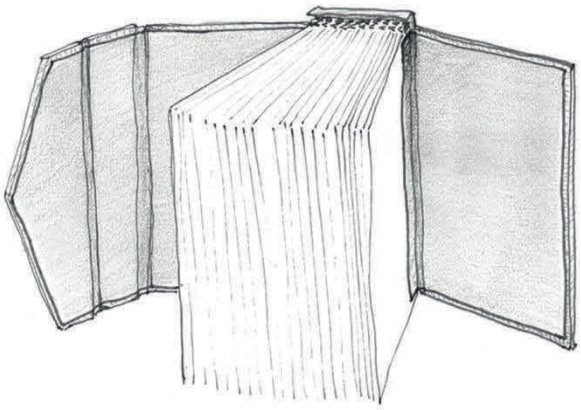

Fig. 22. Inside of a binding with a cloth textblock spine-lining. The inner joint is covered with either a stub from the doublure, a separate strip of leather or paper, or it may be covered by the outer leaf of the textblock or a tipped-on endpaper. It is not always easy to detect the board attachment structure of this type. The flanges were mostly adhered onto the inside of the boards but they may also have been pasted onto the outer textblock leaves. Details are given in figs. 23 and 24.

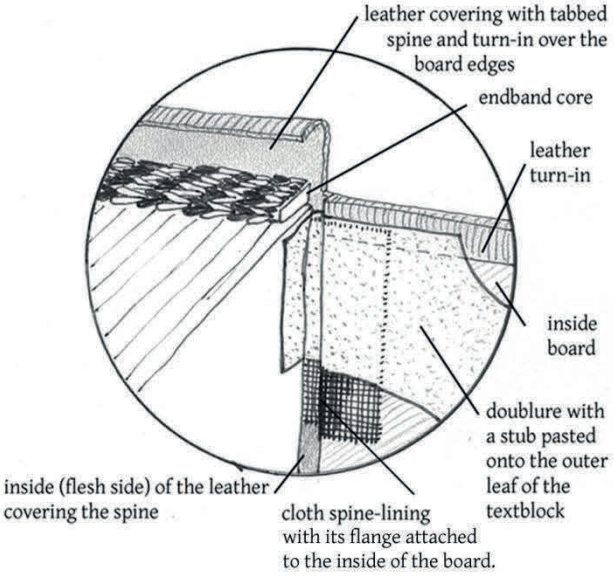

Fig. 23. Detail of the head of the spine and inner joint of a manuscript with a cloth textblock spine-lining, which is used for board attachment. These functional inner joints are covered with the stub from the doublure (or, in other cases, with a separate strip of paper or leather as the innerjoint, or a stubbed leaf tipped on as endleaf with the stub adhered in the joint).

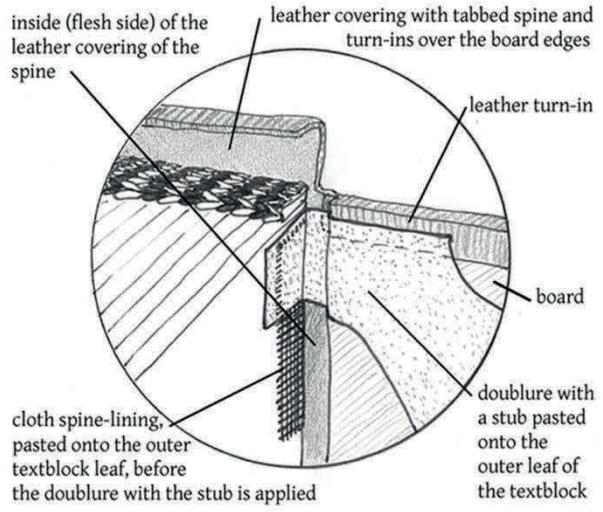

Fig. 24 Detail of the spine and inner joint of a manuscript with a cloth text-block spine-lining, which is not used for board attachment. Instead, the flanges are pasted onto the outer leaves of the textblock. The inner joint is covered with the stub from the doublure (or, in other cases, with a separate strip of paper or leather as the inner joint).

or cotton.[16] Undyed thread is very common as well. It has been suggested that the colour of sewing thread can be related to the subject matter of the text. According to David Jacobs and Barbara Rogers, green thread would be used for works on the life of the Prophet, and texts on Islamic law are supposedly sewn with red thread.[17] However, on what evidence this statement is based remains unclear. Neither data on the number of manuscripts studied nor on any diverging colours to this scheme were provided. Other secondary sources mention yellow or blue and pink thread as the most prevalent colours.[18] The survey results from the present study do not support Jacobs and Rogers' theory, nor the statements that other colours would be dominant. On the contrary, evidence was found to suggest a rather indiscriminate usage of colours, as many textblocks were sewn with two, or more, differently coloured threads. [figs. 28, 29]

Sporadic deviations from this preferred sewing structure are found in a variety of manuscripts, originating from across the Islamic world. Among these, the closest one related to the link-stitch sewn on two stations is a link-stitch sewn on more stations. A structure using four stations is the alternative most often encountered. Naturally, a sewing structure on four stations allows for more variation than the link-stitch on two stations. According to the survey results, the Islamic bookbinding tradition has its own typical version of this type of sewing, in which the thread does not pass on the inside of the gathering continuously, but exits through the second sewing station to pass on the spine-side of the gathering, where it makes a loop around the thread from the preceding sewing tour, thus forming an extra connection. The thread then returns to the inside of the gathering through the third sewing station. The exit in the fourth station and linkage to the thread underneath is similar to the ordinary link-stitch over two positions.[19] [figs. 30-32]

In other cases, three, five or more sewing stations are used. Technically, they form a different category of link-stitch sewing. [figs. 33-37] A link-stitch on three stations does not allow for the thread passing on the spine; the thread exits and enters again on the middle position, thus making a full chain-stitch. For larger manuscripts a link-stitch on five stations is sometimes used. Theoretically it is then possible that the thread alternates, and passes in the gathering-fold (between the first and second station and again between the third and fourth station) as well as on the spine (between the second and third and again between the fourth and fifth – and reversely in the next gathering), which would be comparable with the link-stitch sewing on four stations as described above. However, the only kind of structure encountered is with thread passing between all five stations on the inside of the fold,

[16] Apart from personal choice, availability and costs are of course important factors. In Part Five the usage of the materials is related to origin and timeframe, at which point the possible explanations for the differences will be considered.

[17] D. Jacobs and B. Rodgers, 'Developments in the conservation of Oriental (Islamic) manuscripts at the India Office Library, London' (1990), p. 117.

[18] See N. Baydar, 'Structural features and conservation problems of Turkish manuscripts and suggestions for solutions' (2002), p. 7; and S. Pugliese, 'Islamic bookbindings in the manuscript collection of the Marciana National Library in Venice' (2010), p. 53.

[19] This link-stitch on four stations deviates from the ones found in Coptic, Byzantine or Ethiopian codices. In those, either the thread passes from station to station within the spine-fold by which method also more chain-stitches are formed on the spine, or the gatherings are sewn in two columns with one or two needles. With the latter, Ethiopian method, the inside of the gatherings resembles the Islamic system (where the thread only passes between the first and second station, and again between the third and fourth station), albeit that the Ethiopian sewing scheme is discernible because of the double passing of the thread inside the gathering and also, when the spine of the textblock is accessible, one will find that no thread passes between the second and third station. See J.A. Szirmai, *The archaeology of medieval bookbinding* (1999), pp. 16-22, 33, 46-47 and 67-69. For comparative drawings, see K. Scheper, 'Preserving the Islamic manuscript as an artefact. Some object characteristics and treatment considerations' (2014), 98-100.

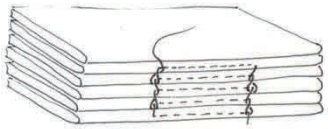

Fig. 25. A link-stitch on two stations. The thread exits one gathering in order to pass to the next , it is then taken behind the point of exit in the previous gathering, thus forming a chain of linkages.

Fig. 26. Or. 849 (1658). The opening shows the thread (in blue) of a link-stitch on two stations (the threads at head and tail are the primary endband warps).

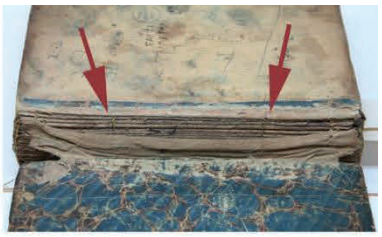

Fig. 27. Or. 17.143. A link-stitch on two stations seen on the spine, visible because the cloth spine-lining has become detached.

Fig. 28. Or. 8907 (1602). The manuscript is sewn with both green and red thread. This opening shows the knot with which the new length of thread is fastened.

Fig. 29. Or. 8907. Detail of the two sewing threads of different colour, knotted together.

Fig. 30. Or. 656 (1562). The opening shows the thread of a link-stitch on four stations.

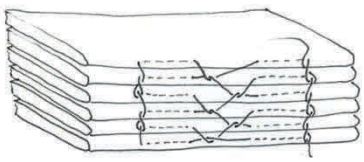

Fig. 31. Diagram of a link-stitch on four stations.

Fig. 32. Or. 340. The spine of the textblock demonstrates the passing of the thread between the second and third sewing station.

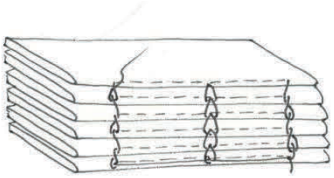

Fig. 33. Drawing of a link-stitch sewing on three stations.

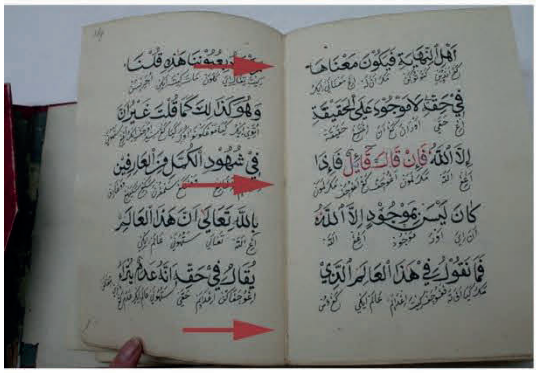

Fig. 34. Or. 1840 (1766, Java (?)). The opening shows the thread of a link-stitch on three stations. The stations are indicated by the arrows.

Fig. 35. Or. 6987. A link-stitch on five stations. On the outer stations no chain stitches are formed, the thread exits and passes on to the next gathering directly (red arrows). With ink the position of the stations were marked (black arrows), though the binder chose to position his sewing differently.

comparable with the link-stitch sewing on three stations, forming the full chain-stitches on the spine. [figs. 35, 36]

Technically, the variant link-stitch on three stations is more stable than a link-stitch on two and even more so than the one on four stations executed in the Islamic manner. The middle linkage forms a direct and small chain with the thread underneath, whereas in the 'four-station sewing' the thread forms a long loop when it crosses the spine on the outer spine-folds, which is rather slack. It is therefore remarkable that in this already superior sewing structure, often an additional effort was made to stabilise the sewing. In many of the specimens the thread is pulled behind the preceding stitch in the gathering spine-fold, creating a loop through which the thread then passed, thus forming a knot. This is the most complicated way of performing a link-stitch sewing. [figs. 38, 39] On the other hand, some of the link-stitch sewing structures on multiple stations lack a chain-stitch on the outer stations. They have a direct change-over, meaning that the sewing thread is not linked to form a chain with both the preceding and the successive gathering. As these outer sewing stations are very close to the endband sewing stations, the loss of connective strength is compensated by the endband sewing. [figs. 35, 36] Although not exclusively, many of the manuscripts made with the type of link-stitch sewing using three, five or more stations originate from Southeast Asia.

2.2 *Stabbed sewing*

Another unsupported sewing structure, though completely diverging from the link-stitch sewing structures, are stabbed sewing methods. With stabbed structures, the thread (or cord, or leather lace) passes through transversal holes in the textblock, quite close to the spine. [figs. 40-44] These sewing methods occur irregularly and throughout the Islamic world. They sometimes appear to be repair sewing structures. [fig. 41] They may also be the original sewing structure, although they need not be contemporary with the manuscript.

Stabbed sewings have an advantage over link-stitch sewing structures in that they can be applied to loose folios; link-stitches can only be made when the gatherings have proper spine-folds. Consequently, stabbed sewing structures are often found in manuscripts containing many loose leaves. Among these are texts with a large number of inserted leaves, such as notes, pieces of scrap paper or other additions on different paper. It has also been used as a repair sewing for damaged manuscripts with torn gathering folds or worm-eaten spines, or, for instance, on composite manuscripts assembled and sewn in a second binding campaign. In the latter case the holes from the original link-stitch sewing may still be visible in the spine-fold. [fig. 43] Furthermore the technique is found on manuscripts originating from North and sub-Saharan Africa where there is a particular tradition to write manuscripts on loose leaves or on bifolios forming gatherings that initially remained unsewn.[20] However, unbound manuscripts are prone to disorder and damage, so it is not unusual for these texts to have been bound at a later stage. Although a stabbed sewing is a quick measure to hold a stack of loose sheets together, the drawback is that a stabbed manuscript does not open as well as a link-stitch sewn book. Passing through the paper some millimetres (up to a centimetre) away from the spine, the thread (or leather lace) connects the pages tightly. As a consequence, text written close to the gutter becomes difficult to access.

The simplest form of stabbed sewing is a side-sewing technique using two stabbed holes. The sewing gets more elaborate when more sewing stations are used, or when the side-sewing technique is combined with overcasting, in which case the thread repeatedly passes over the textblock spine and forms a spine-loop. Some of the very thick stabbed manuscripts

[20] See for example: A. Brockett, 'Aspects of the physical transmission of the Qur'an in 19th-century Sudan: script, decoration, binding and paper' (1987), p. 47 and p. 53 (note 46); K. Johnson, 'An amuletic manuscript: 'Baraka' and 'Nyama' in a Sub-Saharan African prayer manual' (2010), pp. 161-162; *Encyclopaedia of Islam Three,* 'Bookbinding', http://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-3/bookbinding-COM_22883?fromBrillOnline=true (accessed 12-01-2013).

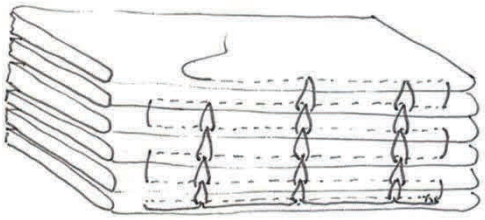

Fig. 36. Drawing of a link-stitch sewing on five stations. In this example, the outer stitches do not form a linkage with the sewn gathering underneath.

Fig. 37. Or. 8205. The thread inside the gathering passes almost from head to tail. Six stations were used for this link-stitch sewing; the warp threads of the primary endband form the seventh and eighth sewing station.

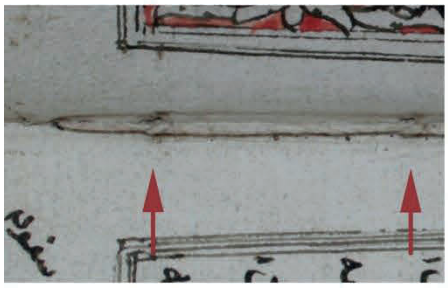

Fig. 38. Or. 8205. Detail of the thread inside the gathering. On returning from the chain on the spine, the thread passes around itself and forms a knot. Thus, the paper is protected from tearing when the thread is tightened.

Fig. 39. Drawing of the knotted stitch. The knot is formed after the thread linked on the spine and was taken back in the gathering.

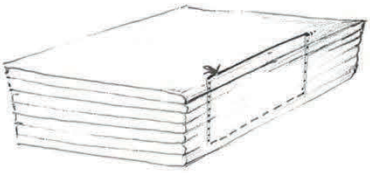

Fig. 40. Drawing of a basic stabbing technique, using only two stations.

Fig. 41. Or. 25.428. A manuscript with a stabbed sewing, which was once sewn on two stations; the red arrows point at the former stations of that link-stitch sewing.

Fig. 42. Or. 25.693 (1811). A manuscript with a stabbed sewing, parallel to the spine and using three stabbed holes.

Fig. 43. Or. 2749 (1766). A manuscript now sewn with a stabbed sewing (red arrows), perpendicular to the spine. The small holes in the centre (black arrows) bear witness of a former link-stitch on two stations.

Fig. 44. Or. 2378 (1724). The manuscript does not open well because the stabbed sewing prohibits the leaves from flexing in the spine-fold. The arrows point at the sewing stations.

were bound in two stages. First manageable sections were stabbed and sewn with relatively thin thread. Then these sections were connected by stabbing them once more with a wider punch and thicker thread.

2.3 *Sewing on supports*

Another diverging structure, although certainly not regularly encountered, are manuscripts sewn on supports.[21] The use of sewing supports is highly unusual in manuscripts from the heartland of Islam and Central Asia. In Southeast Asian manuscripts, however, sewing supports appear to have been used rather frequently. At least two techniques were used, sewn around and sewn across. [figs. 45-49] The first is a more elaborate technique, in which the thread forms a loop around the support and passes the support on the inside of the gathering twice. It thus causes some extra swelling in the spine but prevents the paper from tearing while it is sewn. The second method is quicker, the sewing thread moves from head to tail or vice versa in one direction only. It passes the supports on the spine side and causes no swelling, but fragile paper might tear more easily during the sewing process. In both techniques all gatherings are sewn all along, meaning that the thread runs the full length of the spine-fold except for the outer ends beyond the chain stitches. Two-on sewing or bypassing, ways to economise because supports are skipped or two gatherings are sewn in one sewing tour, was encountered in the survey only once.[22]

In the UBL collections the use of supports of parchment and tanned leather were recorded. The support slips (the outer ends of the support material extending transverse from the spine) were invariably adhered onto the boards in order to strengthen their attachment. [fig. 49] Data details of the methods used will be given in Part Five, where the question of when or why this method of sewing developed, or was introduced in a specific region, is also explored.

2.4 *The primary endband sewing*

Contrary to Western practice, in which, over the centuries, the function of the endband altered from a constructive binding element into a mere decorative feature, the Islamic endband in the predominant manuscript structure has always been very much part of the sewing structure. The typical Islamic endband consists of a primary endband, sewn over a leather core, and a secondary endband sewing. [figs. 50-52] As the link-stitch sewing leaves the textblock relatively unstable, the function of the primary endband sewing is crucial for the structure's stability. But even before the primary endband is sewn, the textblock spine is lined with a piece of leather or cloth. This spine-lining is then included in the sewing structure: the anchoring threads of the primary endband pass over an endband core and through every gathering, as well as through the spine-lining. Thus they provide an additional connection and strength to the outer ends of the textblock spine where such strength is most needed. The application and function of the spine-lining is further discussed in paragraph 2.5 below.

The method of manufacturing the endband has been remarkably consistent and this characteristic component should therefore be considered an integral part of the sewing structure; even when deviating sewing structures were applied we still find a primary

[21] Obviously, this category only describes original bindings made by local craftsmen, contemporary with the manuscript; Western repair sewings were encountered but excluded.

[22] With two-on sewing two – or more – gatherings are sewn while the thread passes once from head to tail or vice versa, using at least three stations. Bypassing is a technique that saves time because the gatherings are sewn without using all sewing supports; with each sewing tour an alternating support is skipped. Unavoidably, these techniques resulted in less stable structures than the traditionally sewn textblocks. Nevertheless, in Western sewing structures from 1550 onwards such time-saving sewing methods became increasingly common, as a response to the growing output of the printing presses. See N. Pickwoad, 'Onward and downward' (1994), pp. 75-78.

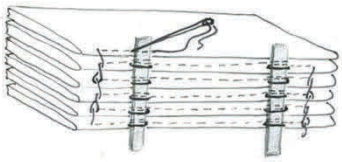

Fig. 45. Drawing of a supported sewing, with the thread sewn around the supports, using two strips of leather or parchment.

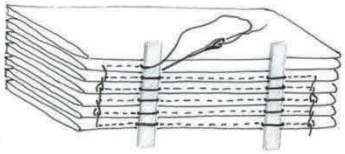

Fig. 46. Drawing of a supported sewing, with the thread sewn across the supports, using two strips of leather or parchment.

Fig. 47. Or. 6997 (1851). The textblock was sewn on three tanned leather supports, which have deteriorated rather badly.

Fig. 48. Or. 2286 (1859). Gathering fold exposing the sewing thread. The gathering is sewn all along, the thread passes on the outside of the supports, so called sewn across.

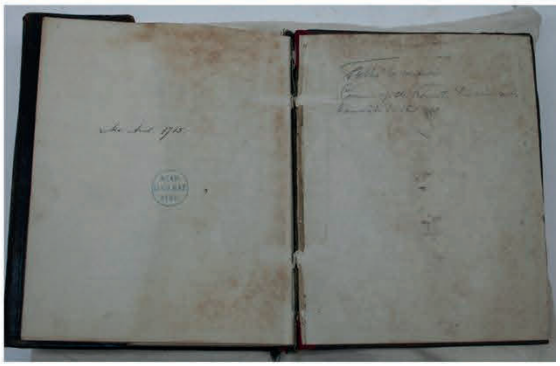

Fig. 49. Or. 2286 (1859). Inside front cover. In the joint the two supports are visible. The support slips are used for board attachment, they are pasted onto the inside of the board and covered with a doublure or paste-down.

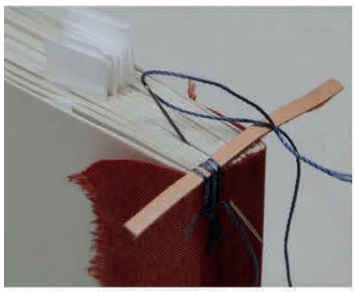

Fig. 50. Sewing of the endband on a mock-up: the tiedowns pass over a leather core, and through each gathering.

Fig. 51. Or. 17.143. The leather spine is missing, thus the cloth lining and the endband's tiedowns at head and tail are clearly visible.

Fig. 52. Or. 1196. The predominant secondary endband, the chevron type.

Fig. 53. Or. 1842 (ca. 1770, Banten, Northwest Java). A rather complicated endband weaving (its sewing scheme as yet unresolved although it does appear to consist of a primary and a secondary sewing).

Fig. 54. Or. 1677. A diverging primary endband technique in which the tiedowns are bundled up, either after finishing the whole primary endband sewing, or while the endband is being sewn. There is no secondary sewing.

endband that connects all gatherings to the spine-lining (with the exception of a few stabbed repair sewings with extensive paper damage). A secondary endband with a more decorative function was applied in most cases; the exceptions to this rule were scarce. [figs. 53-55] The thread for the primary sewing is often the same as the one used for the textblock sewing, but a thread of diverging colour or thickness is also frequently found. Usually the thread is fastened with a knot in one of the outer gatherings but different systems with a fastening on the spine side are used as well.

The core was often made of a small strip of leather but may also consist of twisted threads or textile strips or, less commonly, stiff material like bamboo or reed. In the reference book on endbands, *Les tranchefiles brodées* (1989), parchment is suggested as an alternative material for endband cores in Islamic bindings, but only two examples were found in the present study.[23] [fig. 56] In the final result the core is as long as the textblock is wide, but to manufacture an endband a longer core material was taken initially. The endband was sewn on it and only after finishing the secondary sewing were the extending ends of the core cut away. Evidence of this working method is found on a few manuscripts in which one of the endband-cores, apparently forgotten, protrudes over the joints. [figs. 57, 58] However, in some parts of the Islamic world it seems that the extensions of the endband cores were kept intentionally; the strips of leather were pasted onto the outer textblock leaves, or secured on the textblock close to the spine with a thread passing through the leather and a stabbed hole in the textblock.[24] [fig. 59] On many Indonesian endbands the cores are not trimmed either. And, to make them even more distinctive, these cores are often not made of leather but of colourful cloth or threads, forming tufts at the joints (see paragraph 5.7, figs. 112-114).[25] Lastly, a small group of similar endbands could be identified that diverge from the predominant endband structure because no endband cores were used at all, although the outward appearance of these endbands is very traditional. With this system, the binder used either a horizontal cut in the textblock edge in which a thread was laid – perpendicular to the spine – to secure the position of the tiedowns, or a thick and rigid spine-lining was applied through which the tiedowns were sewn. Both methods seem to be designed to support and sustain the endband in position. However, neither of them appear to be easier, quicker or otherwise advantageous to the traditional use of the leather endband core. [fig. 60]

2.5 *The dual function of the spine-lining*

The authors of all historical sources except Ibn Abi Hamidah described the application of a spine-lining after sewing the gatherings.[26] Indeed, textblock spines appear as a rule to be lined.[27] The lining material is adhered with a vegetable adhesive and covers the spine from head to tail.[28] Generally leather or textile was used, sometimes paper is found as an additional layer. These spine-linings are crucial in the structure of the manuscript. They have a dual

[23] *Les tranchefiles brodées*, (1989), pp. 73, 86.
[24] Data about these manuscripts is provided in Part Five, paragraph 3.3 and 3.4.
[25] More precise data is provided in Part Four and Five.
[26] The available translation of Ibn Abi Hamidah by Adam Gacek (1992) is abbreviated, and as I have not been able to access the text from another source, I cannot yet be conclusive about his practices.
[27] Results from the survey attest this practice; with only a few exceptions, all spines are lined. See Part Four, paragraph 2.3.
[28] Different kinds of adhesive were used, such as starch made from wheat, rice, or the dried and ground root of the asphodel plant. Gums were used as a binder for pigments, though they could be applied as adhesive in bookbinding as well. In the historic sources the usage and particular application of adhesives were not specified in detail, but there is fragmentary information. For example, Ibn Badis describes the use of asphodel paste to adhere the paper linings to the textblock spine. See G. Bosch et al., *Islamic bindings and bookmaking* (1981), p. 49. That the use of adhesives could vary over the region is attested by Pedersen when he cites a tenth-century traveller-bookbinder who mentioned the use of asphodel paste to make pasteboards or apply the doublures in Palestine whereas he used wheat starch for the same procedures in Yemen. J. Pedersen, *The Arabic book* (1984), p. 103.

Fig. 55. Or. 1677. The endband as seen from the spine; it appears to consist of a primary sewing only, the horizontal threads only bundle the tiedowns.

Fig. 56. Or. 546 (1224, though resewn). The endband core consists of a tightly rolled up material, possibly parchment.

Fig. 57. Or. 504 (1520, Gallipoli). Detail of an endband at the tail side, which shows a slip of the endband core that was not cut after sewing.

Fig. 58. Or. 11.723. The extending sides of the endband core were not trimmed, they were folded backwards on the spine. Had the cover not become detached, they would not have been visible.

Fig. 59. Or. 6348 (1664). Detail of an endband at the head side. The slip of the leather endband core was intentionally not cut, since part of the endband sewing pierces the leather.

Fig. 60. Or. 2611 (1767). Endband sewn without an endband core; across an incision in the textblock lays a thread that functions as a grip for the tiedowns. Its outer ends are pulled through stabbed holes in the lining and textblock (arrow).

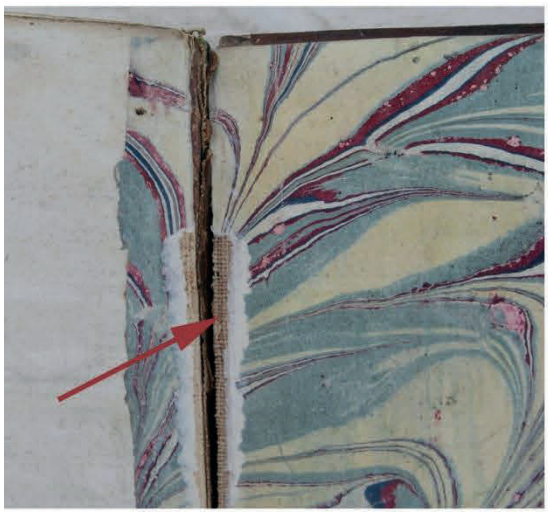

Fig. 61. Or. 755 (1612). Damage in the joint of the marbled paper doublure with stub reveals the cloth flange underneath. As the inner joint is completely torn, it may not be immediately clear that this cloth is the extension of the spine-lining. The arrow points at the cloth. The cloth pattern, visible on the left side of the joint, is only an imprint of the cloth in the paste-layer on the torn paper.

Fig. 62. Or. 2686 (1844). The extension of the cloth lining was adhered onto the outer leaves of the textblock; it did not function in the board attachment structure. Now that the adhesive with which the leather was pasted onto the textblock spine has lost its strenght, the paper joint has split. The remaining stub covers the cloth pasted onto the textblock's outer leaf.

function, not only stabilising the textblock but also supporting the primary endband sewing and preventing the paper gatherings from tearing at the sewing stations of the endband tiedowns, as the lining material covers the spine full length. Moreover, the lining usually extends past the width of the textblock spine several centimetres on both sides. These extensions are generally used to strengthen the board attachment, by adhering the flanges onto the inner side of the boards. Although the application and function of both cloth and leather spine-linings are essentially the same, the subsequent treatment of the flanges and finishing of the inner joints differs for both materials.

According to the survey data (see Part Four, paragraph 2.3), in the majority of cases where a textile was used, the lining extends over the sides of the textblock spine and these flanges were used to strengthen the attachment to the boards. These cloth joints were then covered by means of the stub from the doublure hinge or an additional inner joint of paper or leather (see also the drawing fig. 23). Alternatively, an additional bifolio could be pasted along the gutter of the outer gatherings of which the outer leaf was applied as a paste-down. As a result, these cloth flanges are not directly visible, unless the joint is damaged. [fig. 61] Only rarely is visual proof found that the textile flanges were pasted onto the outside of the board. That way, the cloth supports the board attachment but does not cover the inner joint (see fig. 72 in 3.2 below).

Another method, though far less frequently encountered in this study, was to paste the textile flanges onto the outer folia, after which the fabric was covered with the doublure stub or an additional strip of paper, or sometimes leather. In these cases the extending flanges are always cut relatively short. [fig. 62, see also the drawing fig. 24] Obviously, in these instances the flanges do not function as a board attachment reinforcement, which raises the question why then this manner of working was employed. Perhaps the frequent delamination of the textile lining from the textblock spine over time prompted binders to rethink their practice. This delamination process could be speeded up by frequent use: the spine would have to curve in a hollow and the flexing of the joint would put stress on the attachment of the lining to the textblock. By adhering the flanges onto the outer leaves of the textblock – instead of on the inner boards – at least this tension would not occur. Nevertheless, this possible reasoning does not explain why this particular method only seems to be used for cloth spine-linings and not leather ones. Leather linings always appear to be used for board attachment, no examples were found of leather lining extensions pasted onto the textblock.

Nearly all cloth linings are of a tabby weave. Whilst either the warp and weave threads usually follow the direction of the spine, there are a few rare examples of the cloth being cut on the bias – a technique that guarantees additional tensile strength in the joint. [fig. 63] Many textiles used for spine-linings are undyed, plain fabrics. As the material is used for strength and functionality, but, as stated above, not meant to show after the binding was finished, this cheapest choice of cloth is understandable. It is therefore interesting then that coloured fabrics, often reddish or blue, are quite regularly encountered, as well as blue chequered or striped patterns. Now and then a block-stamped design was also found.

When leather was used for lining the textblock, it always extends past the width of the spine and the flanges serve as a structural component like most textile flanges. But, unlike the textile spine-lining, these inner joints were not covered. They were kept visible, apparently appreciated as a decorative binding element (see also the drawing fig. 20). When the doublures are made of paper, these leather inner joints contrast nicely. [fig. 64] However, when leather was also used for the doublures generally a similar piece of leather (in structure and colour) was chosen. From this custom, and the high standards of craftsmanship, it follows that the overlap between the leather spine joints and the doublure is very subtle, and the seam is often hard to detect. This creates the visual effect of a ‘continuous doublure’ (one piece of leather used as the lining and the doublures). [fig. 65] Such ‘continuous’ doublures, which are in fact the flanges of the lining extending all the way to the front-edge of both boards (and indeed, often the envelope-flap as well), do also occur. Technically they can be

Fig. 63. Or. 398 (1571). The textile spine-lining is cut and used on the bias. The damage to the leather joints gives visual access to the spine-lining; the arrow points at the threads of this cloth.

Fig. 64. Or. 930. The extending side of the leather spine-lining is pasted onto the inside of the board. A part of it is visible as the inner joint, the part underneath the doublure caused discolouration of the paper because of the acidity of the leather.

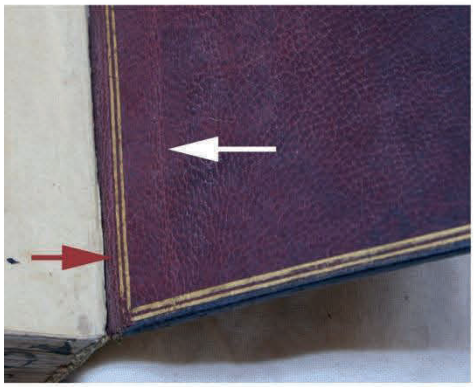

Fig. 65. Or. 1065. Detail of the front doublure. The overlap between the leather joint (the flange of the spine-lining) and the doublure is obscured by the gold lines; the edge of the doublure is just visible on their left side. A slight swelling of the doublure to their right betrays the edge of the leather flange underneath.

Fig. 66. Or. 731 (1588, Egypt). Leather spine-lining in two pieces, both covering the textblock spine. The parts extend over the joint up to the fore-edge, thus forming the doublures. Note the primary endband warps passing through both layers, now causing damage to the delaminating spine-lining.

Fig. 67. Or. 14.204b (1859), Or. 14.201 (1853), Or. 14.209 (1856, Cairo). Unsewn manuscripts in wrapper bindings. The upper left manuscript retained its connective leather strips. Discolouration on the other spines bear witness of similar connective strips, now lost.

Fig. 68. Or. 14.427 (nineteenth century). An unsewn manuscript in a wrapper binding. The connective strips consisted of black cloth. The interior of the binding demonstrates the degree of finishing: the leather at head and tail is turned-in and the interior is fully covered.

made of one or two pieces of leather, in the latter case the pieces overlap on the spine. [fig. 66] Which method was preferred is hard to determine because the evidence is only visible when the textblock spine is accessible because of damage.

In a few instances, the spine-lining material is cut along the shoulders of the textblock, in which case there are no flanges. It remains speculative at this stage whether this feature should be attributed to a certain tradition or if it is to be related to a rebinding method for manuscripts in which the original sewing and lining are kept but not the original flanges, which were perhaps torn or still stuck to the covers of the first binding.

2.6 *Unsewn manuscripts with wrapper bindings*

Lastly, a connective method that is not a sewing structure needs to be mentioned. It concerns a group of manuscripts consisting of proper gatherings which are not, and never were, sewn. They do, however, have bindings that show many similarities with those of sewn Islamic manuscripts. The treatment of the textblock as well as the accompanying wrapper binding suggest a method of assemblage that was chosen with a purpose. The fold lines in the gatherings have no holes to indicate a former sewing structure and there are no endbands. The position of the gatherings is secured only by two strips of leather or cloth that are pasted onto the textblock spine; these strips extend the width of the textblock spine with approximately a centimetre, at front and back, and these extending sides are pasted onto the outer textblock pages. The edges of the textblocks indicate some treatment: they are smooth and all gatherings are cut to the same size. The manuscripts are further protected by a wrapper cover, that fits perfectly but is not connected to the textblock with adhesive or by any other means. When the connective strips are preserved and intact, they reveal that they were not used as sewing supports and were not connected to the wrapper bindings. In fact, the wrappers themselves are completely finished, their interior shows no indication of being a half-product, the inside of the leather spines is covered with either textile or paper and sometimes even a board (the width of the spine) has been applied. From the exterior, these manuscripts look just like their sewn counterparts, but they clearly form a distinctive group. [figs. 67, 68]

In the historic literature the custom of leaving the gatherings unsewn, keeping them together with a protective wrapper binding that has all the features of an Islamic-style binding, is not mentioned.[29] However, quite a few such manuscripts have been preserved and examples are present not only in the UBL but also in libraries in Italy[30], Turkey, Egypt and Algeria[31], and Michigan.[32] It remains uncertain at present why and where these manuscripts were produced.[33] Economic reasons may have been involved since refraining from sewing and endbanding would have saved substantial time and cost, yet the manuscripts could still be traded, transported or stored in this fashion. Intensive use would have been impractical but the custom could be connected to copying practices; loose, exchangeable gatherings promote the efficiency of a copying workshop. Another hypothesis is that the unsewn but neatly supported and wrapped gatherings were stored like this in a bookseller's shop, awaiting a customer. What is clear, however, is that the physical form of this kind of manuscript is not coincidental; it is part of the general tradition although it cannot yet be fully explained. In

[29] Nor was this type of manuscript mentioned, as far as I know, in the secondary literature until I described it in 'The conservation of the Middle Eastern manuscript collection in the Leiden University Library' (2008), p. 68.
[30] Personal communication with Sara Fani, National Central Library Florence, at a COMSt workshop (December 20, 2010).
[31] N. Baydar, 'Newly identified techniques in the production of Islamic manuscripts' (2010), p. 70.
[32] E. Kropf, 'Historical repair, recycling, and recovering phenomena in the Islamic bindings of the University of Michigan Library' (2013), pp. 26-28.
[33] The 28 manuscripts identified in the UBL are relatively young, mostly nineteenth-century manuscripts.

Fig. 69. Or. 1065. The leather covering of the back board and flaps was adhered first, and the part adhered onto the spine is overlapped by the leather extending from the front cover. The seam lies close to the back joint.

Fig. 70. Or. 1392. A small manuscript (9.3x7.7x2.8 cm.) which is covered with the two-pieces technique; the seam of the two pieces of leather is visible above and below the right edge of the paper label.

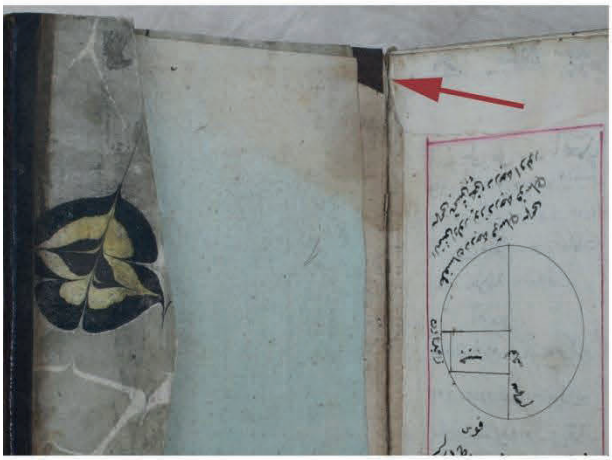

Fig. 71. Or. 20.400 (1749). The leather turn-ins at head and tail cover the paper stub, which was pasted over the cloth flange over the inner joint prior to the turning-in of the leather of the spine.

Fig. 72. Or. 11.550 (1851). The cloth lining is used for board attachment by pasting the flanges on the outside of the boards.

Fig. 73. Or. 47 (1559). Part of the tab is torn and now missing but the remaining half is neatly folded over the endband.

Fig. 74. Or. 10.783 (1869). The tab was moulded over the endband and slightly indented with a tool along the endband's edge. When the incision was made that allows the making of the turn-ins over the board edges, the leather was cut a little too deep.

order to learn more about this particular group, and to explore the hypothesis of copying schemes as well as that of booksellers practices, it will be necessary to study these manuscripts in more detail, and to locate as many examples as possible. It is therefore important that conservators and collection managers be aware of this type of binding, so that they decide to box rather than bind these manuscripts.[34]

3 Covering and board attachment

3.1 *Full leather bindings and the use of the two-pieces technique*

The numerous bindings that are completely covered in leather give the impression that they form a single category, but when we look carefully at the way they are made, a remarkable difference in construction comes to light. Many full leather bindings show an overlap on the spine; these bindings were covered with two pieces of leather instead of one. The leather edges, overlapping on the spine, were finely pared and the seam is hardly recognisable, so it was not meant to catch the eye. Usually both parts cover the spine width, and the edge of the top layer lays close to one of the joints. [figs. 69, 70] Why did some binders use two pieces of leather to cover the front and back board separately, while others used one piece?

There must be practical and technical reasons for this practice. Format could be an issue. If the technique was intended for outsized books too large for one piece of leather, the two-pieces should mainly be found on large volumes. However, quite a few original bindings in the UBL contradict this hypothesis. The majority of the bindings made with this technique are of modest size, the average is around a height of 25 and width of 18 centimetres.[35] Furthermore, it certainly seems unlikely that there would not have been large enough pieces of leather available to cover such small manuscripts as, for instance, Or. 1392 and Or. 1212.[36] [fig. 70]

It can also be argued that the technique is an economic way of using up smaller pieces of leather. In that case one would expect to find examples using different kinds of leather, with a dissimilar structure caused by differences in the hair follicle patterns of the skins, or slightly different colours. This hypothesis also does not hold. None of the bindings with the two-pieces technique which were examined in this study show differences in the two pieces of leather used on one manuscript. The use of leather from one and the same hide for every single artefact is remarkably consistent. This implies that the processing of pieces of leather was not required for economic reasons. Indeed, the binder already had other uses for such smaller parts of leather; he could use them to cover the spines and edges of çaharkuşe bindings as well as for spine-linings and the inner lining of the fore-edge flap. Additionally, they could be usefully applied for the repair of bindings.

The sheer rate of recurrence of this method is so large that it points rather to a working routine that was part of the Islamic bookbinding tradition.[37] Therefore we must look for other reasons to explain the frequent use of the two-pieces technique.

The technique is remarkably undiscussed in specialist literature, so suggestions for the rationale behind the technique were not found except for an article by Kristin Rose, who

[34] The fear of losing unsewn textblocks with wrapper bindings to well-meaning collection managers and binders is certainly not hypothetical. In Baydar's article (2010) an example of such a 'correction practice' is actually described; p. 70.
[35] The largest exemplars are not bigger than 36x28 or 38x25,7 centimetres.
[36] Or. 1392 measures 9.3x7.7x2.8 centimetres, Or. 1212 12.7x9.3x2 centimetres.
[37] Although 11% of the full leather bindings are so heavily damaged that the application method is not detectable, 40% of the remaining full leather bindings are made of two pieces of leather with an overlap on the spine. It should also be born in mind that of the full leather bindings categorised as being in one piece, some specimens may actually consist of two pieces of leather, applied so expertly and preserved in such good condition that the technique was not recognised despite the meticulous examination.

to my knowledge was the first to remark on this method of leather application.[38] Rose suggests it may be specific to Turkish manuscripts. Yet it is a rather common technique found in many Islamic manuscripts and not only confined to Turkish bindings, as the survey results attest. It is probably often due to the neatly pared leather that the technique is rather difficult to detect visually, causing this method of leather application to be overlooked by many conservators and other researchers.[39] Frequently the fact that the full leather binding is actually made of two pieces of leather is revealed only when the binding is damaged or the leather starts to deteriorate. This is presumably why relevant Western literature prior to Rose's article is lacking.[40] Two of the historic sources do, however, refer to the technique.[41]

In order to understand the application method of the two-pieces technique, we have to consider the practical advantages. When a binding is prepared separately from the textblock it might be easier to tool or otherwise decorate the leather. The cover cores are not solid boards but laminated paper sheets. Placed on the somewhat springy textblock, these materials may not offer the firm support required for tooling and stamping. The delicate and highly elaborate tools that were used for this kind of leather decoration would have necessitated quite some pressure, as can be detected from the frequent imprint in the boards or cuts in the leather along the edges of stamped patterns. To apply pressure on these tools firmly and evenly, which became possible when the separate loose covers were worked on a hard surface, would have improved results.

At the same time, when the integral cover would be prepared separately (as in a case-binding), there is an important drawback. Great precision would then be needed to ensure that the separately prepared cover fits the manuscript. If the spine-leather is taken a bit too wide or too narrow it is going to either leave the boards extending beyond the fore-edge or falling short by several millimetres in which case the fit of the envelope flap may cause problems as well. Also, the leather's ability to expand when wetted and shrink when dried has to be anticipated. Equally important are the exact angles at which the boards have to be adhered to the leather. If the angles deviated only slightly the boards would not line up with the edges of the manuscript. So, although making a case-binding is feasible, there are risks in

[38] K. Rose, 'Conservation of the Turkish collection at the Chester Beatty Library: a new study of Turkish book construction' (2010), pp. 47-48. However, the existence of the technique was common knowledge to contemporary binders in Turkey, as is attested by a posting on the BookArtsWeb, 1998. http://cool.conservation-us.org/byform/mailing-lists/bookarts/1998/04/msg00364.html (accessed 07-02-2013).

[39] For example, Max Weisweiler, who meticulously studied many bindings, failed to see the two pieces of leather on several of the Leiden manuscripts, Or. 190, Or. 270, Or. 539 and Or. 590. He described them as "aus einem Stück gearbeitet" (fashioned from a single piece of leather), while he always remarked on other specifics such as the possible repair or renewal of the leather spine or edges, or a replacement flap. M. Weisweiler, *Der islamischen Bucheinband des Mittelalters* (1962), pp. 178-179, 185-186.

[40] In a very different context however, the technique is mentioned by the seventeenth-century traveller Jean Chardin, *Voyages en Perse, et autres lieux de l'Orient* (1711), vol. 4, p. 259. The chapter provides an overview of many different professions, among that of the binder. Although the description is very brief, it reveals a condescending view of the Oriental tradition: "Les relieurs travaillent fort mal aussi; & ce qu'on aura peine à croire, c'est qu'ils ne sauroient faire la couverture tout d'une piece. Ils la font de deux pieces qu'ils collent sur le dos, lequel est toûjours plât, ne le sachant pas faire rond. Et quoi qu'ils collent ces piéces fort proprement, la collure ne laisse pas de paroître avec le tems". I will elaborate on this text in the literature analysis discussing Yves Porter, Part Three, 5.3, as he first used this source in the context of understanding Persian manuscript culture and materials.

[41] G. Bosch et al., *Islamic bindings and bookmaking* (1981), p. 66, quoting Sufyani: "Then when you have finished making the stamp fold the edges of the leather upon the edges of the pasteboard – so when you finish the work of the first cover lay it upon the marble slab before you [...]. While the book rests on the first cover, the second board is pasted and covered with leather". A. Gacek, 'Arabic bookmaking and terminology as portrayed by Bakr al-Ishbīlī' (1990-1991), p. 109: "The next step [...] was to pare the leather and mount it on the boards [...]. It was done with one or two pieces of leather".

the procedure. These are, however, easily overcome by using a different method: the two-piece leather technique. With this method, both boards are prepared separately and individually, each of them covered in its own piece of leather, the back board with the fore-edge and envelope flap attached. The boards are attached to the textblock one by one, with the leather that extends from the spine edge, which is adhered onto the textblock spine.

Thus, this method allowed for a controlled positioning of the boards on the textblock while it enabled the binder to first concentrate on the delicate tooling of the covers. The boards were covered with leather, the exterior decorated and only then after that were the individual boards positioned and attached to the textblock by adhering them with the extending leather to the spine. This leather at the spine side was pared until it was extremely thin at the edge, though not necessarily straight. After adhering both parts to the textblock spine, they were rubbed together on the spine with a bonefolder or similar tool after which the overlap is hardly visible. The use of similar pieces of leather added to the subtle result. After the boards were thus attached, the binder secured the construction by means of the flanges of the spine-lining, which were pasted onto the inside surface of the boards, and then the doublures were applied.

The two-pieces technique is typically suitable and applicable for full leather bindings which had their covers decorated with tooling or stamping. In fact, the technique seems so inappropriate for çaharkuşe bindings, that the few occurrences made with two strips of spine-leather are assumed to have been made that way rather mechanically.[42] The existence of these types will be further discussed below, in paragraph 3.4, 'Tabbed partial leather bindings'. Without primary documentation indicating why both techniques (one and two pieces of leather) were used to produce full leather bindings simultaneously, we will have to consult the manuscripts themselves, as physical examination may provide clues that shed light on the decision criteria. It is important to keep in mind that the techniques may have been commutable, and that preference for the one or the other was only determined through culture or tradition, or, on a different stratum, through master- and apprenticeship. Even though questions still remain with regard to the development of the two-pieces technique, to understand the Islamic manuscript tradition it is important to be aware of its use and prevalence. This is all the more an issue since the Islamic manuscript structure is often designated as a case-binding, meaning that the binding is made as a separate entity, apart from the textblock, only to be applied in the last act in the process of bookbinding. That typification is contradicted by the two-pieces technique, even though the two separate covers are partly prepared in advance. In essence, the two-pieces technique is a built-on structure, since the cover is assembled on the textblock. And in addition, the Islamic binders used other techniques that can be classified as 'built-on' bindings, as is further explained in the paragraphs below.

3.2 *'Built-on' bindings*

Above, the two-pieces technique is described as a method used to cover the loose boards individually and beforehand. The development of this method – which appears to be unknown to other bookbinding traditions in the region – can be explained by relating the advantages of this practice to the high standard of binding decoration that can be found on

[42] Since çaharkuşe bindings are generally executed with paper panels covering the boards, which are only rarely tooled, the initial reason to use the two-pieces method is not in order. For sheer practical reasons the two-pieces technique seems unsuitable for the making of çaharkuşe bindings when the boards would be covered apart from the textblock, prior to attachment to the textblock: only a small part of the spine-leather strip is adhered onto the board and this would easily detach if the boards were thus prepared. The two-pieces technique in these cases seems rather to fit in the category of the built-on bindings, see paragraph 3.2 below.

the earliest exemplars displaying the two-pieces technique.[43] It is, however, also feasible that a full leather binding, using the two-pieces technique, was built on the textblock. The boards would then not be prepared and covered with leather in advance, apart from the textblock. Instead, each piece of leather would be applied to the board and textblock spine, in one continuous action. For this procedure, the board would have to be positioned on the textblock, though its attachment to the spine-lining flange was not required in this stage yet. The resulting structure of either application method is similar, though the latter would have had consequences for the decoration. For when the leather is applied to the boards, positioned on the textblock, and adhered to the spine at the same time, any tooling had to be executed on the assembled binding.[44]

To build and assemble the binding on the textblock in separate stages is a method not only used for full leather bindings made with the two-pieces technique. It is also found with full leather bindings covered in one piece of leather, and it was used to make partial leather bindings. This contradicts the common assumption that Islamic bindings were case-bindings, therefore it is necessary to examine the evidence that was found and the rationale behind the built-on technique in detail.

Especially for çaharkuşe bindings it makes sense, technically, to manufacture them in this fashion. The boards were positioned on the textblock, then the leather was applied – first to the textblock spine, then folded over the joints and onto the boards. Theoretically partial leather bindings can be made separate from the textblock (as a case), but of course the same argument applies as with full leather bindings: the risk is that the spine-leather and joints with the boards do not exactly match the textblock spine, in which case the boards do not fit or close properly. Equally when the textblock does not have exactly straight angles, it is not easy to make a case-binding fit beautifully. But a particular disadvantage of making a partial leather binding as a case is the substantial instability of the product. The overlap of the spine-leather on the board edges is so small that it is actually not feasible that the cover was made this way. For, at this point in the construction there would be no other material whatsoever to stabilise the cover on the inside; the leather was not turned in over the joints (which could have steadied the binding, had it been made as a case). The chance that the boards – particularly the back board with the flap attached – would detach from the small leather overlap is evident. When, in contrast, we imagine the making of a partial leather binding as a built-on binding, no such complications are encountered. The application of the spine-leather, first to the textblock spine and then to the boards (put in place on the textblock or even already attached to the flanges of the spine lining) is a controllable and effective procedure.

In advance of the analysis of the five historic texts (Part Three) it is useful to already mention here that two of the primary sources indicated the variant method of construction, in which the cover attachment is divided in stages. Ibn Badis clearly described the board attachment to the textblock prior to the leather application. Ibn Abi Hamidah pointed at the same method, describing the mounting of the leather to begin on the spine, and only then over the front and back covers.[45] The fact that this *built-on-textblock* structure is mentioned in historical sources is interesting since it is contrary to what later has become the accepted classification of the archetypal construction, namely, the case-binding. The inappropriateness of that designation will be discussed further under paragraph 4, 'A problematic term: Case-binding'. To find this built-on procedure in the primary sources is also noteworthy because,

[43] See Part Five, paragraph 4.2; the two-pieces technique was found on several elaborately tooled Mamluk bindings.

[44] It is well conceivable that over the sixteenth and seventeenth centuries, while the art of embellishing bindings lavishly in gold was declining and the partial leather binding became more common, the original motive for the development of the two-pieces technique was gradually forgotten, causing the procedure to change.

[45] For a more thorough description and full references see Part Three, 1.2 and 1.5.

when these treatises were written, the çaharkuşe technique was not yet in vogue; only full leather bindings were being made. Thus these written accounts indicate the usage of the technique to assemble the cover on the textblock for full leather bindings. For practical reasons it is perfectly acceptable that this technique was commonly used for the manufacture of bindings in general. But, can physical evidence be found to prove this method was actually used?

When looking for evidence of boards being attached prior to the covering material, the order of layers found on the inside of the joint reveals much about working methods. If a binding was prepared separately from the textblock, except for the doublures and inner joints which are formed by the spine-lining flanges, one would expect to always find the flanges on top of the covering material turn-ins.[46] However, in several manuscripts the encountered sequence of materials is reversed. [fig. 71] This indicates that the boards were first attached to the flanges and the covering material was only turned in over the board edges afterwards; the turn-ins therefore cover part of the flanges and possibly even the additional inner joints.

Further proof of the usage of the built-on method is provided by bindings with the textile flanges pasted onto the outside of the boards. Although examples are scarce, as this characteristic is only visible when damage gives access to the structure, it is obvious that this method of board attachment is only possible when the covering material is not yet applied. Therefore, it proves that the boards of these volumes were first attached to the spine-lining and covered afterwards. [fig. 72]

There is one more indication that the built-on method was widely used. It is the characteristically tabbed leather spine covering; its significance is explained below.

3.3 *Tabbed spines*

We can learn more about how Islamic bindings were actually made when we examine them in more detail; especially the investigation of the leather application and the method to finish the head and tail of the spine offers new insights. As explained above, in many cases the spine-leather protrudes at head and tail, forming a tab that is frequently moulded over the endbands to protect them. [figs. 73, 74] When no tabs are present the leather is, or appears to be, cut off straight at the board edge. A reservation needs to be made because it is hard to establish whether the spine-ending is intentionally flush with the boards, or if damage of the tabs forced owners or users to cut the tabs in order to prevent further damage. Either way, it is clear that also in the flush version the leather was not turned-in on the spine. Turned-in spine-endings appear to be an absolute exception, irrespective of the covering method (leather in one piece, leather in two pieces, or partial leather bindings). In and of itself this is interesting because it supports the assumption that the Islamic binding structure is not a case-binding. To understand this we must visualise the stages necessary for covering the boards.

If a binding was prepared separate from the textblock, it would have been easiest to turn-in the leather at each side of the cover, head and tail, over the front and back board edges at the same time. As a result, the leather on the spine would be turned-in at head and tail as well; it would pass continuously over the spine from cover to cover. Such a turned-in spine-ending is, however, hardly ever encountered, as stated above. The other – predominant – types of spine endings, the tabbed version with the leather extending beyond the board edges and the one cut flush with the board edges, would require extra treatment when the cover was made as a case: the leather had to be cut at the joint before it could be turned in over the board edges while leaving the spine-leather to extend. An additional horizontal cut was also needed if the leather was not left to extend in a tab. Since we can assume that

[46] In fact, this sequence of materials is often encountered. From the making of mock-ups it indeed appeared practicable to first apply the leather on boards and textblock spine, and only then adhere the extended sides of the spine-lining onto the inside of the boards, thus covering the turn-ins.

binders did economise and refrained from unnecessary actions, the question arises what this implies.

One could argue that the reason for choosing this more elaborate technique originated from wanting to produce a compact and straight codex form; the binder may have wanted to avoid the additional swelling of the spine at head and tail that could have been caused by turn-ins. However, the excellent paring skills of these binders (as with the almost invisible seam along the spine where two pieces of leather have been joined) almost certainly rules out this explanation. Furthermore, from the investigation of wrapper bindings on unsewn manuscripts we learned that these wrapper bindings all have their spine-endings turned-in. Yet the technique is not found in attached bindings, so evidently it was used very selectively and intentionally. Then why did binders choose to cut the covering leather at the joints as described above?

Let us imagine the making of a cover when it is built upon the textblock, as opposed to a case-binding. When we consider the handling of the leather as it was applied to a textblock spine, with the boards either already attached (to the flanges of the lining) or at least positioned on the outer leaves of the textblock, it does make sense that the leather on the spine was not turned in. After all, the spine-lining covered the textblock spine from head to tail and the covering leather was pasted directly onto it; the leather then crossed the joints and was pasted onto the boards. To turn the leather in at head and tail of the spine, it would be necessary to loosen the already adhered leather at the outer spine ends, thereby also causing tension on the tiedowns of the primary endband sewing, for they pass over the spine-lining at the spine ends. Leaving the leather to protrude at head and tail meant that such risks were avoided. One of the historic treatises on bookmaking clearly suggested that the leather, after pasting it onto the spine and the outside of the boards, is first left to dry before the turn-ins are made.[47] This method certainly did not allow for making turn-ins at head and tail of the spine very easily. Apart from that it would be necessary to incise the textile or leather flanges of the joint at head and tail in order to make the turn-ins, when in this stage the full length flanges of the spine-lining were already adhered onto the inside of the boards. Thus, turn-ins at head and tail of the spine caused risk of damage to the endband tiedowns and weakened the structure. Instead, the alternative – cutting the extending covering leather at the joint, turning it in over the board edges but leaving the leather spine protruding beyond the edge –, seems sensible and practical. [fig. 74 illustrates the method as the cut was made a millimetre or two deeper than necessary]

The extending spine leather may have been too long or uneven, which may have prompted the bookbinder to trim the tab. Examples can also be found of tabs that seem to have been cut to size in situ. In those cases a thin knife cut is visible in the head and tail edge just beyond the endband, which seems to point at a method in which the protruding spine leather was folded over the endband and then cut, using the textblock edge as a support.

3.4 *Tabbed partial leather bindings*

In this respect it is especially edifying to consider the making of a çaharkuşe binding. The leather was smeared with paste and then adhered to the spine. It was rubbed with the thumb or a bone-folder after which the leather was folded over the joints and onto the boards that were positioned on the textblock. Since the overlapping part of the leather on the boards was only small, generally a few millimetres but sometimes up to one and a half centimetre, the binder probably waited before making the turn-ins until the adhesive had dried and the leather was firmly set. Only then did he proceed with turning the leather at head and tail over the edges of the board, onto the inside of the boards. Otherwise, the small leather strip would not have stayed in place because, to make the turn-ins, the board needed to be lifted and that

[47] "Turn-ins are done as a final step when the spine has satisfactorily adhered to the leather", A. Gacek, 'Ibn Abi Hamidah's didactic poem for bookbinders' (1992), p. 42.

movement would cause the still moist leather to detach from the board edge. As explained above, in order to make the turn-ins over the board edges after drying, an incision in the leather at the positions of the joints was necessary, since the complete adhesion of the spine-leather onto the textblock spine prohibited the making of a turn-in continuous over the spine (see also figs. 211-214, Part Six). The leather at the outer ends of the spine was thus left to extend over the endbands. The appearance of so many çaharkuşe bindings with tabs indicate this was regular practice.[48]

The theory that partial leather bindings were built onto the textblock (instead of being made as a case-binding) is also supported by the fact that a fair number of them were made in the two-pieces technique.[49] To envisage their manufacture as a case-binding plainly shows that such a procedure is unfavourable: the strip of leather needed for a partial leather binding's spine is small and using two strips of leather would only complicate the process. Moreover, as the boards of partial leather bindings are rarely tooled, this covering method did not require the two-pieces technique.[50] Nevertheless, it is well conceivable that the boards were prepared separately up to the application of the spine-leather (e.g. with the flap attached and all board edges covered). However, with the çaharkuşe technique, the part of the spine-leather that is pasted onto the board edge at the joint is minimal; the leather strip might easily dislodge when it would be applied before board attachment. It therefore seems more plausible that the board was positioned on the textblock, and the strip of spine-leather was applied to textblock spine and board edge in one go. This relatively simple procedure certainly doesn't require the use of two separate strips of leather, one for each board. Thus, a single occurrence of a çaharkuşe binding with the two-pieces technique could be dismissed as the odd one out. However, the number found in the UBL collections is too large for the phenomenon to be dismissed as an aberration. The examples may therefore indicate that some binders rather automatically used techniques they had learned and applied when covering bindings in full leather, without adapting their approach to this different design. Yet, this theory suggests that the two-pieces çaharkuşe bindings mainly occur shortly after the introduction of this partial leather covering technique when binders were not yet accustomed to the procedure, which is refuted by the survey results. Partial leather bindings made with a two-pieces technique have been made throughout the manuscript period.

3.5 *Tabbed 'two-pieces'*

In conclusion, the existence of tabs argues in favour of the method of 'building' the binding on the textblock for partial leather bindings and the full leather coverings made with one piece of leather. But how does the occurrence of tabs correspond with the two-pieces technique? The best way to fathom the ways of craftsmen is often to retrace their steps. I therefore made models, and to get this specific structure right it appeared necessary to 'try on the individual covers' on the textblock. That is, in order to be sure that the two overlapping pieces of leather do indeed overlap on the spine, close to one of the shoulders and not beyond (in the joint where the flexing material would easily be damaged), the leather is best applied to the paste-board when positioned on the textblock and then over the joint, on the spine.[51] Subsequently, the spine-leather can be marked so that it extends precisely far enough. In this procedure it is logical to make the incision in the leather at the joint at this point. The cut is made a few millimetres away from the board-edge so the joint's edge is covered at head and tail, and its

[48] Data on the occurrence is found in Part Four, paragraph 2.6, and Part Five, paragraph 5.1.
[49] As a result of the survey 25 examples of çaharkuşe bindings made with the two-pieces technique have been located, see also Part Four, paragraph 2.5.
[50] As we will see, the exceptions are bindings with leather spines and lacquer boards.
[51] This is in fact exactly what al Sufyani describes: the boards are positioned on the textblock temporarily to apply the leather pieces. See his chapter three, on "how to tie the quires of the book, the pressing, the covering with leather, designing its center, how to work the headband" in: M. Levey, *Mediaeval Arabic bookmaking* (1962), pp. 52-53.

exact position can be clearly established when the board is still positioned on the textblock. It allows for the turn-ins to be made later, and leaves the leather for the spine long enough to cover the spine and endbands. After that the leather, with the board attached, is taken from the textblock to do the final paring. As a consequence, the leather is already adhered to the board but not yet turned-in. According to Sufyani and Al-Malik al Muzaffar, paste is applied to the boards rather than to the leather, a method very suitable for this working procedure.[52] The turn-ins were made either before or after the tooling was carried out but presumably before the individual covers were returned and attached to the textblock. After attaching the two separate covers to the spine both pieces of extending spine-leather form a single tab (at both head and tail).

3.6 *Indeterminate structure*

It has become evident that for certain structures the technique of leather application or the function of the spine-lining provides decisive evidence for classifying the structure technically. Both full-leather bindings in the two-pieces technique as well as partial leather bindings are in some way built upon the textblock. However, some full leather bindings bound in one piece of leather do not provide such direct evidence, even though the tabs suggest a built-on technique; as a result their structure cannot be classified conclusively. Technically speaking and based on the visual evidence, these bindings can either have been made as a separate entity, or the covers were built on the textblock. As the latter appears to be the general production method, it seems reasonable to expect that those bindings were constructed as built-on bindings as well, despite the remote chance that they were made as a case.

4 A problematic term: Case-binding

4.1 *A matter of definition*

As the literature analysis in Part Three will show, in modern literature on Islamic manuscripts the bindings are often characterised as case-bindings. The difficulty with this term is twofold. Firstly, the definition is not applicable to the commonly used structures, the two-pieces technique and the other built-on bindings, as argued in the paragraphs above. Secondly, the connotation with Western case-bindings generates confusion similar to the use of the terms ‘half-leather binding’ or ‘headcap’, as discussed under *Terminology* at the beginning of this Part. However, since the use of the term is widespread, its inappropriateness needs further explanation and argumentation.

To start with the definition: in Western book descriptions a distinction is drawn between inboard-binding and case-binding. Inboard-binding is considered craft bookbinding; each binding is unique since it is made individually and constructed onto the textblock. Case-bindings, however, are associated with edition binding, although they are not necessarily made in large numbers. A case-binding is simply defined as a cover that is made (as a case) separately from the textblock and later attached by adhering the endleaves of the textblock to the inside surface of the boards of the case.[53] This generally accepted term also immediately

[52] G. Bosch et al., *Islamic bindings and bookmaking* (1981), pp. 66-67; A. Gacek, ‘Instructions on the art of bookbinding attributed to the Rasulid ruler of Yemen Al-Malik al-Muzaffar’ (1997), p. 63.

[53] M.T. Roberts and D. Etherington, *Bookbinding and the conservation of books. A dictionary of descriptive terminology* (1982), p. 47. Revised in 1994 and also accessible online: http://cool.conservation-us.org/don/don.html. The definition provided by Bernard C. Middleton points out the completed state of the case-binding, with which the Islamic two-pieces technique is clearly disqualified from being a case-binding: B.C. Middleton, *The restoration of leather bindings* (1998), p. 15: “Case binding. In a case-bound book, the cover is made separately from the rest of the book and put on in one piece, as distinguished from the type of binding in which the cover is assembled on the book.”

brings to mind an archetype with a hollow back.[54] Islamic bindings could hardly be more remote from this picture. Their cover spines are adhered to the textblock spine and the function of doublures cannot be compared with Western endleaves since they hardly ever form part of the textblock. Thus the question arises: What exactly is assumed when this designation is used for Islamic manuscripts?

4.2 *Counter-evidence in the structure*

Although the method to produce a full leather binding with two pieces of leather was common practice, the technique is overlooked and hardly referred to. It is, however, significant to acknowledge its widespread use. Ultimately it is clear that the two-piece leather technique is not a case-binding structure, it cannot be passed off as such because the covers are clearly made separately and then individually applied to the textblock one after another. As explained, the likely reason for the development of the technique has to do with the effort to improve the quality of tooling and to avoid the risks of an imperfect fit. The fact that much care was taken to pare the leather edges thinly and evenly so as to prevent the seam from being visible, proves excellent and accurate craftsmanship. Conversely, the label case-binding suggests a working procedure in which separate bindings are relatively quickly produced by individual craftsman not necessarily involved with the treatment and sewing of the textblock. While this perception adds to an image of economic book production, it also misjudges the particular care taken to produce Islamic manuscripts and consequently underestimates the *métier* of the binders who worked in the Islamic tradition.

4.3 *The dual function of the spine-lining*

As described above, the majority of Islamic manuscripts were sewn with a link-stitch, most often using two sewing stations. Consequently there are no sewing supports that can be used to attach the boards, nor are the boards connected with the sewing thread in any way. The connection between textblock and boards is therefore indirect, by means of the covering material and the inner joints or hinges. In the majority of cases the latter are formed by the extended sides or flanges of the full-length leather or cloth spine-lining.

The dual function of the spine-lining is essential in this respect. The full-length lining is pasted on the textblock spine, covering it from head to tail, and the anchoring tiedowns of the primary endband sewing are only sewn after the paste has dried. Without support of the

[54] Several glossaries provide comparable definitions. For example, E. Diehl, *Bookbinding. Its background and technique* (1946, republished in 1980), vol. II, p. 377: "Cased book. A book which is held to its covers, or casing, only by the means of pasted down end papers, which are sometimes reinforced". See also J. Greenfield, *ABC of bookbinding. A unique glossary with over 700 illustrations for collectors and librarians* (1998), p. 14: "Case binding: A protective cover, used since the 1820's, made separately from the bookblock. The bookblock is then attached to the case by gluing the hinges, sewing supports and paste-downs. The spine of the case is not adhered to the spine of the textblock".
A much more nuanced definition is provided by *Ligatus*, a terminology for bibliographers and conservators http://www.ligatus.org.uk/glossary/alphabeta?page=4 (accessed 18-07-2012). Here a meaningful distinction is made between case-covers and case bindings. *Case* (provisional definition for the Ligatus glossary): "A cover which is complete in itself before it is attached to a bookblock. It may or may not have boards and other components in addition to a cover but no part of it can have been attached to the bookblock separately before the cover was attached. In almost all recorded examples, the spine of the case-cover is not adhered to the spine of the bookblock, but is left instead with a natural hollow back. In tacketed case-covers where the tackets hold the case-cover tightly to the bookblock across the spine, the natural hollow back may be closed, though no adhesive is used in this structure. Most case covers will be found on case bindings, but the covers found on longstitch bindings [...] are also typically made in the form of a case from single pieces of parchment or cartonnage folded around the entire bookblock. They can therefore be described as case covers, but as the gatherings are sewn to them and they cannot be removed from the bookblock without cutting the sewing and taking the book apart, they cannot be described as case bindings".

lining the gatherings would be much more vulnerable to tearing, and without the flanges the board attachment is feebler. This two-fold function of the spine-lining conflicts with the definition of a case-binding because the connection between cover and textblock cannot be broken without interfering with the sewn structure of the book.[55] When the binding comes away from the textblock there is nearly always severe damage to the structure and the textblock because the spine-lining is structurally connected to both. The covers themselves, however, are not necessarily harmed when separated from the textblock. In fact, they are sometimes preserved without their original contents and there are abundant examples of covers that have been reused. The term case-binding may have been introduced because of this; the cover appears, very deceptively, to have only a minimal, superficial connection with the textblock. But, in-between the cover spine and the textblock spine sits the inconspicuous spine-lining, and its function is structurally crucial for the construction. It seems that this characteristic alone disqualifies Islamic bindings from being classified as case-bindings.

Photographs of the condition of Or. 1079, before conservation treatment, illustrate the confusion caused by the damage typical of the construction. [figs. 75, 76] The sewing thread and endband's tiedowns are still in place, yet the textblock has come loose from the binding, although the joints are not torn. The cover seems to have cleanly parted from the textblock. Therefore, at first glance it looks as if the cover was prepared separately from the textblock, and the spine-leather was pasted onto the textblock spine (as the only attachment!), which has now come loose. Evidence on the spine-lining leather, however, proves otherwise. This spine-lining is now adhered to the inside of the covering leather, and when closely examined damage is evident at head and tail. Parts of the outer ends are missing, which are still stuck underneath the outer tiedowns: the endband warp threads on the spine. This clearly indicates that the primary endbands were sewn through the spine-lining and that the lining was once structurally connected to the textblock. The endbands were sewn *after* the lining was pasted onto the textblock spine, but of course *before* the leather exterior covering could have been applied. The flanges of the spine-lining were pasted smoothly onto the inside of the boards before the doublures were applied. Deterioration of the adhesive has weakened such constructions in many cases and once the adhesion becomes insufficient, tension on the tiedowns may cause either damage to the threads or tears in the spine-lining material, which may result in the complete disconnection of the binding.

4.4 *Misjudgement caused by a Western perspective*

The use of leather as spine-lining material may have added to the confusion, for in the Western bookbinding tradition the use of leather is almost solely reserved for the covering of the boards.[56] Moreover, the way Islamic binders applied this particular piece of leather is completely opposite to the 'Western way', for the leather is adhered to the textblock on the grain-side. The reason to apply the leather thus is clear. The extending sides of the lining are subsequently used to strengthen the board attachment while part of these flanges will remain visible as the inner joint. For aesthetical and practical reasons the outward surface of this small strip of leather in the joint is preferably the grain-side. The grain side is usually the embellished side; moreover, when leather doublures are used the grain patterns match nicely

[55] The second part of the explanation in the *Ligatus* definition illustrates this, using longstitch bindings as an example; see note 53 above. Although longstitch bindings are substantially different from the Islamic book structure in that their cover spine is not adhered onto the textblock spine, the fact that the covers cannot be dismantled without causing damage to the structure is important to the applicability of the term.

[56] It is known that spine-linings with leather can be found on Romanesque and early Gothic bindings, although these linings often consist of patches of leather rather than full-length spine-linings. Already in the first half of the fifteenth century the use of parchment as spine-lining material exceeded by four times the use of leather which soon died out altogether. See J. Szirmai, *The archaeology of medieval bookbinding* (1999), pp. 126-127, 157-158, 190, 194-196.

Fig. 75. Or. 1079. The textblock is detached from the binding. The leather textblock spine-lining still remains adhered to the inside of the leather covering, grain side facing outwards.

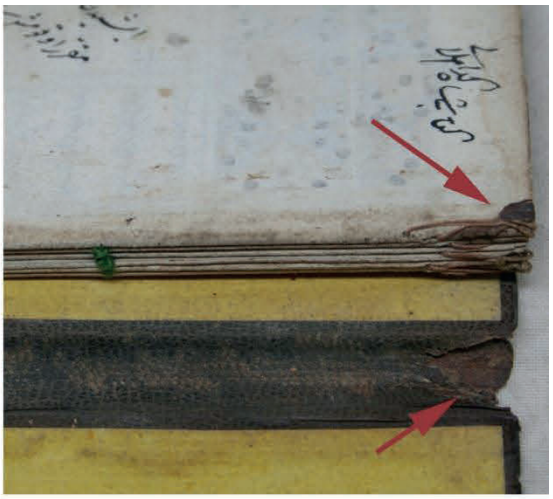

Fig. 76. Or. 1079. Detail of the spine at the head, which shows the damage to the spine-lining leather and the remnants of it still stuck underneath the tiedowns.

Fig. 77. Or. 12.831 (Indonesia). A leather board; the rodent damage at the front edge reveals the core material.

Fig. 78. Or. 5467 (Indonesia). The board consists of a woven sheet of fibrous plant material.

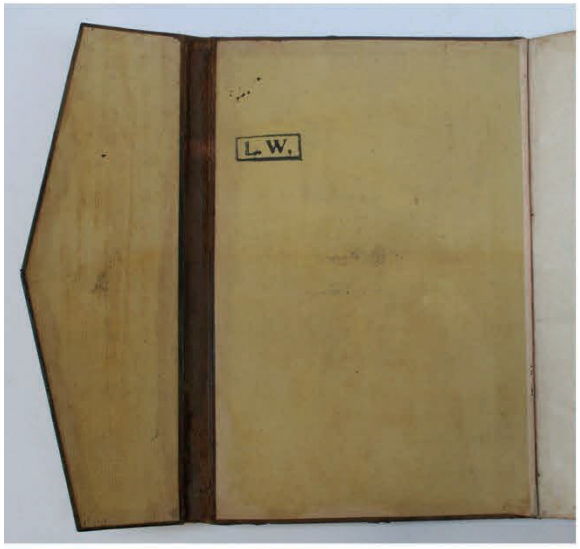

Fig. 79. Or. 155. A flexible fore-edge flap, without a board.

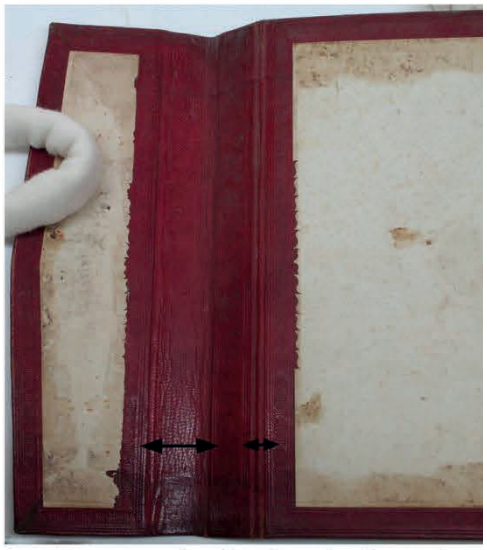

Fig. 80. Or. 10.783 (1869). A fore-edge flap with a narrow and a broad joint. The board in this part of the flap is visible between the two arrows.

and the seam between both pieces does not catch the eye. The practical reason for applying the leather in this particular way is that the inner joint is subject to flexing; the fibrous surface of the flesh side of leather would be more vulnerable to damage, delaminating and incrusted dirt.

Notwithstanding these good reasons, to Western observers it is highly unusual to adhere leather on the grain, and consequently, when they see detached covers like the one in Or. 1079 the obvious conclusion they come to is that this spine-leather belongs to the interior of the cover, for the grain of the leather they are facing corroborates the idea that leather is applied on the flesh side. Therefore, at least for those familiar with Western book structures and materials, the leather interior of the spines of loose Islamic covers is not always recognised as being initially part of the construction. On the contrary, it is observed as the finishing of the cover.

The other cause for misinterpretation is the fact that leather inner joints also occur in Western bookbinding.[57] Their structural function is, however, not comparable to the structure of Islamic manuscripts. Western binders added small leather strips either around the endleaf units, in which case they were sewn with the textblock, or they were simply pasted across the joint, resulting in a purely decorative element. The construction of the leather joints in Islamic manuscripts – coming from the spine-lining – is rather distinct, but when they are not recognised as the lining extensions they are easily misjudged. As a consequence, their structural function is not appreciated either.

4.5 *The impact of a leading opinion*

Modern research on the technical aspects of Islamic bookmaking is scarce, so it is understandable that the first publication to elaborate extensively on the structures and materials used, *Islamic bindings and bookmaking* by Gulnar Bosch, John Carswell and Guy Petherbridge (1981), is much referred to and often cited.[58] The authority this publication gained, however, has also contributed to the acceptance of certain stated facts, which were not easily questioned afterwards. The Islamic binding structure was designated by the authors as a case-binding, and this has become its subsequent characterisation, even though the evidence to prove the opposite is provided by the objects themselves. My observations of the constructions of the manuscripts I needed to treat for conservation purposes, led me to doubt the correctness of the assumption that Islamic bindings were made as a separate entity, apart from the textblock. Examination of the fairly large and diverse group of manuscripts in the current research advanced counter-arguments and it became possible to refute the supposition.

In sum, perhaps it would be more just to say that Islamic manuscripts often are *labelled* as case-bindings instead of them being *perceived* as such, for it seems that the designation has often not been given much thought or attention. Nevertheless, the introduction of the term case-binding and especially the continuation of its use to describe this type of Oriental bindings does illustrate a widespread misunderstanding of the Islamic book structure. As a consequence, it has promoted the idea that the structure is not up to the high standards of the calligraphy and illumination in the manuscripts, nor to the quality of the bookbinding design. Moreover, it also resonated with the idea that the Islamic book-structure is inferior to Western binding techniques.[59]

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[57] Leather joints became popular in Western bookbinding in the second half of the eighteenth century, although they were first used in the late seventeenth century, particularly in France. The leather inner joints in Western bookbindings are most commonly found in fine bindings, and the vast majority of the leather joints are simply pasted over the joint, and not sewn together with the outer gatherings. B.C. Middleton, *A history of English craft bookbinding technique* (1996), pp. 50-51.

[58] This publication and its influence will be further discussed in Part Three.

[59] Workshops on Islamic bookbinding, organised over the past decade by Western bookbinders or conservators, attest this; see Part Three, paragraph 6.3. I further elaborated on this topic at the "14th

That deeply rooted idea has of course affected many preservation treatments. In order to 'repair' the supposed defect in structure, conservators overcompensated by using multiple sewing stations, by sewing through newly added spine-lining cloth or applying thin, flat sewing supports. Structures have been further changed by introducing leather or linen inner joints – conforming to Western methods developed in the eighteenth century – with the intention to strengthen the board attachment. Even hollow spines and 'quarter-joint' structures were used to 'improve' the original construction.[60]

5 Other characteristics

In the forgoing discussion, Islamic bookmaking has been approached by examining the different techniques, arranged according to the actual bookmaking procedure: sewing, lining, endbanding, application of the boards and covering. Thus the variety in methods available to the Islamic binder was sketched. However, apart from differences in structure as specified above, other characteristics distinguish certain groups of manuscripts from others, such as the materials used and the treatment of particular components. As the survey results show (Part Four and Five), these characteristics can provide evidence for the origin and dating of the objects.

5.1 *Boards*

Without a doubt board covers are predominantly made of laminated paper sheets. These paste-boards consist of two or more sheets, and because of the frequently damaged covering material on the board edges we can see that often waste paper and discarded fragments were used for the purpose. Other cores consist of paper pulp boards. The average board is not very thick, approximately 2.4 millimetres[61], and if not semi-flexible, then at least not completely rigid either. However, covers with very thin or even no boards are encountered, as well as remarkably thick and solid ones. Occasionally other materials were used to make up the boards. In several cases a thick piece of leather was found below the leather coverings, and in a few instances the covers contain a sheet of woven rattan or bamboo, or similar plant fibre material. [figs. 77, 78] It must be added, of course, that in many bindings the boards are not visible.

Usually the envelope flap has a core the same thickness as the covers. The core of the fore-edge flap often has the similar consistency too. Some examples of deviations are discussed in the next paragraph.

5.2 *The fore-edge flap*

Not as prominent a feature as the envelope flap, the fore-edge flap is primarily the necessary flexible linkage between the back board and the pentagonal flap. Both flaps have the function to protect the fore-edge of the textblock, and with the envelope flap secured underneath the front cover the book is closed and protected from dust and mechanical damage. Often the envelope flap was included in the binding design, and sometimes it contains text, applied with stamps. The construction of the flap is uncomplicated. The large majority of flaps have boards, as thick as the covers and envelope flap. Usually the width of the fore-edge flap core

Symposium on care and conservation of manuscripts", Copenhagen 2012, see K. Scheper, 'Neither weak nor simple. Adjusting our perception of Islamic manuscript structures' (2014), pp. 253-269.

[60] Examples of such conservation treatments are given in Part Three, paragraph 6.1. The "quarter-joint case" or "Viertelfalzeinband" and its merits are described by J. Szirmai, 'Konservierungseinbände. Teil 2: der Viertelfalzeinband' (1999), pp. 98-103.

[61] Although this feature has not been incorporated in the survey, a small but representative sample was taken to obtain this average by measuring the boards of the manuscript of every twentieth entry in the data-base.

Fig. 81. Or. 426 (1484, though resewn). The inside of the fore-edge flap; the double small core is distinguishable by the dent in the middle and the form of the damage at head and tail.

Fig. 82. Or. 426. Detail of the exterior of the fore-edge flap. Because of the damage and the delaminating boards the double cores are clearly visible.

Fig. 83. Or. 854. The interior of the fore-edge and envelope flap are lined with leather, the front and back boards with dyed paper.

Fig. 84. Or. 6892 (1769, India). The leather stub, extending from the doublure, appears to have a decorated cut edge because it is partially covered with a paper strip that is decoratively cut on its right side.

Fig. 85. Or. 1604 (1757). The fore-edge flap is lined with leather. The doublures of the envelope flap and the covers consists of marbled paper. The doublure is extended with a stub (indicated with an arrow) which is pasted over the joint, onto the outer leaf of textblock.

Fig. 86. Or. 11.526. A block-stamped paper doublure and a leather inner joint which is not an extension from the spine-lining, but an additional strip pasted along the gutter of the outer textblock leaf, over the joint and onto the board.

corresponds with the thickness of the textblock. Its exterior is covered in leather and the leather also forms the joints. At head and tail the leather is turned-in and the interior is lined with either leather, textile or paper. The survey results in Part Four and Five will provide more details but generally it can be said that textile and paper linings of the fore-edge flap were used in the later centuries of the manuscript era.

Because the manner in which nearly all flaps were produced appears to be so consistent, the few anomalies encountered do catch the eye. The first diverging group of manuscripts is formed by bindings without a core in the fore-edge flap. Those flaps consist only of two layers of material: the leather of the exterior covering and the material from the doublure or separate fore-edge flap lining. [fig. 79] A second type of fore-edge flaps combines a narrow and a broad flexing joint. The board in the flap is then narrower than the thickness of the textblock, the narrowest joint is adjacent to the back board and the widest (and thus more flexible) joint is adjacent to the envelope flap. [fig. 80] In several publications it is suggested that apart from serving to protect the fore-edge of the manuscript and safeguarding the whole item from dust and deformation, the envelope flap could also be used as a reading aid and bookmark.[62] It seems that this theory can only be true for manuscripts with these flexible fore-edge flaps. The majority of the bindings have fore-edge flaps with rigid cores the width of the textblock thickness, which will not allow these flaps to be inserted half or three quarters of the way through the book. On the other hand, some manuscripts have flaps with very narrow fore-edge flaps that require insertion in the textblock simply because they do not reach as far as to the front cover. It is obvious that these short flaps cannot serve as a bookmark for the first part of the textblock.[63] A truly functional bookmark should be flexible enough to be stuck into the book at any opening. The form of the flaps, even the flexible ones with the somewhat wider joint on the envelope flap side, do not allow that function. The main and perhaps sole purpose of the flap therefore seems to be a protective one, although this does not explain the preference of some binders to manufacture flaps with a broader joint adjacent to the envelope flap. An interesting anomaly in the fore-edge flap construction again hints at the purported use of the flap as a bookmark. It concerns a fore-edge flap with a lengthwise split core, or rather two small cores adhered at a certain distance from each other so that the leather covering and lining in-between these two cores form an extra joint. [figs. 81, 82] This additional joint in the middle of the fore-edge flap allows for extra flexing. However, although this type of flap was perhaps developed to create a multi-functional flap, only one specimen of it was found in the UBL collections.

5.3 *The envelope flap*

The pentagonally shaped flap is undoubtedly one of the most characteristic features of the Islamic manuscript. It has been suggested that the use of the flap diminished only in later centuries, presumably under Western influence and mainly in the peripheral regions.[64] However, authentic bindings without a fore-edge and envelope flap were already made in the heartland of the Islamic world in the early sixteenth century. Slight differences in the shape of the flap can be noted. Some flaps for example are almost rectangular, or have a sharper point or are ogee-shaped (see also fig. 144 in Part Five).[65] A noteworthy divergence is a

[62] See for example Chr. Gruber (ed.), *The Islamic manuscript tradition* (2010), p. 15; A. Gacek, *Vademecum* (2009), p. 104.

[63] For conservators it is important to be aware of the occurrence of narrow fore-edge flaps; the assumption that a flap 'does not fit properly' may easily lead to a treatment decision that involves splitting joints in order to extend the material into a shape the original binding never had.

[64] See A. Gacek, *Vademecum* (2009), p. 27; Gacek says bindings without flaps appeared on the scene in the seventeenth century.

[65] A remarkable deviant shape was observed in a set of thirty juz', China 1730 AD, three of which were on display in the Museum of Islamic Arts in Kuala Lumpur, Malaysia in February 2012. These flaps were shaped with two tips instead of one, forming a kind of quarter-turned 'W'. Although mutually

binding type with a flap that contains a (remnant of a) leather strap at its point. Such straps were used for closing the binding and therefore clearly point to a different use of the flap: it had to be closed *over* the front cover so that the strap could be wrapped around the volume.

5.4 *Decorative structural elements*

With the exception of block-stamped leather doublures and doublures decorated with filigree work and exquisite tooling or painted doublures, the interior of bindings has not received much attention in the literature. It is, however, interesting to look at the different parts that make up the interior and the materials and decorative techniques used to enhance their appearance. In general, the material on the inside of the front cover was also used on the back cover; the envelope flap and fore-edge flap though may be lined with different material.
A first category is formed by leather doublures. With leather doublures, usually the envelope and fore-edge flap were also lined with leather, and often a continuous piece of leather was used for the back board and flaps: the interior was lined from the joint adjacent to the textblock to the point of the envelope flap. The joint itself is either a separate piece of leather, namely the extension of the leather spine-lining [fig. 83], or the doublure continued in a stub which was pasted onto the outer leaf of the outer gathering along the spine-fold. [fig. 84] Occasionally the leather doublure appears to be the spine-lining leather. That is the only exception to the rule that the doublures are made of separate sheets, for the extended spine-lining flanges used as doublures may consist of one piece of leather. However, there are also examples of doublures consisting of the leather flanges, made in two parts. Those parts were adhered to the textblock spine as with the two-pieces technique (see paragraph 2.5 and fig. 66). Which technique was used can only be revealed if the construction is damaged.

A plainer version is an interior with a leather lining on the envelope and fore-edge flap, but with other material used for the doublure on the back and front boards, usually paper, although sometimes cloth was applied instead. In these bindings, the envelope and fore-edge flap are lined with a single piece of leather. [fig. 83] More sober still, and this variety is very common, is the use of leather for the lining of the fore-edge flap only. The inside of both boards and envelope flap of such bindings were then covered with paper. [fig. 85] Without exception, the leather used was wide enough to also cover the inner joints and it overlapped on the vertical edges of the back board and the envelope flap. Thus, the strength, flexibility and durability of the leather were well utilised. These bindings demonstrate how binders economised on materials but also reflect their efforts to enhance bindings aesthetically, by using decorated or dyed papers and carefully choosing the colours of the materials.

When paper doublures were used, the construction of the inner joints varies. The joint may be formed by a single material, the leather flange of the spine-lining. Alternatively, when a cloth lining flange was used in the structure, a second layer of diverse material was applied to cover the cloth. This could be a separate strip of leather or paper, as long as the textblock and a few centimetres wide. Pasted over the joint and covering the outer textblock leaf along the spine-fold as well as the edge of the board, it was applied before the doublure. [figs. 86, 87] In other cases the paper of the doublure is larger than a single folio (which is also the size of the board) and extends on the spine side of the doublure, thus forming a stub that is adhered over the joint and onto the outer leaf of the textblock. [fig. 88] Or, alternatively, a stubbed leaf is applied as a tipped-on, along the gutter of the outer leaf of the textblock, thus forming a fly leaf and covering the inner joint, which is combined with a paper doublure. [fig. 89] Sometimes the outer leaves of the textblock were used as a paste-down. Finally, a strip of paper or leather could be applied over the primary inner joint (usually the extension of the

divergent, the flaps clearly formed a group in their distinctive appearance. Envelope flaps shaped like this were not found in the UBL.

Fig. 87. Or. 2748. Simple paper cut work along the left side of the paper strip that was adhered over the joint as an inner hinge.

Fig. 88. Or. 546. A dyed paper doublure with a stub, which has a decorative cut edge.

Fig. 89. Or. 829 (1638). A tipped-on blank paper leaf with a stub, that crosses the inner joint and cloth lining flange underneath, and which outer end is covered by a marbled paper doublure.

Fig. 90. Or. 312 (1622). The leather doublures are modestly but finely gold tooled and gold sprinkled; the joints consist of leather from the spine-lining flanges.

Fig. 91. Or. 650 (fifteenth century). The leather doublures are block-stamped.

Fig. 92. Or. 270 (ca. 1500, Cairo). The leather doublure is gold tooled, and its central medallion and corner pieces are leather filigree, which are adhered over blue silk.

Fig. 93. Or. 565 (1564). The leather doublure was dyed blue and embellished with a leather overlay, pigments and gold tooling.

Fig. 94. Or. 1007a (1525, though resewn). The leather covering the exterior and the lining of the fore-edge flap are decorated with a painted floral pattern.

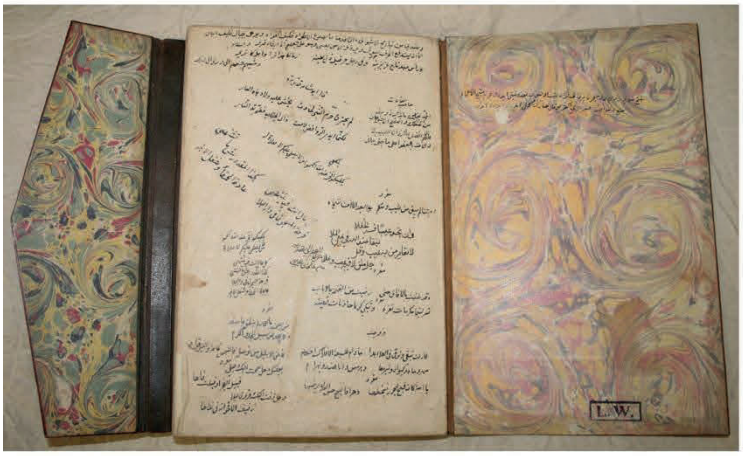

Fig. 95. Or. 442 (1624). Marbled doublures, the leather spine-lining extensions form the inner joints. Different marbled papers were used for the lining of the covers and the envelope flap.

Fig. 96. Or. 18.155. The doublures are made of block-stamped paper.

Fig. 97. Or. 408b. The doublures consist of dyed cloth of tabby weave. The leather inner joint is a repair.

Fig. 98. Or. 61 (1485, Egypt or Syria). Detail of the leather turn-ins of the envelope flap: the leather is adhered over the edges of the cloth.

cloth lining) and the doublure, forming a hinge which reinforces the board attachment. The edges of this strip were sometimes cut in tracery designs for an aesthetic effect.

Apart from the construction of the inner covers, variations are encountered with regard to the decorative aspects of the materials. The leather used for doublures, linings of the fore-edge flap and the inner joint is often a natural brown, or dyed red, dark brown, greyish or greenish, without further ornamentation. A fair segment of this group with full leather doublures demonstrates additional decoration in the form of tooling, blind or gold stamping, and sometimes the application of a painted central ornament or frame-lines in silver or gold paint. [fig. 90] Mamluk bindings with block-stamped leather doublures make up a separate category. [fig. 91] Another distinctive method of decoration is a high quality filigree work. [fig. 92] Somewhat simpler are leather doublures with medallions, made with leather inlay or overlay and gold or blind tooling. [fig. 93] A rather different but small group of manuscripts has leather linings decorated with painted flowers, without tooling or stamping. [fig. 94] The decorative papers can be categorised as *ebru* (marbled) paper [fig. 95], papers dyed in one colour [fig. 88], and papers using other decorative techniques, such as dyed and sprinkled papers, and block-printed or brocade papers. [fig. 96] The effect of ornamentation is in some cases further enhanced by decorative cutwork along the visible edges of the material. [figs. 87, 88 and 91]

Lastly, the description of bindings with cloth doublures needs some extra attention, since their make-up shows an interesting difference from the general work procedure. It appears that cloth doublures were applied before the leather turn-ins were made, which is easily recognised when we examine the inside of the boards. This method contrasts with the usual procedure; the leather turn-ins were made first so the doublure of leather or paper overlaps the turn-ins. The same is true for the application of the leather on the fore-edge flap. Again here, with cloth doublures the leather overlaps the textile, in contrast with the usual application method. As this is done repeatedly and consistently, we must conclude that binders did so intentionally. The rationale behind this working method is quite obvious: to prevent the edges of the fabric from fraying they were secured underneath the leather turn-ins, or the edges of the leather fore-edge lining. [figs. 97, 98]

5.5 *Page-markers*

Some manuscripts are furnished with page-markers. The large majority of the page-markers encountered in the UBL Oriental collection consist of coloured silk thread, laced through the paper margin of the front edge of the pages. Several patterns of lacing and knotting were used, in some of them the thread passed through three holes, in others just one or two. Sometimes the page-markers were made with different colours of thread while others are monochrome. In some manuscripts several different colours were used in the individual page-markers. [figs. 99-101] Their position on the margin varies as well. While they are scattered all over the front margins of some manuscripts, they were positioned more or less in the centre of the fore-edge of others, or alternatively, they were fixed to the paper in descending order from head to tail and front to back. [figs. 102, 103] Some deviations from this common type are encountered, such as paper page-markers either decoratively cut or narrow, plain strips, pasted to the page's edge instead of being laced on. [fig. 104] Another variety consists of leather patches, seemingly cut at random from a blind tooled piece of leather. [fig. 105] Given the function and tight fit of the fore-edge flap, it seems that the page-markers of flexible thread will have been more durable than the extending page-markers made of paper or leather.

Although this particular element is small, it is an interesting characteristic because it indicates which pages were singled out for easy reference. Page-markers were affixed to illuminated or illustrated pages as well as to pages that only contain text. Frequently they appear in composite manuscripts indicating a change of texts. This aspect of usage, as well as

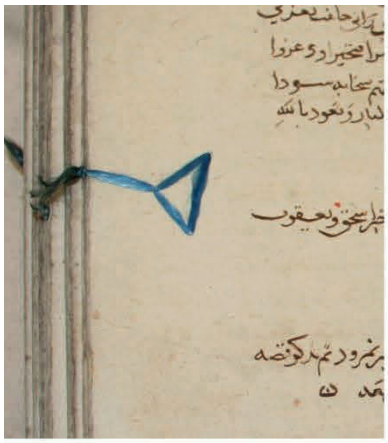

Fig. 99. Or. 2c. A page-marker using three holes forming identical patterns on both sides of the page.

Fig. 100. Or. 134 (1315). A page-marker consisting of three colours of silk going back and forth through three holes in the paper.

Fig. 101. Or. 94c (thirteenth century). A page-marker made with a single loop through one hole in the paper.

Fig. 102. Or. 969 (sixteenth century). The page-markers are unevenly spaced along the front edge.

Fig. 103. Or. 590 (before 1483). The page-markers are all centred in the front margins.

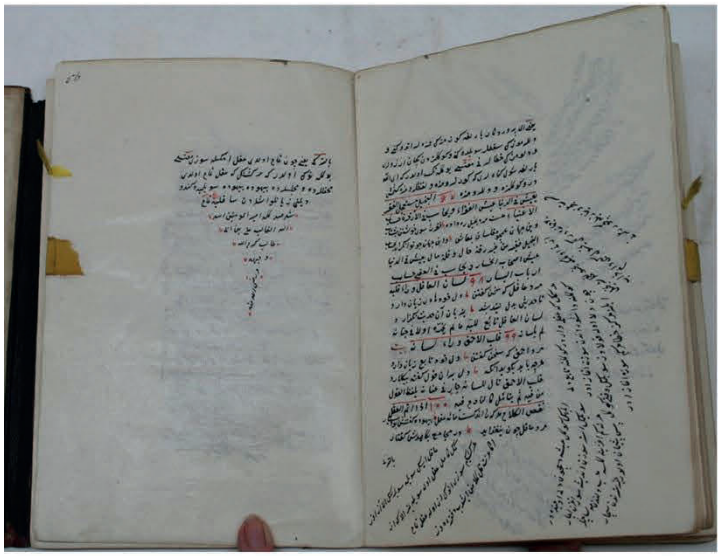

Fig. 104. Or. 961 (1564). A combination of silk and paper page-markers.

Fig. 105. Or. 1902. The page-markers were cut from a tooled piece of leather.

the question of whether page-markers were applied by the binder or the manuscript's owner, will be discussed further in Part Five.

5.6 *Characteristically tabbed spines*

Although most projecting leather tabs are inconspicuous, distinctive varieties can be found. Some bindings have tabs remarkably longer than the average.[66] [fig. 106] The findings from an examination of a particular collection of eighteenth- and nineteenth-century manuscripts from Xinjiang suggested that a specific method of tab decoration, namely the cutting of the tab so as to create a fringed tab, points to Xinjiang origin.[67] [fig. 107] Very occasionally an anomaly is encountered that is not easily explained or categorised. Among these exceptions are tabs that appear to be connected with the secondary endband sewing and tabs that are tied with a vertical thread around the spine.

5.7 *Endband characteristics*

Endbands on Islamic manuscripts are one of the typical binding elements. The system in which a primary endband is sewn over a core, before a mainly decorative secondary endband is sewn, remained the same throughout the manuscript period. Nevertheless, differences occurred in small details in endband manufacture. The best known are some variations in the secondary sewing.[68] Throughout the whole period the predominant pattern is a chevron, made with two colours of thread but only one needle (see fig. 52). Passing underneath every single or bundle of tiedowns, the needle attaches one of the threads and leads the other thread along. The secondary endband threads were either attached inside one of the outer gatherings, or the knot with which they were secured is found on the outside of the spine-lining. The weaving started close to the edge of the textblock, and the sewing pattern was worked towards the spine.[69]

Slightly different patterns occurred when the sewing threads were crossed differently and changed direction in the subsequent row, or when the threads changed direction and swapped the leading role, using a second needle. This method of sewing would result in a vertically striped or diagonally striped pattern. [figs. 108-110] Alternatively, the endband could be sewn with a chevron, but with a change in colour every two rows, in which case the chevron obtained a kind of chequered pattern. [fig. 111] The chevron pattern itself varied depending on the number of tiedowns the needle passed under. The passage underneath one or two tiedowns resulted in a compact pattern. When three, four or even five tiedowns were bundled together, a more elongated chevron was made. Occasionally the chevron was executed with three colours of thread, in which case three needles were necessary. [fig. 112] The appearance of endbands was of course further determined by the type of thread, which could be delicate or coarse, a shining silk or dull cotton.

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[66] The tabs of Central Asian bindings are often remarkably long. Oleg Akimushkin suggested that the tabs in this particular region were used to pull the manuscripts from the shelves "out of a pile". O. Akimushkin, 'Central Asian manuscripts' bindings (1730s-1930s)' (2001), p. 4. Frequent use would have caused severe damage to the spine-ends if such handling would have been common, the specimens kept in the UBL do not bear witness of that. The fact that most book titles are written on the tail edge, indicating the book's position on the shelf, also contradicts the theory.

[67] K. Scheper and A. Vrolijk, 'Made in China' (2011), pp. 58-59.

[68] Some of the possible varieties are mentioned explicitly in the treatise of Bakr al-Ishbili and hinted at without details by Ibn Abi Hamidah. See A. Gacek, 'Arabic bookmaking and terminology as portrayed by Bakr al-Ishbili' (1990-1991), p. 109 and 'Ibn Abi Hamidah's didactic poem for bookbinders' (1992), p. 42. Variations are also mentioned by B. Fischer, 'Sewing and endband in the Islamic technique of binding' (1986), p. 198, and N. Baydar, 'Structural features and conservation problems of Turkish manuscripts and suggestions for solutions' (2002), p. 7.

[69] For a schematic drawing and images of mock-up endbands, see B. Fischer, 'Sewing and endband in the Islamic technique of binding' (1986), pp. 191, 196-197; see also *Les tranchefiles brodées* (1989), pp. 87-89.

Fig. 106. Or. 26.684 (1871). A manuscript from Central Asia with a full leather binding and very long tabs.

Fig. 107. Or. 26.663 (1825, Yarkand). A manuscript from Xinjiang with a characteristic fringed tab.

Fig. 108. Or. 6633. Secondary endband in a striped pattern, without the alternating thread direction which is characteristic for chevron.

Fig. 109. Or. 2072 (1404). Secondary endband in a diagonal striped pattern. Both colours of thread pass underneath the tiedowns, alternating in every changing row.

Fig. 110. Or. 196 (fifteenth century). A diagonal striped secondary endband sewing in which the changing of threads at the turn of each sewing tour is visible; at the front joint, the blue thread 'takes over', while at the back joint the red thread makes the loop and continues to take up the blue thread.

Fig. 111. Or. 241 (North Africa, fifteenth century). The pattern of the secondary endband is a chevron, however, it diverges from the dominant chevron as every pair of sewing tours alternate, which results in a 'chessboard'-like pattern.

More remarkable deviations are found in Southeast Asian manuscripts.[70] While the endband core nearly always consisted of a leather strip in the rest of the Islamic world, Southeast Asian binders used strips of textile, cords of silk or flax or a thin solid material strongly resembling thin bamboo strips. As a further divergence, textile cores often projected from the sides of the endband and extended over the joint, forming tufts. Thus, the endband core seemed to have gained a new, decorative function. [figs. 113, 114] However, close examination of the tufts is necessary, for there are also examples of endbands with tufts that are part of the secondary endband sewing and not of the core. [fig. 112] Another variety is formed by endbands which, after the weaving, were wrapped around their base with one of the endband threads. [fig. 115] Tying the thread around the finished endband perhaps had the function to prevent the secondary weaving from sliding off the tiedowns in the spine's direction.

During the survey several manuscripts were encountered with a groove in the head and tail edge of the textblock, parallel to the spine and just along the edge of the endband. This groove appeared to be connected to a diverging endbanding method, although the construction of the primary and secondary sewing followed the traditional procedure. [fig. 116] The grooves, more or less one millimetre wide and two millimetres deep, were probably saw-cut or possibly made with a knife.[71] In this small channel a relatively thick thread passes from front to back of the textblock. In some of the manuscripts this thread was tied to the spine, in others it makes a full loop through the textblock, which was stabbed close to the spine for this purpose, about two centimetres from the head or tail edge. On a number of occasions this thread was applied after the cloth lining was adhered onto the spine, in which case it pulls the lining away from the joint at the stabbed position and as a consequence it interferes with the flanges' function of board attachment. The primary endband sewing was carried out in the usual manner after this thread was tied around the edge and through the stabbed hole. The presence of the recessed horizontal thread must have hindered this process, as it tied the gatherings together close to the spine, thus obscuring the centres of the gatherings. As a result many of the tiedowns in this endband type are not sewn through the centre of each gathering. The making of a model confirmed this complication and the application of the tiedowns turned out quite irregular. Manuscripts with this diverging endband type were supplied with the usual secondary endband sewing consisting of two colours of thread and a chevron pattern, except for one anomaly in which case a thin strip of twisted red cloth was used instead of thread, combined with a normal unbleached thread.

A practical reason for the execution of this endband was probably the wish to solve the sliding of the secondary endband sewing, as I can think of no other reason to go through the elaborate process of making the cut in the edges and stabbing a full textblock while diminishing the flexibility of the structure. In comparison, the method of tying one of the sewing threads horizontally around the finished endbands appears to be a simpler and more adequate procedure with a similar purpose.

A few anomalies were found as well, endbands made according to the basic principle – a primary and secondary endband – but sole examples of a certain sewing pattern. [fig. 117]

6 Meaning and validity of the diversity

The examination of the Islamic manuscript collection in the UBL yielded a lot of information. Minor as well as major differences in technique were recorded and a variety of materials were observed. For example, apart from the predominant link-stitch sewing on two stations, more

[70] See Part Five, paragraph 3 and 9, for more information and data.
[71] This groove is quite distinctive from the fine cut that can sometimes be observed in head and tail edges, caused by cutting the leather tab, folded over the endband, in situ.

Fig. 112. Or. 2098 (Southeast Asia). Three colours were used to make this endband, and the frills on the edges are formed with the secondary endband threads.

Fig. 113. Or. 2116 (1853, Southeast Asia). The endband cores consist of several strips of decorated textile, the ends protrude in a decorative fashion.

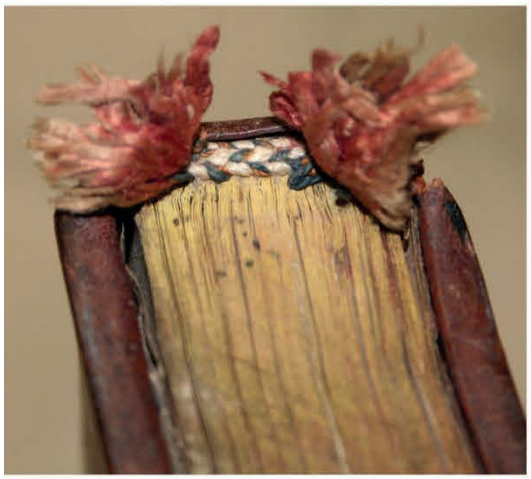

Fig. 114. Or. 1886 (before 1825, Southeast Asia). The core of the endband consists of silk thread and the extending ends were frilled.

Fig. 115. Or. 2064 (possibly Aceh). The secondary endband is sewn with three colours in a chevron, and after finishing it, one of the threads was tied around the total endband structure.

Fig. 116. Or. 6329 (1902). Along the left side of the endband the saw-cut in the edge of the textblock is just visible. The secondary endband is sewn with undyed thread and a red strip of cloth.

Fig. 117. Or. 22.784 (1913, Indian subcontinent). An endband in which the thread direction changes within one and the same sewing tour.

elaborate link-stitch techniques were found. From the literature we already knew that stabbed sewing structures occurred in some parts of the Islamic world, but now it appears that other sewing techniques using sewing supports also belong to the Islamic manuscript tradition. With regard to technique, the crucial function of the spine-lining has become apparent. Equally important, the practical and technical aspects of the two-pieces of leather covering actually direct us to a revised view on the manufacture of the whole construction. However, the two-pieces technique for full leather bindings is common but not universal, so the question arises when one technique was preferred over the other. In addition, while the two-pieces technique seems to be an impractical method for making çaharkuşe bindings, yet it is occasionally found on them. Other anomalies were also encountered, such as spine-linings that were applied without using the opportunity to strengthen the board attachment and endbands that involved a stabbed technique which rendered the functioning of the manuscript more difficult.

This diversity, both in techniques and materials used, shows a much richer bookbinding tradition than the Islamic culture has been credited with so far. How the various methods were disseminated, however, remains speculative unless data is provided concerning the origin of these items. A quantification of the varieties in structure and materials is therefore needed, as well as a linkage with the origin and dating of the manuscripts. In Part Four and Five such information is supplied and examined. This will allow for a better understanding of the development of the tradition, with regard to the occurrence of different techniques in time, and their geographical and cultural distribution. However, one of the original questions remains: is the Oriental manuscript collection in Leiden in fact representative of the Islamic manuscript tradition as a whole? To answer that question, the relevance of the encountered variations presented above needs to be more firmly established. Analysis of both the primary and secondary literature on bookbinding techniques sheds more light on the validity of the findings. This is done in the next Part, which provides an overview of the binding procedures as presented in the historic sources and in all relevant research published since. Additionally, the structures and methods described in the literature will be compared with the binding characteristics as presented above. From this comparison it will become clear whether the methods and characteristics described here are incongruous or do, indeed, correspond with what has been recorded in primary and secondary sources. As we will see, some of the anomalies and remarkable divergences described above *do* emerge in the literature analysis. This is of particular interest; even though the origin of these techniques or materials is often not explained or even mentioned explicitly, the fact that they are in some way referred to does substantiate the theory that such characteristics are part of the Islamic manuscript tradition. Ultimately, their description proves that these divergences were encountered not only in the UBL collections but elsewhere as well. Thus, the historic sources and the information revealed in later studies support and validate the findings of the present research.

PART THREE COMPARATIVE STUDY OF THE HISTORIC SOURCES AND RECENT LITERATURE ON THE MAKING OF ISLAMIC MANUSCRIPTS

1 Historic sources

1.1 *Introductory remarks*

Next to autopsy there is, of course, a supplementary method to obtain information on how the manuscripts were made. Written sources, originating from the period and culture of the objects involved, shed an interesting light on book production. On the making of Islamic books and their bindings in particular, five historic sources are known.[1] Although the texts are well known amongst scholars working within the field of Islamic manuscript studies, they have not been analysed comparatively before. Nor were they evaluated from a binder's or a conservator's point of view. My approach in studying these sources is a craft-based perspective. To explain the possibilities and limitations of this way of exploring the treatises, it is necessary to start with some remarks, which will also set my viewpoint in context.

First of all, the original texts have been made accessible to non-Arabic readers, either in edited versions or direct translation, through the efforts of excellent scholars, who were compelled to work from later copies preserved in sometimes dire conditions. The way the original sources have come down to us are affected by this in one way or another. My inability to read Arabic left me dependant on the available translations or summaries, adding of course a stratum between me and the sources in which changes in interpretation can occur. On the other hand, my capacity as a book conservator with the practical experience of making Islamic book models gives me an insight into the material that adds a new dimension to the texts. Because of my specialism, concerning techniques, structures and materials, I examined the treatises differently than the original translators. While reading the series of steps described in the bookbinding procedures, I visualised the process and evaluated it in light of the technical possibilities. As a result, it was possible to interpret some technical descriptions in a different way than had the original translators. Also, when the procedures, as described in the texts, appeared rather incomplete or impractical, these passages are indicated and possible explanations are made.

Secondly, it is useful to look critically at the authors' names and social positions. It appears that in two cases the authors were rulers, not binders. Although princes and rulers were introduced to certain respected trades or crafts as part of their general education, it remains unknown if the two rulers involved – Ibn Badis and Al-Malik al-Muzaffar – were actually trained in how to bind books. It is quite possible that they were, but it is equally possible that the treatises bear the ruler's name although they were actually written by someone more adept at this craft. One of the three other treatises is written by a man of letters and a poet, Bakr al-Ishbili, who knew how to make books, since bookbinding provided him with additional income. The writer of the didactic poem on bookbinding, Ibn Abi Hamidah, states himself that he was not trained as a binder. Only one of the five authors, Sufyani, is known without a doubt to have been a craftsman; he even wrote his instructions out of frustration over his unappreciative apprentices.[2] We therefore can conclude that at least three of the primary sources are not meant to be manuals, they are merely descriptive accounts of a respected craft. Being aware of the nature of the writings helps to understand

[1] The authors are Ibn Badis (d. 1062), Bakr al-Ishbili (d. 1231), Al-Malik al-Muzaffar (d. 1294), Ibn Abi Hamidah (fifteenth century), and al-Sufyani (treatise is dated 1619). Full descriptions are given in Part One, footnote 38. Extended bibliographical information can be found in A. Gacek, 'Scribes, amanuenses, and scholars. A bibliographic survey of published Arabic literature from the manuscript age on various aspects of penmanship, bookmaking, and the transmission of knowledge' (2004).

[2] G. Bosch, 'The staff of the scribes and implements of the discerning: an excerpt' (1961), p. 1; G. Bosch et al., *Islamic bindings and bookmaking* (1981), p. 3.

their incompleteness. Furthermore, the five sources do not cover the total breadth of the Islamic world at the time; three of them were produced in the Maghreb (Algeria and Morocco), one in Yemen and one of uncertain origin was possibly written in Syria.[3] Consequently, we lack accounts of the bookbinding tradition from important cultural centres in Egypt, Anatolia, large parts of the Arabian peninsula, Persia and further east. Even so, comparing the contents of the known treatises allows for some interesting conclusions and the shape of the Islamic bookbinding tradition emerges quite clearly from the discussion.

Lastly, the primary sources that came down to us are copies of the original texts, some of them written centuries later. Multiple copies of a single source attest, in their divergences from each other, that the originals were not always repeated word for word.

As the historic texts sometimes give patchy directions and leave room for interpretation, the drawn models with named components (see figs. 13-24) and the list of terms given in Appendix I are intended to assist readers in understanding the technical details, as well as my argumentation.

1.2 *Ibn Badis*

The earliest known treatise is dated ca. 1025 CE. The author, Tamim Ibn al-Muizz Ibn Badis (d. 1062), was a prince and ruler in northeast Algeria and a patron of the arts, which explains his interest in the art of bookmaking.[4] He was not, however, a binder himself. The majority of the chapters deal with the making of the textblock: the preparation of inks, dyes, adhesive, and the manufacture of paper. Only the last chapter is dedicated to "the art of binding books in leather and the tools". The full title of the work is "Book of the staff of the scribes and implements of the discerning with a description of the line, the pens, soot inks, *līq*, gall inks, dyeing, and details of bookbinding". While Martin Levey translated the whole text, Gulnar Bosch focussed on the twelfth chapter (on bookbinding); both translations were published more or less simultaneously in 1961-1962.[5]

Ibn Badis starts with a brief description of a few tools. The use of two different needles is interesting for our purpose. One needle is supposed to be used for page sewing and the other for binding the book. In bookbinding terms this is one and the same thing; gatherings are formed by nestling two or more bifolios in on another's spine-fold, and sewing these

[3] A. Gacek, 'Ibn Abi Hamidah's didactic poem' (1992), p. 41.

[4] Consequently, Ibn Badis supposedly wrote this treatise almost 40 years before he died, when he must have been relatively young.

[5] G. Bosch, 'The staff of the scribes and implements of the discerning: an excerpt' (1961), pp. 1-13; M. Levey, *Mediaeval Arabic bookmaking and its relation to early chemistry and pharmacology* (1962). Both editions are based on the early twentieth-century copy of the text kept at the Oriental Institute in Chicago. Levey, a scholar in Semitic languages and chemistry, also examined other copies or fragments of copies kept in Gotha, in order to clarify difficult passages in the text, and a much older copy (1671), also preserved in the Oriental Institute (see Levey, p. 6). Bosch, an art historian and Arabist, used the 1908 Chicago copy only. An equivalent copy in Berlin (MS Landberg 637) from 1813, was not consulted.

Notwithstanding the importance of these translations, as both scholars were not binding practitioners a marginal note needs to be made. Lack of in-depth knowledge of this specific type of manuscript construction must have complicated the translation work. Apparently Levey recognised his shortcomings with respect to the art of binding, he therefore asked for Berthe van Regemorter's assistance. At the time van Regemorter was working on a publication on Oriental bindings in the Chester Beatty collection, including Arabic manuscripts; see B. van Regemorter, *Some Oriental bindings in the Chester Beatty Library* (1961). As a skilled professional who examined many Byzantine and Coptic bindings, van Regemorter's contribution undoubtedly was helpful. She was, however, not particularly specialised in the field of Islamic bookbinding. Her descriptions in the aforementioned publication cover the decorative aspects only and contain no information on structure. Apart from missing the expert knowledge on binding, Levey alluded to the fact that working from defective copies using uncommon terminology was not easy, the rare technical terms were not well known. Moreover, the text of Ibn Badis frequently lacked diacritical marks which hampered clarification of the text.

gatherings together forms the textblock. Apparently, Ibn Badis denotes two different procedures. He indicates that the needle for sewing should be perfect and thin in body, the one for bookbinding shorter and thicker.[6] For practical reasons a thick needle for sewing the gatherings is not advisable because a thick needle causes larger holes in the spine-folds, where adhesive can penetrate and which would cause stiff or brittle spines. The only other sewing procedure is the endband sewing, consisting of a primary and a secondary sewing. Of these two, the primary sewing is applied through the gatherings, therefore the same conditions are applicable as for the stations of the sewing of the gatherings. Hence, the thick needle is again disqualified as a proper tool for this action. The only type of sewing that an experienced binder would perform with the thick (and presumably blunt) needle, is the secondary endband sewing. For this a blunt needle is definitely preferable because the needle needs to slip between the tiedowns and the leather core without catching on these materials.[7]

A relatively large part of the text is used to elaborate on presses and straightedges, dividers and irons for tooling (stamps). Apart from enlisting all the necessary tools, some of the character traits a binder needs are noted.[8] After this Ibn Badis starts to describe how a book is sewn. There is an interesting detail in this paragraph. When the stack of gatherings that needs to be sewn is put on the slab, it says, "a quire (gathering) is picked up with the left hand. It is opened with the right hand. It is put down on the slab and opened. Then the folder is passed over its centre where the binding thread is to be. Then it is folded and the end paper is cut properly. This is a double sheet; one page is pasted on the leather and the other remains on the quires to protect the book from harm and dirt". This is a description of a bifolio that will serve as fly leaf and a paste-down after the covers are attached. It is interesting since a paste-down is a very different binding element (in structure) than the doublure, which is usually mentioned and recorded as the covering material of the interior of the boards. If anything, paste-downs are mostly associated with manuscripts from much later periods, when Western methods became influential.[9]

Ibn Badis states that some craftsmen used a sewing technique with two sewing stations for ease and quickness. Others used more needles, two or three.[10] The method with one needle over two stations corresponds with the predominant link-stitch sewing encountered in Islamic manuscripts. According to Ibn Badis, the thread should be thin to obtain an even spine, and he emphasises the importance of evenness, for the spine should also be pounded "where sewn" so that there will be no differences in thickness between the sewn area and the rest of the textblock.

Subsequently the lining of the spine is described. It is suggested that two pieces of paper were taken, presumably the length of the spine although that is not explicitly mentioned, but the width should exceed by two fingers the width of the spine. These strips are pasted onto the spine one after the other, each of them so that their excess width is on one side of the spine (forming a flange), "the other in the opposite way", indicating the front

[6] G. Bosch, 'The staff of the scribes' (1961), p. 2; M. Levey, *Mediaeval Arabic bookmaking* (1962), p. 41.
[7] Bosch explicated the second type of sewing called "binding", providing the Arabic word *hazam* which she translated as "weaving the headband". It would be even more exact to clearly distinguish it as the secondary endband sewing.
[8] "One who seeks this art should have quick understanding, good observation, dexterity of hand, and be certain without being hasty. The latter is a good manner of getting along and it has the elegance of attracting others of grace and good character", M. Levey, *Mediaeval Arabic bookmaking* (1962), p. 42.
[9] The survey results in Part Five, paragraph 6.2 attest the use of endleaves at least from the sixteenth century onwards.
[10] J. Szirmai pointed out some differences in translation between Levey and the work by Bosch et al., *Islamic bindings and bookmaking* (1981). At this specific passage Bosch et al. (1981, p. 47) translated the text with "others use more positions, two or three", which indeed makes quite a difference. Szirmai also rightly addressed the problem of having to rely on translations and emphasised the importance of accepted terminology. J. Szirmai, *The archaeology of medieval bookbinding* (1999), note 6, pp. 60-61.

and back of the textblock. Ibn Badis advises to smooth or rub the spine after adhesion of the lining, not directly with a bone-folder, but with a sheet of paper in between the folder and the lining, in order to protect the freshly pasted and still moist paper linings. The additional advice to be patient and let the lined spine air dry is practical and sensible too; only if necessary one should consider speeding up the drying process with the aid of a low fire or the warmth of the sun.

The making of boards (cores) is described next, rather cursorily. Before the lined textblock is left to dry the binder needs to measure it, although it is not specified why. From what follows we can deduce this has to do with the making of the boards. Sheets of paper and paste are needed to build them up to the required thickness. A remark is made about Iraqis, who apparently follow a different method. Levey's text is here particularly patchy and difficult to follow.[11] The edition by Bosch differs only slightly but is less confusing. Ibn Badis seems to indicate that the Iraqis do not use endleaves, although the translation also suggests they might refrain from using boards: "the Iraqis paste the book (cover) to its pages without these linings, or end papers". The remark about the 'strengthenings' (*taqawwi*) does not refer to the Iraqis (as it seems in the translation by Levey) but to the function of the laminated paper boards: "people think that by using them they strengthen [protect] the book. Their strength is like that of cloth or board".[12]

Ibn Badis continues with the method of board attachment. The description indicates that the boards are put on the textblock when both are sufficiently dried. The hinges from the lining are pasted on the exterior of both upper and lower boards.[13] Then "a long, narrow sheet whose width is two fingers is pasted on it from the other side [that is, between the interior of the board and the outer leaf of the gathering] to prevent it from being opened excessively".[14] This strip forms a hinge in the inner joint and in preventing the board from opening at too big an angle (more than 180 degrees), reduces damage at this vulnerable point in the structure. This whole procedure as well as the next step are significant. The text says "When this stage has been reached, the leather is applied to it". This irrefutably points to a method in which *first* the boards are attached to the textblock, and then the leather covering is applied as a subsequent step. Ibn Badis describes this matter-of-factly, he says no more on the subject and uses the rest of his treatise to explain how the covering leather should be coloured and treated, and how to test several ink recipes, but the implication is there. It supports the results of the survey in the UBL and my contention that Islamic binding structures are often wrongly judged as case-bindings, by showing that their structure is more complex.

We need to consider one more issue regarding Ibn Badis' text. He does not go into the exact application of the leather, nor its tooling or other ornamentation techniques apart from dyeing and marking the centre of the covers, presumably for decoration purposes. According to the procedure he describes, the leather application is the last stage. If this indeed was the final step in creating a binding during Ibn Badis' time in North Africa, a consequence is that the leather turn-ins would cover whatever material is pasted onto the inside of the boards, whether this be a doublure or the paste-downs Ibn Badis describes. That make-up does not corroborate with the situation we usually find in manuscripts where the leather turn-ins are largely covered by the paper or leather doublures, leaving only a small strip of the turn-ins visible on the interior of the boards. The latter structure demonstrates that for the majority of bindings the turn-ins of the leather covering are made before the doublures are applied, with

[11] M. Levey, *Mediaeval Arabic bookmaking* (1962), p. 43.
[12] G. Bosch, 'The staff of the scribes' (1961), p. 7.
[13] "Now place the strengthening [the laminated paper boards] on the book, mounting it between the hinge and the core [textblock]", G. Bosch, 'The staff of the scribes' (1961), p. 7. The method of pasting the flanges of the lining on the outside of the boards does not correspond with the structure we find in later centuries (with the exception of a few specimens), but it could have been a more common method in the eleventh century.
[14] M. Levey, *Mediaeval Arabic bookmaking* (1962), p. 43.

one clear exception though. When the doublures consist of cloth (instead of leather or paper) the procedure was reversed; the edges of the fabric are covered with the leather of the turn-ins. Consequently, on these bindings the doublures must have been adhered to the inside of the boards before the leather turn-ins were made. Although no mention is made of this detail in the historic sources, the rationale behind it is very clear. Cloth frays quite easily, while leather or paper do not. It is therefore practical to cover the cloth edges with the leather turn-ins to prevent them from fraying over time. Furthermore, in the UBL collection two specimens with leather doublures applied in the same way – before the leather turn-ins were made – were found, with a North African or Andalusian origin.[15] The fact that Ibn Badis describes the application of the leather covering as a last step in the procedure could point to a preference for the usage of textile for the doublures, or leather applied in the same way at that time. Unfortunately there are not many bindings left from the period in which Ibn Badis wrote his treatise to confirm this, so this interpretation remains speculative. Given the incompleteness of other parts in the treatise it is likewise possible that final steps in the binding procedure that followed the application of the leather, such as adhering the doublure or additional inner hinges, were just not mentioned. Especially since the source texts used for transcription are such late copies of Ibn Badis' text, the omission can also be related to copying faults.

1.3 *Bakr al-Ishbili*

Another Maghribi text on bookbinding was composed by Bakr al-Ishbili (d. 1231).[16] Of this work, which is dedicated to the ruler Abu Yusuf Ya'qub al-Mansur (r. 1184-1199), only one late copy (1634) is known to have survived.[17] Adam Gacek, who made the text available in English, albeit in compressed form, states that this text is the most comprehensive manual on bookbinding that we know of so far.[18] This might be explained by al-Ishbili's profession; although he knew how to bind manuscripts he was a man of letters and a poet. Thus he was capable of writing a concise textbook with a full understanding of the craft. However, Gacek points out the difficulties with interpretation because many of the technical words used by al-Ishbili are no longer standard in present terminologies. Moreover, since so few manuscripts from al-Ishbili's time have retained their original bindings, there are hardly any contemporary examples to help explain or reconstruct the meaning of the text.

The first sections deal with tools and adhesives, but al-Ishbili also makes the general distinction between manuscripts bound with wooden boards and those with pasteboards. Some of the tools he mentions are to be used for working wooden boards, like a drill for making the holes necessary for endbanding.[19] This description is remarkable. Though the wooden board type is known, it is generally associated with the box-binding and landscape format type of manuscripts, thought to belong to the earliest centuries of Islam. However, al-Ishbili's text may imply that wooden boards were still being used in the twelfth century. That we have no surviving examples does not mean the practice was not common, merely that the manuscripts bound with this technique did not survive the subsequent eight centuries. Al-

[15] These bindings are described in Part Five paragraph 1.1.
[16] According to the lemma 'Bookbinding' in *Encyclopaedia of Islam* al-Ishbili's year of death is 1179; http://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-3/bookbinding-COM_22883?fromBrillOnline=true [accessed 07-04-2014].
[17] The manuscript copy is preserved in al-Maktabah al-Ammah, Tetuan (Morocco); a printed edition was made in 1959-60 which, according to Gacek, is unfortunately far from flawless.
[18] A. Gacek, 'Arabic bookmaking and terminology as portrayed by Bakr al-Ishbili in his '*Kītāb al-taysīr fī ṣināʿat al-tasfīr*' (1988), p. 106.
[19] Ibid., p. 107. The slips (the extending sides at the joint) of the endband cores sewn on manuscripts with an box-binding, are laced through the wooden boards. This structural feature is not encountered on the predominant codex form ('Type Two' and 'Type Three'), but the method can be found on European bindings from the same period.

Ishbili continues with further specifications on the materials to be used. Doublures, for example, can consist of leather, cloth (more specifically silk), paper or parchment. The use of parchment for doublures is also associated with the wooden board binding.

The section on sewing is of interest since it describes phenomena that are rarely encountered. First the text suggests that doublures, when made of leather or cloth, can be sewn together with the textblock. This implies that these materials consist of more than just the sheet used to cover the inside of the board, since the sewing requires that part of the material has a spine-fold to which the sewing will be applied. However, from autopsy we learn that leather or cloth doublures are never encountered in the shape of a bifolio, which could be sewn in the spine-fold; they appear as a folio. Accordingly, to sew such a leaf, part of the material should project over the spine-fold, as a stub. Original examples with sewing thread in the fold of the joint (between the stub and doublure) or with a leather or cloth stub folded around the outer gathering were not found in the UBL collections but have survived elsewhere.[20] The other possibility is, that the stub was attached to the spine of the textblock in the form of a lining, and that the doublure was sewn together with the first or last gathering; two specimens with this structure were encountered.[21] The text continues with the textblock sewing; it is advised to sew parchment gatherings in twos (which means the sewing of two gatherings on a single length of thread in one tour) – presumably to prevent swelling of the spine once the stack of gatherings is sewn –, while paper gatherings are sewn one by one. The first sewing technique poses questions since the common link-stitch sewing on two stations is not suitable for two-on sewing. It simply is not possible to switch gatherings between two stations when the link-stitch sewing consists of only two stations. A technique linking two gatherings in one sewing tour at least needs three sewing stations.

Al-Ishbili advises rounding of the spine of the textblock after sewing, "otherwise, when the book becomes old, the fore-edge flap will protrude".[22] The rounded spine is then lined, although the material used for the lining is not specified in this stage. Nevertheless, it is clear that the spine-lining is wider than the textblock thickness, since the flanges of the lining which form the hinges are said to be glued on to the inner covers. This procedure, however, is not clear and the further instruction to place three to four sheets of paper on top of the hinges adds to the confusion. One is left to wonder what exactly are the "inner covers"? Are the hinges pasted onto the outside of these covers, as Ibn Badis' had instructed? And would the extra sheets of paper then be pasted on top of these hinges to form "outer covers", which, once adhered onto the "inner covers" would form paste-paper boards consisting of several sheets of paper as we know them? In that case the hinge would be sandwiched between two thin boards which would certainly constitute a strong board attachment, but such a structure has not been encountered in the present survey nor have I seen it mentioned anywhere in the recent literature. The description of the "inner cover" may as well denote the interior of the cover, in which case the extra added leaves could actually make up the laminated paper boards, although "three to four sheets" would only form a thin board. Since the exact method

[20] John Mumford and Jake Benson, who studied Mamluk bindings in the Dar al-Kutub, Cairo, reported to have observed this structure in several bindings. They presented a poster on Mamluk binding structures at the ninth conference of The Islamic Manuscript Association, Cambridge 2013. I was able to examine another example myself, dated first half of the fourteenth century in a well-preserved Mamluk binding, kept in the Museum of Islamic Art in Doha, Qatar, MS. 307.1999. This is a *Juz'* consisting of a few gatherings, and the green silk doublures were folded and pasted around the spine-folds of the outer gatherings, thus sewn into the structure before they were pasted down as doublures.

[21] This structure is known to be used in other manuscripts as well, for example in those called 'al-Andalus bindings'. See: T. Espejo and A. Beny, 'Book I from the collection of Arabic manuscripts from the Historical Archives of the province of Málaga: an example of al-Andalus binding' (2009). Whether the specimens in the UBL collections originate from the Iberian Peninsula or the Maghreb is not clear; details are given in Part Five, paragraph 1.2.

[22] A. Gacek, 'Arabic bookmaking' (1988), p. 109.

of application of these extra leaves is omitted (were they sewn, or adhered?), there are no clues to understand their function in a better way.

Al-Ishbili writes about the practice of binders to add extra hinges of parchment when wooden boards are used; usually the doublures are then made of parchment too. He also specifically discusses the materials for pasteboard bindings. Then, the doublures could consist of paper or cloth. Another option is the use of cloth for the spine-lining, in which case the doublures could be made of soft leather.

In the next, short section the repair of worn or worm-eaten manuscripts is discussed. When manuscripts need to be resewn, al-Ishbili advises to mark the middle of the gatherings in order not to miss one of them in the endbanding procedure. The recommended use of leather spine-lining strips also appears to be related with repair work. These leather strips are applied to re-attach the boards, irrespective of the material used for the doublures. However, instead of using strips, al-Ishbili states that some binders use a single piece of leather for lining the textblock and attaching the boards; this is a clear description of the leather spine-linings as described in Part Two. Although, according to al-Ishbili the extending flanges of the lining can either be pasted over the doublures or underneath them, he prefers the latter but he does not elaborate on his motives, which might be strength and durability, or aesthetics, or both.

Subsequently the sewing of the endbands is described. A strip of leather is used as a core and al-Ishbili advises 'ordinary' thread (common sewing thread) for the primary sewing, but acknowledges that some binders use coloured silk for the tiedowns. The outer gatherings are to be sewn twice for additional strength, which indeed is frequently found. According to al-Ishbili, two needles are necessary for the secondary endband sewing. He recounts eight secondary endband patterns but is of the opinion that four of them are too complex to describe and require demonstration. Of the four varieties he describes – endbands in one colour; a chessboard-like pattern; a chevron or zigzag pattern; and another chevron variety called 'rotating or trellis-like' – three correspond with regularly encountered specimens, assuming that the trellis-like endband he mentions can be correlated with the type that I refer to as diagonally striped. Although we can imagine what a chessboard-like endband would look like, a clear example has never been published.[23] However, the other three seem to be reproducible with one needle. So the fact that al-Ishbili mentions two needles either points to a tradition in technique not necessarily dictated by a strict need, or to a misinterpretation of the patterns he describes, since some of the more complex secondary endband sewings *have* to be made with two or even three needles, as is explained in Part Two, paragraph 5.7.

The preparation of the leather for covering the boards is discussed next. While Ibn Badis mentioned the covering of the boards in leather only briefly, the rather detailed description of al-Ishbili is very interesting. He explicitly states that, for this purpose, one or two pieces of leather can be used. According to the translation "two pieces were used if the flap (*udhn*) was prepared separately"; the term for this technique is *al-mukassar* (literally broken).[24] I am inclined to think that the original text indicates that a separate piece of leather was used to cover the *board connected to and including the flap*, and not just the flap. The latter interpretation accords well with the large number of manuscripts which have an overlap on the spine, whilst the making of full leather bindings with a separate piece of leather on the flap is not a common technique.[25] If my interpretation is correct, this is the two-pieces technique discussed in Part Two, paragraph 3.1. Moreover, the date of description

[23] While conducting the survey, a few endbands were found that may qualify as a chessboard variant, nevertheless, it is unknown whether they actually correspond with the historic exemplars al-Ishbili has seen; see fig. 111 below and fig. 146 in Part Five.
[24] A. Gacek, 'Arabic bookmaking' (1988), p. 109; however, the term is not listed in the 'Glossary of technical terms used in *Kītāb al-taysīr*', pp. 112-113.
[25] Only one example in the UBL collections has been found, Or. 890.

of its use accords with the earliest specimen included in the survey, see Part Five, paragraph 4.2.

Gacek emphasises the novelty of the description of making only one flap as an extension of the lower board since, until the time when al-Ishbili was active as a binder, books were supposed to have flaps on all sides, which were closed with thongs and pegs, or were box-bindings.[26] Although the use of wooden boards is mentioned, as well as several particular procedures connected to wooden board-binding (such as the sewing of parchment gatherings, the extra lining strips and the lacing on of the endband cores), al-Ishbili's text does not remark on the covering or attachment of the wooden boards, nor on the making of the "walls" (the three sides protecting the edges) of a box-binding. He does, however, discuss the making of pegs, thongs and clasps, and additionally describes how to produce slip-cases and boxes. His mention of binding with only one envelope-shaped flap, provides us with an earliest date for the occurrence of this type.

The paragraph on covers is not very clear. Apparently pasteboards are described to consist of several layers of paper and one sheet of parchment. The parchment would be the inner layer of the board because when the turn-ins of the leather covering are made they are said to be adhered onto the sheet of parchment. However, not much evidence is found for the usage of parchment in this way, which may indicate that after al-Ishbili's time the use of parchment declined rapidly; its use may have applied to bindings in wooden boards only. The next sentence "The covers were usually made of one piece of leather, particularly in the case of *al-maṣāḥif al-sifrīyah* [the paste-board type][27] and thus formed a casing" leaves us in doubt of what the original text indicates and whether the term "casing" is interpreted correctly by Gacek.

The next part quite elaborately treats the tooling of the leather, but it discusses the differences in decoration styles rather than the working method. It is not mentioned whether the tooling should be carried out before or after the covered boards are attached to the textblock. However, the list of originally unnumbered chapters does suggest the latter. Using Gacek's numbered headings, 7, 8 and 9 are respectively *lining inner covers*, then *paring leather*, and *mounting, covering with leather*. Only three steps later we find 12, *tooling*.[28]

An interesting detail is hidden in the last chapter, *Flaws in bookbinding*. One of the mentioned flaws is an "uneven cut of the leather near the endband".[29] This seemingly trivial comment characterises the way in which the leather is applied to the textblock spine and covers, and, in fact, joins the binding to the textblock. As explained in Part Two, when the cover would have been made as a case-binding structure, it would have been easiest to turn-in the piece of leather across the spine. With that method, there would not have been any leather near the endband that needed cutting. However, when the binding was not made as a separate entity, but instead was built on the textblock, then the leather on the spine extended beyond the endbands, as a tab, while the leather on the boards was turned in over the board edges. For this procedure vertical cuts at the position of the joint were needed to allow the turn-ins over the board edges to be made. Subsequently, the leather tab may have been cut horizontally, to bring the leather of the spine even with the endbands or at least to diminish the length of the tab a little.[30] Although the summarised description in al-Ishbili's text of this

[26] A. Gacek, 'Arabic bookmaking' (1988), p. 109, see n. 22 for sources on these early structures. More information on these three-flap or box-binding structures can also be found in J. Szirmai, *The archaeology of medieval bookbinding* (1999); and M. di Bella, 'An attempt at a reconstruction of early Islamic bookbinding: the box binding' (2011).
[27] The word *al-maṣāḥif* may indicate a Qur'anic manuscript, but Gacek explains this is probably not the case in this context, see p. 107.
[28] A. Gacek, 'Arabic bookmaking' (1988), p. 106.
[29] Ibid., p. 110.
[30] The specific characteristic of a tabbed or flat spine-end is extensively discussed in Part Two, the commonness of the feature is substantiated by the survey results in Part Five, paragraph 5.1-5.3.

particular cut is insufficient to denote the specific procedure, it does contradict the case-binding technique and indicates a built-on technique. The widespread use of this technique is reflected in many bindings from then on.

1.4 *Al-Malik Al-Muzaffar*

Only slightly younger than Ishbili's text is a text called "Instructions on the art of bookbinding" which is attributed to Al-Malik al-Muzaffar, again an Arab ruler, residing in Yemen. It has been preserved in three copies, of which two are very similar and one contains supplementary information.[31] Like the treatise of Ibn Badis, quite a few chapters on ink and writing tools precede the bookbinding chapter. Adam Gacek, who translated and adapted the section on bookbinding of those three manuscripts (Chapter seven of the text), points out that al-Muzaffar used Ibn Badis' treatise and quotes him at certain points. The opening paragraph for example lists the same tools and implements. The actual procedure starts with a description of how to prepare adhesives. The preparatory treatments of the gatherings include their collation and pounding along the spine-fold so the textblock will remain flat, but new is the instruction to mark the outer spine-folds of the gatherings, by dividing the length of the spine into three equal parts, to determine the two sewing stations.

According to the diverging copy of the text, the next procedure is the preparation of the doublures that will be sewn together with the textblock.[32] The doublure for the upper board should be the size of the gathering, the lower doublure includes the lining of the fore-edge and envelope flaps and is therefore longer. A blank single sheet of paper, also the size of the gathering, is pasted onto both doublures, presumably along the spine-fold. Subsequently another single blank though slightly wider sheet is applied with adhesive; the extra width is used to fold the completed endleaf structure around the spine-folds of the outer gatherings. Thus attached, the doublures and free endleaves become part of the textblock structure. The material the doublures should consist of is not specified; perhaps the choice of leather or cloth was so obvious there was no need to explicate it. The instructions for adhering the additional blank folia lack details as well, yet it is rather important that they are only pasted along the gutter instead of being adhered over the full surface, otherwise they would not function as free endleaves at all. This omission also may be due to its obviousness, or may be explained by the fact that the author was not a binder by profession. Another important aspect of this particular procedure results, strictly speaking, in two blank flyleaves and a paste-down, instead of a doublure. As explained in the discussion of the text of Ibn Badis, who also describes the application of paste-downs, these references demonstrate the early use of paste-downs.

For the next stage, the sewing of the gatherings, the binder is instructed to start at the end and use thin thread. The sewing structure that al-Muzaffar describes is clearly a link-stitch on two stations. Any swelling caused by the sewing is pounded flat after sewing. Like al-Ishbili, al-Muzaffar advises the rounding of the spine, although "not too round as this would damage the glosses during shaving, nor too square for this would precipitate the disintegration of the book".[33] The rounded spine is lined with three layers of paper. The first

[31] A. Gacek, 'Instructions on the art of bookbinding attributed to the Rasulid ruler of Yemen Al-Malik al Muzaffar' (1997), p. 58. The oldest copy of this text dates 727 H./1327 and is preserved in Cairo, the second is located in Hyderabad, dated 876 H./1471, and a later copy, 1184 H./1770, is kept in the Bibliotheca Ambrosiana, Milan. Gacek describes the Hyderabad copy as the most divergent of the three.
[32] That this method of attaching doublures seems to be a rare or rather only an early practice was mentioned above, in discussing al-Ishbili's text.
[33] A. Gacek, 'Instructions on the art of bookbinding' (1997), p. 61. The shaving here refers to cutting the textblock edges at head, tail and fore-edge, executed after sewing in order to obtain smooth textblock edges. It is interesting that the shaving is remarked on as a subsequent treatment, after the rounding of the spine, since a convex spine results in a concave fore-edge. As a consequence, when the fore-edge is

layer exactly fits the height and width of the spine, the subsequent layers are two fingers wider and form a flange or hinge on each side of the spine. Then an additional spine-lining is applied. This secondary lining appears to be a partial lining only, made with two pieces of thick cloth. The text seems to indicate that these cloth linings are short and only cover the outer ends of the spine without extending on both sides over the joints.[34] If true, these linings only serve to support the primary endband sewing and do not strengthen the most vulnerable part (the outer ends) of the joint. This particular type of lining has not been encountered in the survey, nor during conservation treatments.[35] Because of this it occurred to me that this could be a misinterpretation, caused by our modern definitions. In our perception, the 'width' of the spine is the distance between upper and lower cover, and 'the ends' of the spine are likely to refer to head and tail. But should we read this part conversely, then the width of the spine refers to the length of the joint – after all, the manuscripts were kept laying horizontally on their back cover –, and the ends of the spine indicate the sides, the joints themselves. Interpreted this way the description of the first and secondary lining corresponds with the treatise of Ibn Badis and, what is more, with the actual situation we encounter on manuscripts. In this interpretation, the primary paper linings-hinges then seem to function as a stabiliser for the cloth joints.

The procedure to fabricate the boards shows many similarities to the text of Ibn Badis. After drying they are positioned on the textblock, a bit away from the spine, which in this stage of the procedure means that the boards are placed on the reverse side of the doublure, with the hinges formed by the linings between. This is followed by the endband sewing. There is an instruction for making the leather endband core indicating that the strip of leather needed, is the width of half the little finger. "It is glued on the inside with *nashan* (starch paste), twisted and dried". It remains unclear what 'the inside' means, though one would assume it is the flesh side of the leather, and it is equally uncertain why the leather core should be twisted; the endbands examined do not attest this practice. Perhaps it indicates the folding of the outer ends of the leather strip extending beyond the width of the textblock edge, onto the surface of the outer folios. The description then states that the gatherings are pre-pierced with an awl, then the primary endbands are sewn with a thread of the same thickness as that of the sewing (which was thin) used to join the gatherings, but with a thicker needle. Presumably this description of the needle particularly hints at the need for a blunt point, which would ease its manoeuvring in the spine-fold and finding the pre-pierced hole, since with a sharply pointed needle the risks of damaging the paper would have been substantial. The procedure for making the secondary endband is not explicated, except that silk thread was used.

After this, a section on the preparation of the covering leather follows. The notes on tanning, paring and dyeing are again very similar to Ibn Badis' treatise; therefore Gacek does not go into details. The paragraphs on the application of the leather are not entirely clear. The text says that: "the covers [boards] are pasted on the outside and the leather is glued onto them", which means that the pasteboards are smeared with paste, and not the leather, which will prove to be important later on in the procedure. It is not explicitly stated that for this

cut even, in this stage, the margins of the outer gatherings will be trimmed slightly shorter than those in the middle. This explains al-Muzaffar's warning.

[34] A. Gacek, 'Instructions on the art of bookbinding' (1997), p. 61: "After this, two pieces of thick cloth (*khirqah*) of the width of the spine and three fingers long (ca. 5cm) are attached to the ends of the spine".

[35] Of course, when the binding structure is sound and the spine leather is not damaged, the lining is not accessible and therefore the survey results are not conclusive. On the other hand, this particular structure with only paper hinges as functional board attachment is deemed more vulnerable than structures including textile or leather flanges. Therefore, it is to be expected that this method, had it been used regularly, would have revealed itself either during the survey, when rather a large number of damaged items were studied, or during conservation treatment of some of these manuscripts.

procedure the boards should be de-mounted from the textblock. However, the next paragraphs do indicate that this would have been the case, since the covers and flaps are folded after the leather is applied on the outside of the boards, and left to dry under a stone. After this any desired tooling is done. Only then are the covers and spine pasted onto the textblock spine and doublures.[36] Therefore, it seems that the provisional attachment of the boards, while the endbands were sewn, have the function of stabilising the manuscript during that phase of production. Another interesting detail in the work procedure is that the leather turn-ins are pared only after the leather is applied to the boards, and after it was left to dry for an hour. This explains why the boards needed to be smeared with paste, and not the flesh side of the leather. The paring of such a small length of leather protruding from the board edges (which cannot have been much broader than one and a half centimetre) is not an easy task because the thickness of the boards prohibits the movement of the knife. It does, however, provide an additional reason for working the boards off the textblock. As an extra detail, al-Muzaffar mentions the finishing of the turn-ins, according to him these should be cut straight, presumably for aesthetical reasons. Although examples of such treatment were found, there is no great need to do so since the turn-ins are largely covered by the doublures, though not, of course, when cloth doublures were used. Therefore, the description of this custom may either point to the commonness of textile doublures, or to a certain 'school' of practice.

The structure of the binding as a whole remains inconclusive; the procedure could indicate the use and preparation of a single piece of leather onto which the boards and flaps were adhered, or the two-pieces technique. Crucial details are simply lacking. The treatment of the spine-ends, either by cutting the joints and leaving tabs or by cutting the ends flush with the boards, is not mentioned either.

1.5 *Ibn Abi Hamidah*

The fourth text, a didactic poem, is thought to be written in the fifteenth century, by Ibn Abi Hamidah; the text is again made available in English by Adam Gacek.[37] It seems that Ibn Abi Hamidah is the most mysterious of the group of historic authors. He probably lived in the fifteenth century and according to his own words he was not taught in the bookbinding craft, but did get some advice from a *qadi* (judge) in Damascus, which, however, does little to explain the source of his bookbinding knowledge.[38] The poem has been preserved in only one copy, known so far, which is now kept in the Dar al-Kutub, Cairo. It is not dated but appears to be a late copy, probably mid-nineteenth century.

In line with the other texts, Ibn Abi Hamidah starts his instructions with the making of adhesives. In the second chapter the preparation of doublures and boards is described though only very briefly; the text says that "the leather used for doublures should be thin. It is glued on one side only and attached to the textblock by means of threads. The boards are then mounted and left to dry". The compressed instruction and ambiguity of the terms complicate the understanding of the process. At first reading, "the mounting of the boards" in this stage seems to indicate application to the textblock. That would be an important instruction as it indicates that the binding is assembled on the textblock. However, the mounting may also simply refer to assembling the pasteboards. This is affirmed by the instruction that they should be left to dry, which is something an experienced binder would not do on the textblock, as the moisture within the pasteboard could affect the paper and ink of the textblock. By the same token, it is not clear if "side" indicates an edge of the doublure leather (presumably the gutter, or spine edge) or the whole surface of the leather, presumably the flesh side. In the latter case the gluing "on one side" could indicate the mounting of the

[36] A. Gacek, 'Instructions on the art of bookbinding' (1997), p. 63.
[37] Idem., 'Ibn Abi Hamidah's didactic poem for bookbinders' (1992).
[38] Ibid., p. 41.

boards onto the textblock. Technically, since the instruction refers to the sewing of the doublure as a means of attachment to the textblock, there was no need for the additional attachment with adhesive. With that premise, it remains uncertain whether the folded edge of the doublure is adhered as a stub onto the gutter edge of the outer textblock leaf, or if the extending side of leather doublure was adhered onto the textblock spine, as a spine-lining. Either way, sewn-on leather doublures are not common, but they are encountered in some Andalusian and Maghribi manuscripts.[39]

The next part of the text deals with the shaving or trimming of the paper edges, followed by "the sewing of the gatherings and endbanding". Again, the text offers no absolute clarity. If the order of the verses correlates to the order of binding operations, the trimming of the gatherings at this stage is unlikely. When gatherings are sewn it is extremely difficult to prevent slight displacements of leaves. Therefore, usually the trimming of textblock edges follows and does not precede sewing, in order to eliminate any unevenness in the edges. Where the sewing fits into the procedure remains uncertain. In footnote six Gacek explains that the word *shabikah* (endband) refers to the sewing of endbands alone, and that the sewing of the gatherings is not elaborated on, in which case the textblock sewing may have preceded the trimming of the textblock after all.

The sewing of the endbands is not specified except that two needles – one with a 'thick head' – and two colours of silk should be used. The advantage of using a needle with a rounded point has been elaborated on above, and it is likely that the 'thick head' refers to such a needle, which also indicates that the other needle, for the sewing of the gatherings, was thin and sharp. The mounting of the leather, however, is described in more detail and it offers an interesting account of the procedure. The work is done with leather in one piece, which should be cut large enough to fit the boards and the envelope flap plus the turn-ins. "The procedure begins with the spine, then the upper and lower covers and ends with the flap. Turn-ins are done as a final step when the spine has satisfactorily adhered to the leather. The book, with the covers thus mounted, is then placed in a press". This is a strong indication that the leather is applied to the textblock on which the boards were already mounted, or at least put in position, and thus it refers to the built-on method. The boards are not covered in leather while off the textblock, and then adhered to the textblock spine, so the procedure disqualifies the structure from being considered a case-binding.

Additionally, the explicit mention of making the turn-ins only after the spine leather has sufficiently set corroborates the binding procedure which results in tabbed spine-ends. Although the procedure is not explicated, the leather projecting at head and tail would have to be cut near the joints to allow for the turn-ins to be made, thus forming tabs. Another consequence of this working procedure would be that the turn-ins would cover the doublure, because the doublures were already adhered to the inside of the boards. Although such a composition is not at all common, it is noteworthy that the two bindings with sewn on leather doublures encountered in the UBL are indeed specimens with turn-ins covering the edges of the leather doublures. The tooling of the covers is the last stage discussed in the text, and some instructions are specified for heating and cooling the tools. The exterior as well as the doublures are tooled as preferred.

1.6 *Al-Sufyani*

The fifth text is dated 1619, and is written by a master craftsman, al-Sufyani, who lived and worked in the Maghreb and supposedly wrote his treatise in Fez. It is known only from a late copy (1839) on which an edition was based first published in 1919.[40]

[39] See note 22 above. This structure perhaps was really a product of Ibn Abi Hamidah's time; the fact that not many manuscripts from the thirteenth century have survived unscathed in their original binding may explain our unfamiliarity with the sewn doublures.

[40] For the analysis of Sufyani's text I mainly used the translation of M. Levey, *Mediaeval Arabic bookmaking* (1962), pp. 51-54, and compared it with Bosch et al., *Islamic bindings and bookmaking* (1981). In

After an introduction, Sufyani describes the making of the boards, then the assembling of the gatherings, advising the use of catch-words to avert disorder, and their flattening, through pounding. Before the gatherings are sewn Sufyani suggests to mark the spine-folds on the outside with ink, in two lines, where the sewing thread will pass. Although the use of the link-stitch over two stations is not explicitly mentioned, this instruction certainly points to that sewing structure. A thin but strong thread is prescribed, however, when the book is thick and swelling is caused by the thread nonetheless, the textblock needs to be rubbed over the spine edge, using a bonefolder, in order to rub the excess material away, into the mass of the paper. There are also suggestions for adjusting the textblock properly, should gatherings have slipped out of alignment.

When the gatherings are sewn, a layer of adhesive is applied to the textblock spine.[41] According to Sufyani's description, a fair amount of it is smeared on the textblock spine, even between the gatherings. This action is, however, immediately followed by the use of the press, to even the thickness of the textblock spine with the other edges and to remove the excess of glue.

The next sentence indicates the application of a leather spine-lining. According to the description two strips of leather, finely pared, are used. It is not stated explicitly that they should fully cover the spine, neither from head to tail nor from joint to joint. Nor is it indicated that the two strips should abut or overlap in the middle of the width of the spine. However, the next paragraph continues with the application of the leather hinges and provides additional clues. Two more things can be deduced from this part of the text. The first is that the leather is pared when wet. It is not uncommon to do so, but it had not previously been explicated anywhere in the text. Sufyani expresses the concern that dampness from the leather may cause damage to the outer leaves of the textblock, especially when these leaves are decorated with gold or water-sensitive paints or dyes. Therefore he advises to keep the two hinges away from the front and back of the textblock "in such a manner that the hinges do not come in contact with the writing". He also remarks that "when you prepare the two hinges, both being wide, glue them to the book when they are dry, neither moist nor wet". Since the adhesive would certainly introduce moisture to the leather, that is not the kind of moisture being referred to here; it therefore points to moisture from another source and it is likely that the paring as a preceding phase is the cause of it. The second fact we learn is that the textblock Sufyani refers to is not protected at front or back with blank bifolios, or even a single leaf of paper. It indicates that the gatherings were written from front to back without designating outer leaves as endpapers, nor were extra protective leaves added at this point in the procedure. It also suggests that the previous method of sewing leather or cloth doublures together with the textblock is no longer standard procedure. As to the application of the two leather hinges, the phrase "turn over the two hinges on it, each of them on the other with awling and flattening" seems to point at the position of the hinges on the spine. Indeed, they should overlap: only then do they provide full support to the textblock spine and the tiedowns. However, it remains uncertain why two strips of leather are required, when it seems that one piece of sufficient width could have served the same purpose.

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his introduction, Levey writes that he studied the text as published in 1919 in Fez, and he states he was unable to procure a second edition published in 1925 in Paris (both by Prosper Ricard), pp. 6-7. However, the heading on p. 51 suggests that he *did* use the 1925 edition, which seems likely as this probably was a more accessible edition; it was also used by Bosch et al.

[41] M. Levey, *Mediaeval Arabic bookmaking* (1962), p. 52. In the glossary (pp. 58-65) several types of adhesive are mentioned, such as starch and fish glue. As Levey used the verb "to glue" as a generic term in the text, it is not always clear which adhesive was actually used. The word glue usually indicates an adhesive made from an animal source, such as hide or bones, while paste or starch indicate a vegetal adhesive. From my own conservation experience I can say that animal glue is not often found on Islamic textblock spines.

Sufyani suggests the use of an additional three layers of spine-lining, made from paper, which should be adhered to the spine while the sides of these paper strips may protrude on both sides of the joints. After drying, these extending sides are cut off with a sharp knife. The function of these additional linings is not explained but the obvious reason seems to be to further even-out the spine so the leather covering will not show any unevenness. Manuscripts with multiple layers of spine-lining, combining leather and paper, were encountered during the present study, which attest this practice.

The preparation of the boards is discussed as the next step. The upper and lower boards are cut first and then positioned on the textblock, using two or three drops of glue on the hinges, to keep the boards in place. The description shows a resemblance to the text of Al-Malik al-Muzaffar at this point. When the thus positioned boards have dried in the press, the cutting of the edges is described. Although not explicitly stated, this procedure seems to include the cutting of both textblock edges and the two boards. That would indeed be an adequate method for making the boards flush with the textblock. After pumicing, to remove the trace possibly left by the cutting iron, a third board is cut to size for the fore-edge flap ("the fore-band") and the envelope flap ("the tongue cover").

When all boards are ready, the leather can be applied. First the front board is to be marked in the centre, for the stamping. The board is covered with leather while positioned on the book, and rubbed "to the right and to the left"; only then is the board detached from the hinges, lifted from the textblock and put on a marble slab. Stone provides a solid and flat surface, which is more suitable for the further tooling of the leather than when the boards would have remained on the somewhat springy textblock. There, the leather is stamped, and the turn-ins may be made. Work continues on the second and third board (the back board, and the fore-edge and envelope flap). From this we can deduce that both boards are covered individually, a clear indication of the two-pieces technique. Sufyani seems to describe a method that involves smearing the boards with adhesive instead of the leather. Between the third board (the flap) and 'the other board' (the second or back board) the binder should leave one or two fingers space for flexibility. Once the exterior of these boards is covered, the inside surface of the fore-edge flap is covered with leather. Sufyani describes the use of a pared piece of leather which is adhered from the edge of 'the other cover board' to the outer edge of 'the tongue'.[42] This seems to imply the covering from the back board edge adjacent to the fore-edge flap, to the outermost edge, the point of the envelope flap. Sufyani is then describing the variant in which the doublure of both flap elements are created by a single piece of leather.[43]

The subsequent chapter deals with the drying of the leather covering the boards, and its subsequent rubbing and polishing. "After you complete this aspect of bookbinding, you line it either with leather or cloth". This seems to indicate the application of the doublure at this point. Although feasible, it complicates board attachment when the leather hinges are to be pasted underneath the doublures. When the text treats this phase of the procedure – the sewing of the endband is dealt with first – any relevant advice is omitted: "... fix the cover boards on the book after you have smeared it [that is probably the textblock spine] with glue". This leaves us at a loss as to how to explain the attachment of the hinges. Evidence on most manuscripts shows that inner joints or hinges were not adhered on top of the doublures, but directly to the inner boards and under the doublures. Thus there are two possibilities to explain Sufyani's text. Either the doublures were not applied before board attachment, or,

[42] M. Levey, *Mediaeval Arabic bookmaking* (1962), p. 53.

[43] Such a leather doublure of the fore-edge and envelope flap was usually combined with either a paper, or a separate leather doublure of the back board. From the survey results it appears that this technique was indeed common in the centuries preceding Sufyani's text. From the seventeenth century and later, when the flap pieces were lined with leather a continuous piece was used to cover the back board as well. Otherwise, only the inside of the fore-edge flap and adjacent joints were covered with leather, while the doublures of the envelope flap and the back board consisted of paper. See also Part Five, paragraph 6.4.

they were, but only partially, leaving free a few centimetres close to the inner joint's edge. That way the hinges could be pasted onto the boards underneath the doublures, before finishing the completion of the doublures. It would be a complicated work procedure and, therefore, seems unlikely. A second argument against this explanation is that cloth and leather doublures were no longer common by the time Sufyani wrote his treatise. Therefore, another possibility is that the sentence "...you line it either with leather or cloth" does not at all refer to the doublure, but to the flanges of the spine-lining, which would indeed have consisted of leather or cloth. If true, it indicates the attachment of the boards to the textblock at this stage, which would make perfect sense. However, it remains undecided what the author actually meant, or whether perhaps a later copyist is responsible for a faulty text.

The procedure of the endband sewing starts with the adhesion of the leather core onto the edge of the gatherings, using gum Arabic. The sewing of the primary endbands is described briefly, and the attachment of the thread with a knot on the spine is stated explicitly. The secondary endband sewing, however, is summarily described as "weaving it with coloured silk until you complete the work of the headband from the two sides". The work then proceeds with "... fix the cover boards on the book after you have smeared it [presumably the extending leather on the spine side] with glue". This is followed by the instruction "Tie on the spine side with strong thread". The action being referred to must have been clear to a binder since it is not elaborated on further. Apparently cord was used to tie the book, probably so as to put pressure on the moist, freshly applied parts of leather now covering the spine. That cord could be tied perpendicularly to the spine or along the joints, modelling the tabs over the endbands in the process. From the text, the exact procedure is not clear.

The fifth chapter elaborates on the use of gold, and is not relevant for studying the structure of the book. The sixth and last chapter is a short text dedicated to the decoration of the leather for binding. It does not add anything further to the bookbinding procedure. Again, this treatise peters out and does not finish with a clear description of the last procedures that seem necessary for the making of the Islamic book, which would include adhesion of the spine-lining flanges on the inside of the boards, followed by pasting the doublures. However, as discussed above, while the treatment of the board attachment and application of the doublures is incoherent, at least in our view, the author may have felt that all stages were addressed well enough. Perhaps these final procedures were thought to be so obvious that there was no need to explicate them further.

1.7 *Concluding observations*

The five texts have a similar structure. They start with an overview of the necessary tools for bookbinding and instructions on how to make adhesives. They all give clear instructions for how to prepare the gatherings for sewing, and stress the importance of keeping the surface of the spine level with the rest of the textblock. As for the shape of the spine, it is suggested by al-Ishbili and al-Muzaffar that a rounded form is preferable. All sources describe the preparations for the boards rather similarly. The noteworthy differences are found in the lining of the textblock spine, the assembling of the doublure material, board attachment and application of the covering material.

Except for the oldest and youngest documents the texts remark on the use of leather doublures that can be sewn to the textblock. However, we lack evidence for a frequent use of this method. None of the authors denote the use of a link-stitch sewing on four stations, although this method of sewing was used in their region, at least in the times of the two most recent authors. All authors describe how to line the textblock spines after sewing. Leather, cloth and paper are noted as suitable materials, and the linings always are described to project over the joints so the extensions can be used for board attachment. It is interesting to note that additional spine-lining strips of paper are mentioned several times. Those extra linings were presumably intended to further flatten the spine, for they were not used as board

attachment, except for the paper 'hinges' described by Ibn Badis. He only indicates the use of paper linings, without reference to an additional stronger lining material, so the flanges of paper, in this case, were necessary to form the attachment to the textblock. It is important to emphasise that all treatises confirm that the lining is part of the structure. Departing from the idea that the sequence of the described steps reflects the actual work procedure, the texts clearly indicate that the spine-lining was applied before the primary endbands were sewn.

In all texts there is a paragraph that deals with the finishing of the textblock edges. They do not really diverge, except perhaps in method or in the tool used. All treatises mention the shaving or trimming of the edges, either with a trimming blade or a knife, followed by softening the paper edges with a pumice stone or a file. The edges of Islamic manuscripts are very seldom decorated, so the smoothing of the edges does not serve the purpose of preparing them for gilding or marbling. Still, when five out of five sources mention it as a necessary step we must assume it was considered worth the effort. Sufyani mentions this action to dispose of any traces of the instrument used for trimming. Possibly it enhanced the ease with which one could leaf through a textblock; it is also possible that the aesthetical quality was heightened by the polishing.[44]

Save for Sufyani all authors describe the use of two needles for the endband sewing, without explicating their precise usage. The endband type consisting of the chevron pattern, which was predominant in the whole period covered by these primary sources, is easily made with one needle. The leading thread, that is held by the needle, takes the other thread along while it passes underneath one or more primary endband warps. The variation in pattern best described as 'vertically striped' can likewise be produced with just one needle.[45] The exception appears to be the diagonal pattern and the chevron pattern using three or more colours; for the latter even three needles are necessary. However, this variety is extremely rare and its occurrence seems to be confined to Southeast Asia, an area not covered by the historic texts. Thus, although most endbands are executed in two colours, for the majority of the secondary sewing patterns only one needle was used. Could it be that the instruction to use two needles for endbanding actually points to the separate sewing stages? Ibn Abi Hamidah writes in his conclusion that "only the needle for endbanding should have a thick head".[46] Thick should presumably be interpreted as round, as opposed to pointed; a round needle point facilitates a smooth passage between the tiedowns and endband-core leather strip whereas a pointed needle would catch on the materials and cause damage. Such a needle, however, would not be practical for sewing the primary tiedown, connecting every gathering to the endband core and spine-lining. For that purpose a thin and sharp needle was used. Yet, the decorative sewing on top of the endband core was sewn with the second, thicker (or rather rounder) needle. This is the most obvious explanation.

With regard to structure it is noteworthy that both Ibn Badis and Ibn Abi Hamidah describe the method of building the binding on the textblock, that is, to first mount the boards and then apply the leather. Bakr al-Isbili provides more options; the two-pieces technique that he mentions involves board attachment after covering the separate covers, but he also indicates the application of boards prior to covering. Al-Malik al-Muzaffar offers no conclusive procedure but hints at the preparation and covering of the boards prior to

[44] By comparison, Western historic sources on bookbinding techniques do not contain instructions or suggestions for smoothing the edges. The trimming or cutting of edges is a standard technique, of course, but I know of no further mechanical methods for sophisticated results (with the exception, of course, of marbled, gilded and gaufered edges).

[45] See Part Two, figs. 52, 108-111 for images of these patterns. Making models of these endbands clearly demonstrated the ease of production with a single needle for the chevron and striped pattern. The diagonal (or 'trellis-like') endband is best done with two needles although one might 'cheat' at the beginning of every other tour by skipping a warp, which would allow the use of just one needle, and one would still end up with a nice diagonal endband sewing.

[46] A. Gacek, 'Ibn Abi Hamidah's didactic poem for bookbinders' (1992), p. 42.

attachment to the textblock; whether or not two pieces of leather were used in that process remains unclear. Sufyani also refers to the two-pieces technique, albeit indirectly. His description indicates a technique of covering the boards, individually and separately, prior to attachment.

As we will see in the secondary sources there is a persistent inclination to refer to Islamic manuscripts as being case-bindings, or, when that specific term is not used, the preparation of the entire binding separate from the textblock is indicated in other words. Additionally, the frequent occurrence of the two-pieces technique is overlooked in the vast majority of the secondary sources. It therefore must be assumed that the historic treatises, in this respect, have been widely neglected as a source to help understand the structures and actual composition of these artefacts.

2 Secondary sources: related studies and general reference works

2.1 *Book-historians, art-historians and pioneers of manuscript studies*

Islamic bindings are frequently referred to in studies on the history of the Western book, since many of the materials and decorative techniques used to produce Western bindings first occurred in the Near and Middle East. The ornamentation schemes and decorative tools used to beautify Oriental bindings have significantly influenced Western styles of book decoration, and the importance of Middle Eastern manuscripts as a source and inspiration for the development of Western binding designs has not been underestimated. Similarly, developments in the use of the materials in the Orient were transferred to Europe over time and changed the Western bookbinding tradition permanently. Examples are the use of alum tawed leather, the introduction of paper, the use of pasteboard instead of wooden boards, the practice of gold decoration, techniques for cutting filigree leather and the secret of paper marbling. However, although these aspects are covered in many reference works on Western bookbinding, technical descriptions of Islamic bindings are only touched on briefly.[47] Generally they do not go beyond the observation that the Coptic sewing structure – a chain stitch sewing – underlies the sewing techniques of both the Islamic book as well as the Western codex, and then they add that the Islamic book structure may be referred to as a kind of case structure.[48]

Some of the first publications on the general aesthetic aspects of Islamic bindings have been discussed briefly in Part One, paragraph 3.1. They will not be addressed further since they add nothing to the topic of structure and technique. An important exception is *Der islamische Bucheinband des Mittelalters* (1962), by the German Arabist and Orientalist Max Weisweiler, who followed a much more thorough line of research on this topic. He assessed hundreds of Arabic manuscripts from the pre-Ottoman period in collections preserved in Berlin, Gotha, Istanbul, Tubingen and Leiden. He made rubbings from (parts of) their covers and developed a system to group them, according to differences in tooling patterns and decorative schemes.[49] Weisweiler's detailed typology of decorative groups is highly esteemed and has contributed to the diligence with which many early manuscripts are now approached. His study did not, unfortunately, include remarks on the structure of the bindings. Partly based on the results of Weisweiler's research, Gulnar Bosch further studied the use of block-

[47] The exception is J. Szirmai, *The archaeology of medieval bookbinding* (1999). Chapter five is devoted to the Islamic book structure (pp. 51-61) and is discussed below in paragraph 4.1.
[48] See for example M. Foot, *The Panizzi lectures 1997. The history of bookbinding as a mirror of society* (1998), p. 4.
[49] M. Weisweiler, *Der islamische Bucheinband des Mittelalters. Nach Handschriften aus deutschen, holländischen und türkischen Bibliotheken* (1962).

stamped leather doublures, associated with the pre-Ottoman binding, preserved in the Oriental Institute, University of Chicago.[50]

A completely different contribution was made by Johannes Pedersen, the Danish theologian and Orientalist, with *Den Arabiske bog* (1946), translated into English in 1984.[51] He sketched the whole picture of Islamic manuscript production, starting with how manuscripts were composed, then written, authorised and published, copied, bound and traded. Thus he explained many aspects of the tradition and supplied it with context. In the early centuries of Islam the *warraq* (copyist) was more than a professional transcriber; he could also be involved in proofreading, binding and selling the manuscripts.[52] However, when the need for books increased in later centuries, the bookmaker's art became divided in several specialities, and one of them was that of the binder.[53] Pedersen described the characteristic features of the manuscript form, the flat spine with the leather covering adhered directly onto it, and the envelope flap, but he provided no technical details.[54] The rest of his chapter on bookbinding is devoted to developments in the decorative aspects; apart from tooling and painting no bookbinding techniques are mentioned. Pedersen ends with the remark that "the bindings considered so far have been the deluxe ones. The ordinary, everyday bindings, of course, did not have the costly decoration described here".[55] This remark is important and reflects the general focus in bookbinding studies, which until then covered only one part of the spectrum.

At the end of the nineteenth century, Paul Adam, who was a German book restorer, became interested in the Islamic book structure when he was confronted with a collection of Oriental manuscripts.[56] He took great care in analysing the techniques used to manufacture the objects before treating them, and published his observations on their structure.[57] Adam recognised the importance of the endbands and described them as an essential part of the sewing system, their function similar to the Western kettle-stitch close to head and tail of a book.[58] He also noted that the sewing structure was remarkably consistent over the ages, much different from Western sewing structures which varied considerably over time. According to his descriptions, Adam never came across manuscripts sewn on more than two stations.[59] The way he incorporated the Oriental book in *Das Restaurieren alter Bücher* was a novelty. Unfortunately, although he compared the Western and Oriental binding features in nearly every aspect, when he described the methods used to cover bindings in leather he did not include Islamic manuscripts.[60] Therefore we do not know if he noted the two-pieces technique, nor his thoughts on tabbed spine-ends.

An even older, but odd one out, 'pioneer' in Islamic bookbinding studies is Mary Eliza Rogers, who travelled the Levant with her brother in the 1860s, where she visited several

[50] G. Bosch, 'Medieval Islamic bookbinding: doublures as a dating factor' (1964); this study is summarised below, in paragraph 3.1.
[51] J. Pedersen, D*en Arabiske bog* (1946).
[52] J. Pedersen, *The Arabic book* (1984), pp. 50-52.
[53] Ibid., pp. 102-103.
[54] Ibid., pp. 104-105.
[55] Ibid., *The Arabic book* (1984), p. 112.
[56] P. Adam, *Lebenserinnerungen eines alten Kunstbuchbinders* (1951), p. 102.
[57] Idem., *Der Bucheinband; seine Technik und seine Geschichte* (1890), pp. 186-200.
[58] Idem., *Das Restaurieren alter Bücher: Wiederherstellungsarbeiten an alten Büchern, Einbänden, auch Manuskripten sowie Ausführungen über das notwendige Verständnis für die Technik des Buches zur Beurteilung von Zeit und Herkunft alter Einbände* (1927, reprint 2003), pp. 26, 28 and 48. He even stipulated that the function of the Oriental endband is so important for the stability of the manuscript that, when a binding needs to be restored, one should never cut the edges of the textblock, for then the endband sewing would be cut as well.
[59] Ibid., *Das Restaurieren alter Bücher* (1927), p. 48.
[60] Ibid., *Das Restaurieren alter Bücher* (1927), pp. 33-36.

bookbinder stalls in *souks*, and wrote a short account of what she encountered.[61] The insight she gives to a nineteenth-century workshop offers details not given elsewhere. In the author's sketch of a bookbinder's workplace, we see a sewing frame standing on the floor right behind the chest which also functioned as a work-table. As a sewing frame is not used for the traditional Islamic link-stitch sewing, this device is a clear indication of the introduction of the Western method of sewing on supports.[62] Rogers states that "the five [Damascene] bookbinders good-naturedly lend their patterns and tools to each other" and notes that none of the stamps, used for decoration, seem to be very recent, because sufficient old stamps were available. Both observations imply that the study of stamps – at least of that period – will not be useful to specify binders' workshops. Rogers also describes the use of asphodel, "an excellent paste", used to adhere the leather for covering and for the glazing of paper. According to her, the asphodel paste was also used with wheat starch, in a ratio of one to two. The paragraph documenting the actual making of a binding suggests the making of a true case-binding, although, unfortunately, the precise stage at which the textblock is attached to the cover is not mentioned. In short, it says that paste is applied to the inside of the leather, and then three boards – front board, back board and envelope flap – are applied to it. According to the chronology of the description, the next step is the application of a cloth lining to the inside of the fore-edge flap, then the edges of the leather are turned-in and rubbed with a bone-folder (in this case, the tool is described as a "boxwood rubber"). After the leather has firmly set the stamped designs are applied to it by vigorous hammering. Neither the sewing of the gatherings, nor the application of the endbands nor the textblock attachment is mentioned. In this respect, this could even be a description of the making of a wrapper binding for an unsewn textblock. The only further steps noted are the application of a leather lining to the flap – unspecified whether this is the fore-edge flap or envelope flap – and paper to "the other parts". Given the non-professional interest of Rogers in bookbinding, it is difficult to judge the reliability of her eye-witness account. However, her description of the making of the binding separate from the textblock could be correct; techniques and materials from the West are known to have been used in the nineteenth-century Islamic world – the sewing frame is an obvious witness – and the Western case-binding was developed some forty years before Rogers published her report.[63]

2.2 *Glossaries and encyclopaedias*

Entries on 'Bookbinding' in encyclopaedias on the Islamic world start with a short characterisation of the typical shape of the Islamic manuscript (edges flush with the covers, spine always flat without raised bands and a flap attached to the back cover to protect the front-edge, which is tucked under the upper cover). The description then follows with the development of the decorative aspects. *The encyclopaedia Iranica* (1990) elaborates on the impressive technical advances made during the Timurid period and later during the Safavid dynasty, and addresses in some detail the craftsmanship of filigree cutwork and the manufacture of lacquer, however, no mention is made of how the books were constructed.[64]

The entry 'Book' in *Medieval Islamic civilization. An encyclopaedia* (2006) first stresses the eminent position of the manuscript in the Islamic world in order to explain the care

[61] M.E. Rogers, 'Books and book-binding in Syria and Palestine' (1868), pp. 113-115; this account, including her illustrations of a bookbinder at work and details of tools and designs, was brought to light by Jake Benson in his yet to be published article "Satisfying an appetite for books: innovation, production, and modernization in later Islamic bookbinding", *Proceedings of the conference on codicology of manuscripts of the Arabic script*. Madrid, Spain, May 19-21 2010.

[62] Several manuscripts from the nineteenth century with local, contemporary bindings, included in the present study, attest this practice; see Part Five, paragraph 1.5.

[63] M.T. Roberts and D. Etherington, *Bookbinding and the conservation of books. A dictionary of descriptive terminology* (1982), p. 47; the case-binding is said to have been developed in the 1820s in Great Britain.

[64] E. Yarshater (ed.), *Encyclopaedia Iranica* (1990), Vol. IV, 'Bookbinding', by Duncan Haldane, pp. 363-365.

calligraphers and binders took to produce these artefacts.[65] The phrase "although elegant and alluring, the binding offered a robust protection for the text that it contained" is noteworthy, for it recognises the protective functionality of the binding, which is so frequently underestimated or disputed in Western sources.[66] While the possible varieties of book production in society are described (from the soloist copyist who sold his books in the market to the sophisticated and highly specialised artists working under royal patronage), actual bookbinding techniques are not discussed.

More information is provided by the latest, on-line edition of *Encyclopaedia of Islam*, which interlards an overview of the development of the appearance of the book with bits of technical information. The entry even opens with the statement that several types of binding were used in the Islamic world and that not all manuscripts were bound.[67] Both the box-binding ('Type One') and its successor, the 'Type Two' binding are explicated in fair detail. Bindings from the southern Maghreb and sub-Saharan Africa are explicitly mentioned as a distinctive group, as these manuscripts are often not sewn. Indeed, the textblocks consist of gatherings or loose sheets, and the bindings are therefore not necessarily connected to them. Their covers are described to be made of supple leather, for which sometimes several pieces were used, in the archetypal shape with an envelope flap extending from the back cover. It is also noted that these flaps frequently close over the upper cover, at least in those cases when the tip of the flap contains a leather strap that can be wrapped around the entire volume. There seems to be a reference to the tab, though it is referred to as *endcap*: "The endcap protects the bundle of quires but is not fixed to the covers". When later on Guesdon discusses Central Asian bindings, they are said to be sometimes "adorned at the top or bottom with small scraps of leather that could be grasped by the user to pull the volume off the shelf". The source of this remark probably is Akimushkin.[68] However, the theory for this possible use of tabs is not substantiated. It is even contradicted by the common practice of writing the title of a manuscript on its tail edge, which means that the volume was positioned on the shelf with the tail side out, and not the spine, so that the tab at the head could not be reached. Nevertheless, it is interesting that the tabbed spines were judged worth mentioning as a distinctive Islamic binding feature.[69]

Several publications on the history of Western bookbinding as well as glossaries for book-historians, conservators and other scholars give a few cursory sentences to the making or characterisation of Islamic manuscript structures. A similar short 'typification' is found in many catalogues. Unfortunately, these brief descriptions are often incorrect. They reflect the common misconception that Islamic bindings are made as a case-binding and therewith contribute to the continuation of the inaccurate perception of this manuscript tradition. The rather summary character of such descriptions and the focus on decorative schemes in this particular bookbinding tradition add to the idea that Islamic bindings mainly serve to be aesthetically pleasing, not to protect the book. For example, Jane Greenfield completely misrepresented the structure in her *ABC of bookbinding* (1998). According to her drawings and brief captions, first the textblock is sewn, which is followed by the sewing of the endbands.

[65] J.W. Meri (ed.), *Medieval Islamic civilization. An encyclopaedia* (2006), Vol. I, 'Books', by David J. Roxburgh, pp. 114-117.
[66] Ibid., p. 115.
[67] Marie-Geneviève Guesdon, 'Bookbinding', *Encyclopaedia of Islam*, Third Edition, Eds.: Gudrun Krämer, Denis Matringe, John Nawas, Everett Rowson, Brill Online, 2013. http://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-3/bookbinding-COM_22883> first appeared online 2011 (accessed 14-01-2013).
[68] The "scraps of leather" are an interpretation, Akimushkin writes: "The back spine sometimes had two tongued flaps that extended upward and downward (1.5-2.0 cm) for pulling the manuscript out of a pile on the shelf". O.F. Akimushkin, 'Central Asian manuscripts' bindings (1730s-1930s)' (2001), p. 4.
[69] As far as I am aware, Akimushkin and Guesdon are the only authors who have pointed out the distinctiveness of Islamic spine ends.

Only then is the spine-lining thought to have been applied, in which case it no longer has a structural function. Furthermore, the cover is presented as a case, made separately from the textblock.[70] *The dictionary for bookbinders* (1982) by Roberts and Etherington does not give a word to the Islamic (Oriental, Middle Eastern or Arabic) book, although it does have an entry on Japanese binding.[71]

3 Founders of our knowledge on the use of structure and materials in Islamic bookmaking

3.1 *Bosch*

Already in the early 1960s Gulnar Bosch researched the decorative features of block-stamped leather doublures. She compared the ornaments used with those known from Indian textiles. Intriguingly, the peak of the trade in these textiles coincided with the period in which this type of doublure was used.[72] Bosch also observed that the use of this decorated material occurs in 'average' bookbindings, and suggests that such decorated leathers were a trade product, used throughout the whole Islamic region, although its artistic and creative centre may have been situated in the Egyptian-Syrian region.[73] The descriptions of the block-stamp patterns themselves, however, have not led to a sub-classification system for this particular period, nor is the publication widely known or referred to. By contrast, around the same time Bosch translated the twelfth chapter of the treatise of Ibn Badis, which undoubtedly found a much wider audience.[74]

Notwithstanding the value of Bosch's first publication on the Islamic binding structure, the work that has become fundamental to the knowledge of many contemporary scholars and conservators and is cited or referred to in many publications, is *Islamic bindings and bookmaking* (1981), which Bosch wrote in cooperation with John Carswell and Guy Petherbridge.[75] The book is an elaborate catalogue divided in three parts. The first section gives an extensive overview of the literature then available, which is followed by an in-depth chapter on the materials and techniques used to make manuscripts, with a final section comprising the catalogue itself. Particularly the second chapter on materials, techniques and structures was very well received and, indeed, filled a void in the knowledge of Islamic manuscript production. It offered for the first time a clear overview of the possible construction of Islamic manuscripts and the materials used to produce them. The description of techniques provided access to the hitherto often ignored bookbinding procedures. The vivid picture that emerged of the making of manuscripts found its way into many studies conducted since.

The information is partly based on the treatises of Ibn Badis and al-Sufyani. Substantial parts of both texts are quoted; when phrases of the translation by Bosch et al. are

[70] J. Greenfield, *ABC of bookbinding. A unique glossary with over 700 illustrations for collectors and librarians* (1998), pp. 88-89. As she typified the structure as a case, her definition of a 'case binding' on p. 14 is of particular interest. It illustrates the inconsistent use of the term 'case', of which she states that "The spine of the case is not adhered to the spine of the textblock"; clearly this is not applicable to Islamic manuscript bindings.
[71] M. T. Roberts and D. Etherington, *Bookbinding and the conservation of books. A dictionary of descriptive terminology* (1982). This illustrates the neglect of the Near Eastern bookbinding tradition at the time, while Far Eastern techniques and materials were incorporated in the field of bookbinding and conservation.
[72] G. Bosch, 'Medieval Islamic bookbinding: doublures as a dating factor' (1964), p. 219.
[73] Ibid., p. 221.
[74] Idem., 'The staff of the scribes and implements of the discerning: an excerpt' (1961).
[75] G. Bosch et al., *Islamic bindings and bookmaking* (1981).

compared with translated text by Levy there are clear differences.[76] These sources are complemented with historic context, other studies – by the authors and others – and direct observations of the exhibited items. That last source of information merits a comment, for the condition of these objects, which largely consisted of loose medieval manuscript covers, is likely to have influenced the views of the authors on matters of structure and strength of the original bindings.

There is no need to repeat here those parts of the text that are more or less a synopsis of both historic authors. However, a critical analysis of the interpretations of the authors is required, especially because of the authoritative role of this work, *Islamic bindings and bookmaking*. In the light of the current survey results, it is apparent that some views and assumptions as stated by Bosch, Carswell and Petherbridge need to be modified.

One of the features from *Islamic bindings and bookmaking* which has been frequently reused in later publications is a line drawing of the archetypal manuscript, providing terminology for its constituent parts.[77] [fig. 118] The introduction of this basic vocabulary together with the depicted structure offered everyone working with Islamic manuscripts tools to communicate with each other. Adam Gacek for example reproduced the diagram in his edition of al-Ishbili's text; he added the Arabic terms used by al-Ishbili to the terms provided by Bosch.[78]

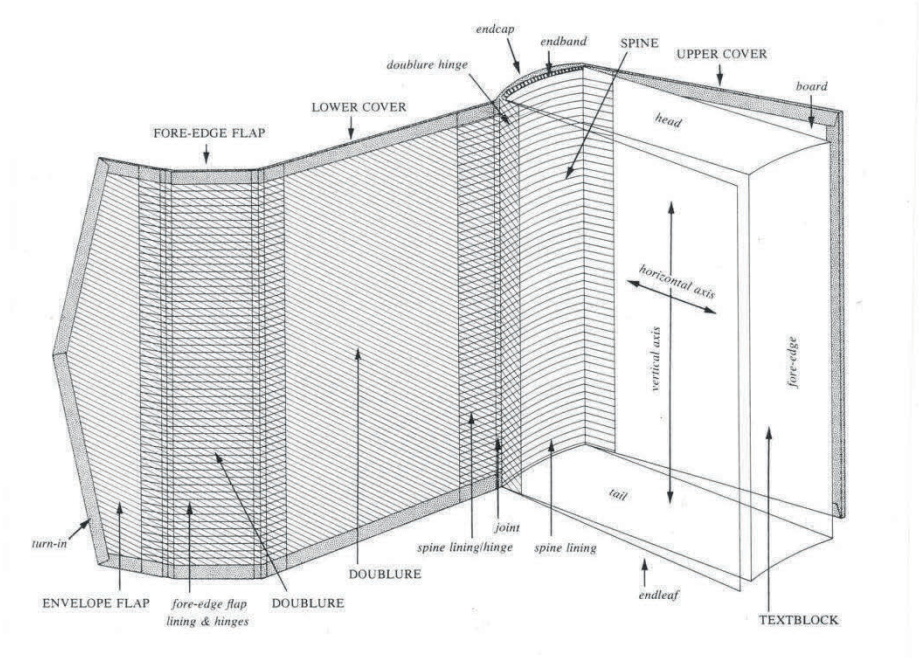

Fig. 118. The schematic presentation of the Islamic manuscript and its constituent parts, reproduced from Bosch et al. (1981), p. 38.

Most of the English terms have taken root, however, the usefulness of the word 'endcap' is debatable, as argued in Part Two, paragraph 1.1. With regard to the drawing a few remarks are in place. It shows a continuous doublure covering the back board, the fore-edge flap and envelope flap, with a stub (called 'doublure hinge') pasted onto the outer leaves of the textblock. At the same time it also shows a separate fore-edge flap lining that covers the joints and edges of the adjacent boards. This appears to be a hybrid assemblage. When such a

[76] For example, the paragraphs dealing with adjusting the gatherings prior to sewing, or the leather application on the covers differ substantially. Why these differences occur is not explained, all authors used the Paris edition by Prosper Ricard (1925).
[77] G. Bosch et al., *Islamic bindings and bookmaking* (1981), p. 38.
[78] A. Gacek, 'Arabic bookmaking and terminology' (1990-1991), p. 108.

continuous doublure is used, usually made of leather, binders did not first apply an additional lining on the fore-edge flap. A lining of the fore-edge flap as depicted is encountered frequently enough, but then it is combined with individual doublures for the inner board and the envelope flap, made either of leather, cloth, or paper. Two separate drawings would be needed to illustrate the variation clearly. The stub itself is certainly a frequently encountered feature, though it is not as common as an inner joint formed by the projecting flanges of a leather spine-lining. For readers to learn to distinguish between the inner joint structures, and to enhance the understanding of the dual function of the spine-lining it would be important to present the latter structure prominently; this drawing only represents a variant structure and does not focus the attention on the actual board attachment.

Within the scope of the present study, discussion of the structural components of the Islamic manuscript is of special interest. When Bosch et al. describe the procedure for lining the textblock spine, one of the important functions of the spine-lining is omitted. The support that the lining provides for the primary endband sewing and the protection it offers at the same time for the paper spine-folds is not mentioned.[79] This is especially crucial because on several occasions Bosch et al. indicate that the binding structure is, in essence, a case-binding (as will be elaborated on below). As explained in Part Two, paragraph 2.5, the dual function of the spine-lining is one of the counter-indications of that structure. Furthermore it should be noticed that these authors mention cloth explicitly and solely as a spine-lining material, whereas leather was also often applied. Subsequently, the *additional* application of leather or paper hinges is noted, with a reference to both Ibn Badis and Sufyani. However, what those historic sources actually describe is the spine-lining proper. Furthermore, according to Bosch et al. there is little evidence that paste-downs were used in the fourteenth to seventeenth centuries, instead of doublures. However, such evidence is provided by the survey results: in the Leiden collections, over 30 manuscripts from this period were provided with paste-downs.

The description of the endband sewing, both primary and secondary, is very clear and comprehensive and apparently not based only on the patchy primary sources. Especially the observation that slight changes in the processing of the threads when the secondary endband is sewn results in variations of the chevron pattern, and that the patterns vary in size depending on the thickness of the threads and the applied interval between the primary tiedowns, indicates examination of preserved specimens. The subsequent remark, however, is a misjudgement probably caused by the poor condition of the manuscripts involved: "more often than not the protective endband core is omitted with the result that the primary endband threads (not being anchored around a core) cut into the spine folds of the paper gatherings and eventually tear out".[80] Endband cores are prone to damage or loss once delamination or tearing of the spine-lining has caused damage to the tiedowns, but the large majority of endbands were definitely originally sewn on an endband core.[81]

Bosch points out that manuscripts were not necessarily sewn and bound, a custom which could have eased the copying of texts, as it allowed for the simultaneous distribution of gatherings among several copyists.[82] According to Bosch, when left unsewn a portfolio was constructed to protect the loose gatherings, which is said to be made with additional flaps at head and tail. However, no examples of such multiple flap structures are given, nor to my

[79] G. Bosch et al., *Islamic bindings and bookmaking* (1981), p. 50.
[80] Ibid., p. 53. Most likely, the paper damage occurred when the spine-linings were torn, pulling at the tiedowns which keep that little strip of leather in place. The missing endband core is an additional damage.
[81] See Part Four, paragraph 2.4 and Part Five, paragraph 3.3.
[82] G. Bosch et al., *Islamic bindings and bookmaking* (1981), p. 45; the remark about copying schemes is found in note 156. However, there may well have been other reasons for the intentionally unsewn manuscripts kept in wrapper bindings, which I first described after my pilot survey in 2010, see K. Scheper, 'Refining the classification of Islamic manuscript structures' (2011), p. 379. This issue will be further explored in Part Five, paragraph 1.8.

knowledge published in other sources, and although the UBL collection contains unsewn textblocks with wrapper bindings, none of these specimens show additional flaps or remnants of such flaps; their wrapper covers are very similar to the Type Two cover (see Part Two, paragraph 2.6 and Part Five, paragraph 7).

The most important point of criticism I want to make concerns the characterisation of the binding structure. The authors stated that "Regardless of the sequence of operations used to construct it, the Islamic book cover [...] can be considered as a separate structural unit", and the structure is designated as a portfolio.[83] They also put forward that "examination of Islamic bindings with fore-edge and envelope flap indicates that usually the book cover was prepared as a unit separate from the textblock right up to the completion of the tooling and other decoration, somewhat like the case bookbindings developed for the mass production of books in Europe in the nineteenth century".[84] We should keep in mind that the authors worked with a particular collection, consisting of a selection of manuscripts and, importantly, a collection of covers which were separated from their contents. It is likely that the condition of these objects influenced the authors' perception of the materials; indeed, they point out that the intact survival of so many loose covers attest the case-binding structure. Given the selection of objects they worked with, there may have been no manuscripts at hand with original bindings produced with the two-pieces technique, or, if they existed, damage may have rendered this feature difficult to detect. In addition, one often needs to be aware of the existence of a certain characteristic before one is able to observe it and at the time, the two-pieces technique appeared to be unknown. Additionally, conclusions derived from loose covers have inherent limitations. It would have been necessary to examine the bound volumes for such details as the use of the flanges to support the board attachment, the presence of tabbed spine-ends, and signs of the use of the two-pieces technique, in order to draw conclusions of the binding structure. In Part Two it was argued that the two-pieces technique is by definition not a case-binding technique since the cover is not completed as a sort of cassette before attachment. The difference may seem quite subtle, for the book covers are partly prepared in advance. Nevertheless, the covers are prepared separately and individually, and the binding is assembled on the textblock. Ultimately, this distinction is essential for the qualification of the structure, as well as the fact that the spine-lining material, with the sewn-through tiedowns, forms a strong bond with the flesh-side of the cover-spine leather(s).

The importance of *Islamic bindings and bookmaking* cannot be underestimated. It has informed and shaped the ideas of the scholarly community working with Islamic manuscripts. Apart from the significant facts and understanding that this publication provided, the misperception of the authors concerning the construction of the manuscripts also influenced the acuity of other scholars. As a consequence, the notion that Islamic book structures are case-bindings is deeply-rooted and too often are Islamic manuscripts judged as weak structures, whereas in fact they are functional and durable. It is true that due to natural decay in combination with intensive use, wear and tear and unfavourable conditions, many Islamic manuscripts were damaged. The flexing parts proved to be most vulnerable and covers tended to tear along their joints. Yet, such damage is to be expected, considering the organic materials and the mechanism of a book. In those instances where bindings are preserved separate from their textblocks (usually in Western collections), they often carry the traces of that intensive bond with the former spine-lining on the inside, such as traces of thread or parts of the lining. Even the complete lining may still be adhered there, showing holes where the tiedowns passed through the material (as in figs. 75 and 76, in Part Two). Certainly, many covers were re-used for other manuscripts, but usually only after the application of new

[83] G. Bosch et al., *Islamic bindings and bookmaking* (1981), p. 56.
[84] Ibid., p. 64. The analogy with the nineteenth-century mass production of case-bindings is particularly unfortunate. It seems to underline the supposed weakness of the structure and devalues these custom-made bindings by equating them with ready-made bindings.

leather on the spine, new inner joints and possibly other adjustments. Therefore, the re-circulation of covers does not indicate that the covers were initially made as a cassette. Covers only have the capacity to lead a second life when they are adjusted or repaired. When they are preserved as an individual object, traces of the former structure are usually disguised by repairs, which are meant to cover any split edges or loose materials. Such adjusted covers, and the re-use of covers in itself, do not prove that the bindings were made as case-bindings, nor that the original structure was a feeble one.

3.2 *Déroche*

In 2000, François Déroche published his *Manuel de codicologie des manuscrits en écriture arabe* , which became available in English translation in 2006.[85] Apart from being an excellent introduction to the codicology of Islamic manuscripts, Déroche's subdivision in three binding categories (see also Part One, paragraph 4.2) is widely adopted and used as a guide to describe bindings.[86] The different materials for bookbinding are addressed, subdivided further in the discussion of the different components: boards, covering materials and doublures. However, the actual construction of these components is not explicated. When Déroche typifies his three categories, he touches on the surface of technical aspects of bookbinding but does not clearly specify what differences can be found in the binding structures, nor how the bindings are actually constructed. Accordingly, the classification is mainly based on the outer appearance of the artefact; it is either a box binding (Type One), a binding with a fore-edge and envelope flap attached to the back cover (Type Two) or a binding without flaps (Type Three). [fig. 119]

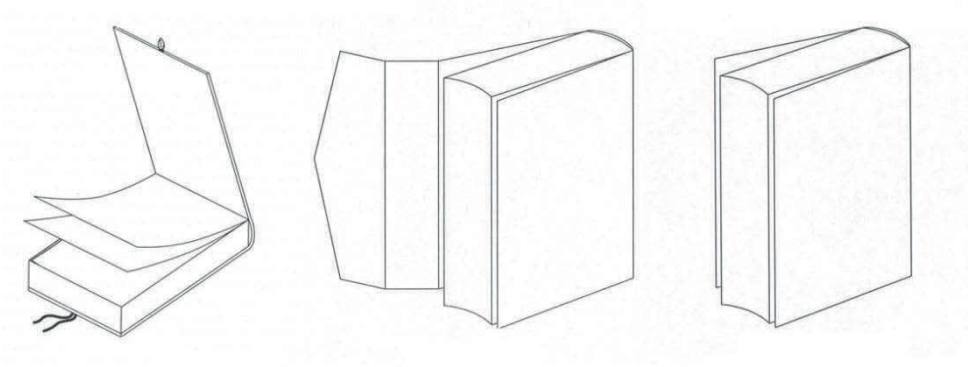

Fig. 119. The type One, Type Two and Type Three binding, reproduced from Déroche (2006), pp. 262, 260 and 258.

With regard to construction, Déroche describes the predominant sewing structure – the link-stitch on two stations – but adds that little research has been done on this issue.[87] The endbands are clearly and correctly described as important for the manuscript's stability, however, the spine-lining is omitted in the description of the sewing structure; the sewing of the primary endbands through the lining material is not pointed out. The spine-lining is mentioned under the description of Type Two, where it is only indicated as a constructive element because the extensions of the spine-lining are pasted onto the boards. Furthermore, just as in Bosch et al., only cloth is mentioned as a lining material. It thereby passes over one of the most common techniques, the use of a leather spine-lining with flanges that are used to strengthen the board attachment, and that remain visible in the joint and are combined with doublures without a stub.

[85] F. Déroche, *Manuel de codicologie des manuscrits en écriture arabe* (2000), translated (by Deke Dusinberre and David Radzinowicz and edited by Muhammad Isa Waley) as *Islamic codicology. An introduction to the study of manuscripts in Arabic script* (2006).
[86] Ibid., pp. 256-262 and 286-290.
[87] Ibid., pp. 274-276.

The somewhat cautious statement that "from a technical point of view, it (the predominant form of bookbinding) is close to the modern 'pasted down to ends' style in case-binding in which the block is attached directly to the endpapers" appears to be a recapitulation of Bosch et al. (1981).[88] In the footnote the term "case-binding" is explained as the covers being made separately from the book. Déroche then continues with the visible characteristics of the bindings.

When dealing with the covering of the exterior, full leather bindings are mentioned, but the two-pieces technique is not referred to. With regard to the partial leather bindings, which are only described under Type Three bindings, Déroche employs the terms "half – binding" and "quarter-binding". Confusingly, the terms are used with explicit mention of coverings consisting of leather spines with leather covered *corners* or *corner pieces*, and without *corners* or *corner pieces*.[89] In and of itself, as was pointed out in Part Two, the use of the terms "half-binding" and "quarter-binding" is confusing enough, since they are borrowed from Western bookbinding descriptions, while the lay-out of the partial leather Islamic bindings clearly diverges from their Western counterparts. For Islamic bindings covered partially in leather, long strips of leather were used to cover all board edges, or, in simpler variety, only the front-edge was covered with leather. Either way, a variety in which only the corners of the boards were covered with leather is highly unusual in the Islamic world. The fact that these varieties in covering styles are discussed in the paragraph dealing with Type Three bindings, is somewhat unfortunate, and as pointed out above the reference to "corners" complicates the issue further. For those unfamiliar with the wide range of covering schemes in Islamic manuscripts this could imply that the partial leather techniques mainly occur in Type Three bindings, whereas in fact they were made more often with envelope flaps than without.[90]

3.3 *Gacek*

The importance of Adam Gacek's contributions in which he makes the Arabic historic sources accessible to a larger public, is unmistakable. They are the basis of and cited in many publications on Islamic codicology published since. Without them, it would have been impossible to write the first section of the current Part, for example. More recently Gacek published his highly informative *Arabic manuscripts. A vademecum for readers*. This reference work has a different character and aims to combine information from historic sources with knowledge acquired from contemporary research. Although all kinds of textblock aspects form the major part of the book, the *Vademecum* does hold entries on *bookbinding, sewing* and *endbands*. Gacek uses Déroche's division in three major types (box-bindings, bindings with flaps and bindings without flaps). He describes Type Two as a: "'roundback', i.e. the upper and lower covers flow smoothly round into the spine without a strengthening ridge", after which he stipulates that the spines of Islamic bindings are never a "hollowback". The "ridge" denotes the point where the side of the spine and the edge of the front or back cover join each other, and with "strengthening ridge", Gacek probably refers to the 'backing' or 'rounding' operation used on Western books in order to form shoulders (the ridge) to accommodate the boards.[91] Such an operation, however, has no positive influence on the strength of the joint and therefore the lack of it has no negative consequences.

Gacek's description of the structure follows the view of Bosch et al. (1981): "Most of the bindings produced after the 7/13th century are essentially 'case bindings', that is, bindings produced independently, as a whole, and then lightly attached by paste to the lining of the

[88] Ibid., p. 260; Déroche, however, refrains from further use of the term 'case-binding'.
[89] Ibid., p. 258. In French the terminology is comparable: "pleine reliure" and "demi-reliure", Déroche (2000), p. 279.
[90] See Part Four, paragraph 2.7.
[91] See for example: B.C. Middleton, *The restoration of leather bindings* (1998), p. 12 ('backing'); p. 32 ('outer joint'); this ridge can also be referred to as 'outer joint' or 'shoulder'.

backs of the sewn quires".[92] The drawing of the inside of this assumed case-binding is particularly interesting because it shows a completed cover prior to attachment, with the doublures already adhered.[93] [fig. 120]

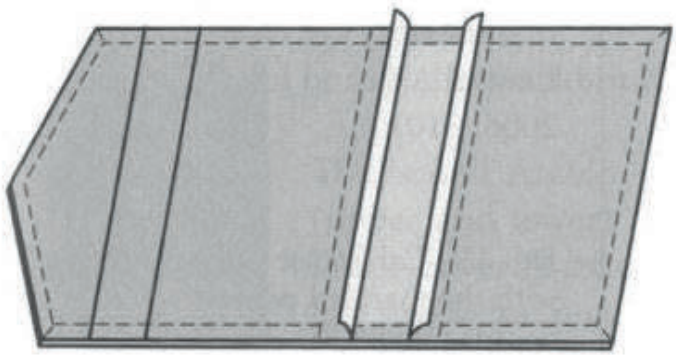

Fig. 120. Depiction of the inside of 'a case-binding' as represented in A. Gacek, *Vademecum* (2009), p. 27.

On the spine-side of both doublures the joint-hinges are also already drawn, which are either stubs, from the doublures, or additional strips; the dotted lines seem to mark their position underneath the doublures. The extending parts of this joint material is supposedly adhered onto the outer leaves of the textblock later on (after the spine of the cover is adhered on the textblock spine). This type of construction is theoretically possible but not in accordance with the empirical findings (see Part Four). Moreover, the drawing displays turn-ins over the spine area at head and tail, which are in reality not found on the predominant Islamic binding type.

When Gacek discusses Type Three bindings, he remarks on the covering of the bindings (which was not done for the Type Two bindings). Next to full leather bindings, the occurrence of partial leather bindings is described. The three images which are meant to explain this type of covering are found under the lemma "Half-bound books". A binding that only has leather on the spine is called "quarter-binding", and when leather covers the spine and corners, the term "half-binding" is used, conforming to Déroche's terminology.[94] The drawings can only cause confusion since they depict a covering scheme mainly used for Western bindings.[95] Although the dominant Islamic partial leather binding is not illustrated under the lemma "Half-bound books", when Gacek addresses the Type Three binding he affirms the use of the term *çaharkuşe cild*, for bindings with the spine and edges covered in leather.[96] As mentioned above, this type of covering is certainly not restricted to Type Three bindings. It seems that this brief overview is largely based on the description of Déroche. It is however noteworthy that in addition, Gacek mentions the occurrence of limp bindings (covers without boards) in the Type Three category.

[92] A. Gacek, *Arabic manuscripts. A vademecum for readers* (2009), p. 25.
[93] Ibid., p. 27; the figure is based on W. Bull, 'Rebinding Islamic manuscripts: a new direction' (1987), p. 26.
[94] A. Gacek, *Vademecum* (2009), p. 27.
[95] Ibid., pp. 118-119. The first depiction of "half binding" is certainly a Western covering scheme, the second does occur both in the Islamic as well as in the Western binding tradition. However, when this scheme is used for Islamic books, the strip of leather used to cover the front-edge of the boards is significantly smaller than depicted. The fact that none of the schematic drawings include a fore-edge and envelope flap contributes to the Western appearance of the book. According to the *Vademecum*, manuscripts covered in partial leather are especially encountered in the eighteenth and nineteenth centuries. The survey findings attest that such bindings occur just as often in the seventeenth century.
[96] Ibid., pp. 27-28.

Endbands are attested to serve both a structural and aesthetic function but Gacek does not elaborate on the construction. The dual structural function – the formation of extra sewing stations in each gathering close to head and tail and securing the spine-lining to the textblock spine – is not mentioned. More attention is given to the decorative function of the secondary endbands.

Under the entry "notabilia and finger tabs" mention is made of "thread tabs, often made of twisted multi-coloured silk or cotton threads [...] sewn through paper on the level of chapter headings or sub-section of the text and protruded outside on the side of the fore-edge".[97] Perhaps it is typical that this much disregarded binding element does not even have a fixed name or its own entry in the *Vademecum*; in the present study the characteristic is recorded and referred to as 'page-marker'.

When sewing is discussed, Gacek describes the occurrence of a link-stitch sewing on four stations along with the much more common link-stitch on two stations. However, the drawing of the former sewing-structure represents two separate link-stitch structures next to each other, rather than a continuous link-stitch sewing on four positions.[98] This representation accords with the two parts of the sewing thread visible in the spine-fold, but not with the actual structure. At least, it deviates from all the sewing-structures on four stations encountered in the UBL collections, in which the thread passes from the second sewing station to the third on the spine-side of the fold, where it makes a loop around the thread from the sewn gathering underneath (see Part Two, figs. 31, 32).

4 Structure as a starting point

4.1 *Szirmai*

Janos Szirmai looked at manuscripts from a truly material perspective when he wrote *The archaeology of medieval bookbinding* (1999). He related historic sources to physical evidence, the latter through examination of many original manuscripts. This resulted in an excellent and profound overview of the evolution of the codex form. However, for the chapter on Islamic codices he based his account mainly on the manuscript findings in Kairouan (early 1940s) and Sanaa (1972), which brought to light text and binding fragments from the first centuries of Islam up to the twelfth or thirteenth century. For this particular topic he relied on the written accounts of other researchers when making his comparisons. Examination of the physical evidence by these researchers had proved difficult because of the condition of the material. In fact, the bulk of the material consisted of loose covers or even smaller parts of bindings, additionally, incomplete textblock fragments or loose leaves were found. It is unfortunate that Szirmai, with his discerning eye and attentive mind, did not examine early Islamic manuscripts himself. The findings from both Kairouan and Sanaa were fascinating and exceptional, nonetheless, it is also very difficult to reconstruct binding structures from such damaged and broken remnants. To draw conclusions with regard to the functionality of Islamic manuscript structures on the basis of this particular collection is treading on dangerous ground, for these covers were discarded because they were so damaged. They were no longer useful and probably considered to be beyond repair; many of them were already mended several times.

One should therefore question his assertion that "the binding is constructed as a modern case binding [...]".[99] There is no explanation, or reference to a single item from the findings, to support his claim, but Szirmai linked the treatise of al-Sufyani to the case-binding technique. Sufyani indeed explained the making of the pasteboard and the possibility of

[97] Ibid., p. 169.
[98] Ibid., pp. 247-248. The drawing seems to be inspired on the illustrations of Coptic and Ethiopic sewing structures as represented in J. Szirmai, *The archaeology of medieval bookbinding* (1999), pp.17-18, 21, 46-47.
[99] J. Szirmai, *The archaeology of medieval bookbinding* (1999), p. 53.

applying the leather on the boards when they are separate from the textblock, to which they were attached in a later stage, with adhesive only. Apart from my conviction that these individually prepared boards, made with the two-pieces technique, are not case-bindings (as explained in Part Two, paragraph 3.1-3.2) Sufyani wrote his text in 1619 and the fragments in question date from before the thirteenth century, so some caution seems in order in trying to explain early binding structures using a treatise written many centuries later. As we have seen, Ibn Badis, whose treatise is more or less contemporary with the objects in question, was unambiguous in describing the application of leather only after the boards were attached to the textblock.

Szirmai put considerable emphasis on 'the weakness in the construction'. He clearly qualified "the manuscripts, sewn with extremely thin thread on two sewing stations and provided with a case binding" as being technically inferior to its predecessor with structural board attachment and multiple sewing stations.[100] In my opinion this description of the structure does not do justice to the Islamic binding. Firstly, a vital component in the structure – the endband – is not mentioned by Szirmai. The primary endband sewing provides two extra sewing stations in each gathering close to head and tail, which in itself enhanced the stability of the sewing. Additionally, this endband sewing was applied after a full length spine-lining was adhered to the textblock spine, which further strengthened the structure. Possibly Szirmai did not fully realise the importance of the endband to the manuscript types with pasteboards and an envelope flap, since from the Kairouan findings only the covers with wooden boards showed remnants of endbands.[101] Secondly, the assumption that the covers were case-bindings is not without bias. Szirmai suggested the shortcoming explicitly: "[...] the weakness of the board attachment of case bindings and the ease by which it can be severed constitutes a problem for the student of oriental bindings [...]".[102] This preconception seems to be based on reiteration of other scholars, rather than on solid conclusions from the two reference collections used. All in all, while most of the other chapters in *The archaeology* are based on structural examination of substantial corpora and provide excellent insight into structures and materials, the chapter on Islamic codices is deficient and misleading as an introduction to Islamic binding structures.

4.2 *Merian*

The material aspects of the Armenian binding tradition have been researched and outlined by Sylvie Merian.[103] In the years prior to 1993 Merian examined the structure of several Islamic manuscripts with the objective of making a comparison with Armenian binding structures; she also compared the Armenian bindings with Byzantine and Syriac bindings. Unfortunately not many 'real' manuscripts were used to make the observations first hand; with respect to the Islamic book, information was in large part gathered from published material. Bosch et al. (1981) were her main informants. Merian's interpretation of the bookmaking process is therefore based on known material and does not offer new insights. We see a repetition of thoughts when she states that "Examination of the large number of detached covers from Islamic manuscripts has indicated that the covers *must* have been prepared separately and even covered with leather and tooled before being attached to the sewn text block. The idea is

[100] Ibid., p. 56.
[101] The primary endband sewing thread was attached to the wooden boards of the box-bindings through holes in the corners close to the spine; such a connection is not known on manuscripts with pasteboard covers, either from the literature or from physical evidence. On manuscripts bound with pasteboard covers, the endband is only, though securely, connected to the textblock. As a consequence, when remnants of bindings and loose covers are found without their associated textblocks, the absence of endbands is to be expected.
[102] Ibid., p. 57.
[103] S. Merian, *The structure of Armenian bookbinding and its relation to Near Eastern bookmaking traditions* (1993); Idem., 'The characteristics of Armenian medieval bindings' (2008).

similar to modern case bindings".[104] To support the theory, Merian interpreted a footnoted remark by Arnold and Grohmann, about the makers of cases (for Qur'ans) who worked in the vicinity of booksellers, and suggests that: "the making of cases may even have been a separate craft".[105]

Especially the assumption that "board attachment consisted of the previously made hinges (cloth, paper or leather) which had been pasted to the spine", without recognising that these hinges are the actual spine-lining that also supports the primary endband sewing and therewith constitutes a constructional cohesion between the gatherings and the cover, does not do justice to the complex structure of the Islamic book. The same goes for the conclusion, that "the board attachment, therefore, is accomplished simply by the use of adhesive on some type of hinge, which had previously been attached to the spine of the text block with adhesive. This would not be an extremely strong attachment, and indeed, it is quite common that the bindings of Islamic books be detached from the text block and found separately".[106] As a further argument, similar to Szirmai's line of reasoning, the finding of many loose covers in the Great Mosque of Kairouan (Tunisia) is mentioned. However, many of these fragments belong to the box-binding category and are therefore not comparable. The covers with wooden cores may even have been un-detached from the start and perhaps just functioned as a weight to rest on the stacks of gatherings.[107]

Merian put forward the idea that the doublures could also have been applied to the separately prepared covers, prior to attachment to the textblock. This is hardly feasible for most Islamic bindings. After all, even when one supposes that the lining is not structurally connected to the textblock by sewing, the flanges from the lining usually are adhered onto the inside of the boards underneath the doublure. Presumably Merian was not aware of the occurrence of leather spine-linings, and based her idea on the description of Bosch et al. that the leather block-stamped doublures frequently have a stub which is pasted onto the textblock. With such doublures, and when one ignores the use of the flanges, the application to the boards prior to board attachment is indeed feasible. Bindings with leather stubbed doublures, however, form a minority group, and even with stubbed doublures one can usually find flanges of a cloth lining underneath the doublure.

Merian concluded that the structure of Islamic manuscripts indicates that these books may have been made more hastily than Armenian bindings. In support of this assertion, she suggested that there "was a great market for books because of a large literate class, and that bookmaking seems to have been much more of a business endeavour rather than a secluded monastic activity".[108] She hinted that bindings may have been made cheaply. Apart from a rather significant number of bindings that are very elaborately embellished, the idea of cheap production does not at all corroborate with the care and effort taken by the scribes to produce the manuscripts, nor with the generally accepted notion of the high position manuscript making holds in the Islamic world. It is more reasonable to assume that costly, precious and highly regarded manuscripts were respected accordingly by the binders, and were therefore supplied with attractive *and* functional covers. Binders were evidently aware of the eventual damage the structure could suffer; they repaired broken bindings often

[104] S. Merian, *The structure of Armenian bookbinding* (1993), p. 159. My italics; with the "must" in this quote the theory of Bosch et al. is amplified, not just repeated.
[105] Ibid., p. 159, n. 38. Arnold and Grohman, however, only point out that booksellers and paper-makers had their own section in the bazaar, and they refer to Al-Maqrīzī who wrote that the makers of cases for Qur'ans worked not far from this section. Th.W. Arnold and A. Grohmann, *The Islamic book. A contribution to its art and history from the VII-XVIII century* (1929), p. 32, and n. 141, p. 108.
[106] S. Merian, *The structure of Armenian bookbinding* (1993), p. 160.
[107] G. Marçais and L. Poinssot, 'Objets Kairouanais: IXe au XIIIe siècle. Reliures, verreries, cuivres et bronzes, bijoux' (1948), p.16; Th. W. Arnold and A. Grohmann, *The Islamic book* (1929), pp. 30, 33-34, 44-46.
[108] S. Merian, *The structure of Armenian bookbinding* (1993), p. 167.

enough. Still, it is likely that the bindings were thought to be durable for a certain amount of time although we do not know what that expected lifespan would have been. Of course, economics played a part; bookbinders were constrained to meet high levels of production, so they developed their bookbinding techniques to meet that demand. Strength in structure, however, was never compromised in order to reduce labour or costs. For example, the survey findings prove that the spine-linings kept their dual function throughout the whole period of the manuscript era. Also, the number of tiedowns was not reduced over all these centuries; all gatherings were structurally connected to each other as well as to the spine-lining, even though this amount of warps was not strictly necessary to create the secondary endband sewing, as the common practice of coupling the tiedowns (two by two, for example) demonstrates.

4.3 *Fischer*

Preparation work for an exhibition entitled *The book in the Orient* (1982-1983) confronted Barbara Fischer, conservator of the Bavarian State Library in Munich, with Islamic manuscripts. Fischer knew little of Islamic bindings and this work prompted her to examine the structure, and especially the endbanding, more closely. Her intelligent account throws a clear light on the construction of the endband sewing as an elementary part of the manuscript structure.[109] Using publications from Paul Adam and Emil Kretz and direct observations of her own, she managed to disprove a theory Karl Jäckel proposed in 1961.[110] Her research mainly concerned the sewing of the secondary endband but also addressed the structure of the endband sewing as a whole.

Jäckel had devised a method with twisted threads or cords in two colours that resulted in a chevron pattern. However, instead of weaving the secondary endband on tiedowns he connected these twisted threads with an additional thread that was only then fastened to the manuscript. Not only was this a reversed procedure, every twisted thread had to be cut at the outer ends and glued on the sides to prevent them from fraying. This action in particular was unsatisfactory to Fischer because it created a discord with the otherwise sound and elegant characteristics in the structure.[111] Also, none of the specimens she had to treat showed traces of such a procedure. Searching for other sources, Fischer found that observations recorded by Paul Adam, fifty years earlier, did correspond with the originals. He described the primary endband sewing "as part of the sewing, actually [...] was at the same time the outermost stitch of the sewing, replacing what we call the kettle-stitch".[112] However, since Adam did not go into detail describing the secondary endband sewing, Fischer explored Oriental textile techniques and then set out to create models. These reflect the variety she observed in the secondary endbands; they could either be sewn on single or bundled tiedowns and with dissimilar types of thread. Fischer thus illustrated clearly that chevron patterns sewn on bundles of three or more tiedowns become elongated. In the same way a diverse chevron form is created by a combination of thin and thicker thread. Lastly, Fischer mentioned the sporadic occurrence of diverging patterns as a result of a changed course of the sewing threads.[113] She concluded that more variations were to be expected and information about regional and temporal varieties might be generated through systematic study.

4.4 *Espejo and Beny*

As part of a project that researches the materials and production techniques of al-Andalus Arabic manuscripts, several bound manuscripts from that region and period – Iberian

[109] B. Fischer, 'Sewing and endband in the Islamic technique of binding' (1986).
[110] Ibid., pp. 183-188 and notes 4-6 and 11-12.
[111] Ibid., p. 183; Fischer described this cutting and gluing as 'an open end'.
[112] Fischer translated from P. Adam, *Das Restaurieren alter Bücher* (1927), pp. 9, 11.
[113] B. Fischer, 'Sewing and endband in the Islamic technique of binding' (1986), p. 198.

Peninsula, ca. the eighth to the fifteenth century – were examined by Teresa Espejo and Ana Beny. They came to the conclusion that al-Andalus bindings differ in technique from the predominant Islamic structure.[114] Most importantly, the gatherings of the textblocks that the authors examined were not sewn in the same way as most manuscripts from other Islamic areas, although a link-stitch sewing technique was used. What distinguishes these structures is that the first and final pair of gatherings were not sewn on two stations. Instead, a more elaborate technique was used, resulting in a long running stitch using four positions. Moreover, since the sewing thread of these outer gatherings also passed through the cloth spine-lining, the spine-lining was connected to the textblock not only by the primary endband sewing, but even more securely, by sewing the outer gatherings through the spine-lining as well. As a third remarkable divergence, the textile lining was also used to cover the complete inside of the boards as a doublure, whereas the majority of the cloth spine-linings are just used as inner joint and board attachment. Although this specific characteristic seems to bear a strong resemblance to Mamluk bindings with textile doublures, the two structures have not been compared in a detailed study and therefore any conclusions on this particular detail would be premature. The sewing structure Espejo and Beny observed certainly seems an anomaly in the Islamic bookbinding tradition. In the UBL collections, however, two manuscripts with a similar construction were encountered.[115] Yet, it is not certain that these manuscripts originate from the Iberian Peninsula; at least one of them is thought to be made in the Maghreb. As the materials used in the UBL manuscripts differ slightly from the al-Andalus bindings (leather was used for the spine-linings and doublures instead of cloth) the two techniques are not identical, but a close sphere of influence is certainly suggested.

In their conclusion, Espejo and Beny question the accuracy of the general assumption that Islamic bindings are case-bindings.[116] They rightly argue that, since the cloth lining is structurally attached to the textblock and makes up part of the cover, this designation needs to be reconsidered, at least for the al-Andalus bindings. Indeed, when a cover is clearly not made in its entirety separate from the textblock, the definition of case-binding is not applicable.

5 Structure as a side issue

Many publications concerned with Islamic book culture or art history also consider bookbinding techniques to a certain extent. Usually, they either sketch the 'archetypical' structure briefly or discuss only certain details. These extended catalogues or individual studies focus on a certain period, a style or a collection in which the technical aspects of the manuscripts comprise a few paragraphs. That, of course, indicates the significance the subject is usually accorded: the materiality of the manuscripts is considered interesting but is not the primary focus of attention. Hence, much of the information found in such chapters appears to be copied from the major sources, such as Bosch et al. or Déroche, and the interpretation of the material aspects of the items in question may be limited. However, some contributions dealt with structural aspects quite prominently and either provided new insights or they illustrate the misunderstood construction; these are considered in the next paragraphs.

5.1 *Raby and Tanındı*

Turkish bookbinding in the 15th century (1993) covers the development of the design and use of covering materials of Ottoman manuscripts in the second half of the fifteenth and first

[114] T. Espejo and A. Beny, 'Book I from the collection of Arabic manuscripts from the Historical Archives of the Province of Málaga: an example of al-Andalus binding' (2009), pp. 121-133.
[115] Or. 241 and Or. 1313.
[116] T. Espejo and A. Beny, 'Al-Andalus binding' (2009), p. 130.

quarter of the sixteenth century.[117] This well-illustrated work reflects the visual impact of manuscript bindings from this period. With respect to binding structures, the authors stated in the introduction that "Like a modern cased binding Islamic covers were prepared separately from the text block", and continued one paragraph later with "The processes involved in the production of Islamic cased bindings have been described in considerable detail by Gulnar Bosch and Guy Petherbridge [...]".[118] Throughout the whole book this case structure is not questioned. Interestingly enough, in the first appendix to *Structural features of the Ottoman book*, the authors point out that their perception of the sewing structures sometimes diverges from the description in *Islamic bindings and bookmaking*.

The authors often encountered a sewing structure which, instead of a link-stitch sewing on two stations, was thought to be sewn on four stations, and according to the authors, this sewing involved additional stitches in which the thread passes over the head or tail edge from the outer positions.[119] To the more technically specialised reader, this observation seems to be a clear misconception: the outer threads that pass over head and tail of the gatherings are the primary tiedowns. Had the authors been able to inspect the textblock spine or known what to look for, they would not have found the sewing thread passing from the middle link-stitch onto these outer positions because the two sewing structures are not linked. In fact, what they depict is exactly what Bosch described. Contrary to the suggestion of the authors, there is no change in technique that can be related to differences between the earlier, medieval Arab manuscripts that formed the basis for *Islamic bindings and bookmaking* and the somewhat later manuscripts from the Ottoman court binderies. They mistook the endband's tiedowns for link-stitch sewing in the multiple instances where the primary endbands were sewn with thread similar to that used for the textblock sewing. When they were sewn with different thread, the tiedowns were not confused as being part of the textblock sewing. The misinterpretation is caused by lack of a full understanding of the binding technique.

However, Raby and Tanındı did notice a second, truly diverging sewing pattern, which they called B. This pattern is described as being sewn on six stations, in line with the mistaken description of the predominant link-stitch sewing thought to be sewn on four positions. In fact, in pattern B only four stations are used; the outer positions are again related to the separate primary endband sewing. The manner in which this type B sewing structure is sewn corresponds with the link-stitch on four stations as described in Part Two, paragraph 2.1.

The authors remarked that pattern A was standard and suggested "that pattern B occurs only in manuscripts that have been restored".[120] This last observation is interesting; in Part Two we have seen that this sewing structure also occurs occasionally in the UBL collections and indeed, from the survey results there appears to be a relation with the re-sewing of manuscripts.

5.2 *Haldane*

In *Islamic bookbindings* (1983), Duncan Haldane mentions a few characteristics that are interesting, even though he did not address bookbinding constructions.[121] In describing the Islamic bindings in the V&A collection, Haldane divided the binding styles into Arab, Persian,

[117] J. Raby and Z. Tanındı, *Turkish bookbinding in the 15th century. The foundation of an Ottoman court style* (1993).
[118] Ibid., pp. 1-2.
[119] Ibid., pp. 215-216. This is the so-called sewing pattern A, however, the included drawing illustrates quite clearly a pattern that can be identified as a link-stitch sewing on two stations with the primary endband sewing in place.
[120] Ibid., pp. 215-216.
[121] D. Haldane, *Islamic bookbindings* (1983). The descriptions of the bookbinding styles in this case solely refer to the artistic and stylistic features; the use of materials are discussed as long as they play a part in the development of decoration and ornamentation.

Turkish and Indian bookbindings. Within the Arab world, further categories were formed by Egypt and Syria (which Haldane considered the production centres of the finest Arab bindings), with the Maghreb on one side and South Arabia and Yemen on the other. He writes "The majority of bindings in the Museum's possession are loose covers which in part is a reflection on the different sewing techniques used in the Islamic world which often led to the binding coming apart from the text block. In some cases glue was used to attach the binding to the spine of the book which was even less secure".[122] This quotation illustrates the common perception about the weakness of the structure, while at the same time it shows a gap in understanding since the bindings that 'were attached to the spine with glue' are singled out as especially fragile structures. It suggests that the author was not aware that the spines of *all* Islamic bindings were attached to the textblock spine with adhesive (with the exception of manuscripts that were never sewn and have wrapper bindings). Collected for their beauty and outstanding craftsmanship, these loose covers provided little information on their manufacture. When Haldane talked about 'techniques', he referred to tooling, cutting of filigree-work leather, painting and gilding, all decorative techniques used to embellish the interior and exterior of the covers.

One of the major developments in Persia was the introduction of lacquer techniques for bindings. While the base layer of the first lacquer bindings were composed of heavily chalked leather or, according to Haldane, parchment, soon paper boards, fixed with gypsum or chalk, were being painted and finished with multiple layers of lacquer.[123] In introducing the technique, Haldane used the term pasteboard twice; after that he referred to the core of the covers as "papier-mâché".[124] The use of this term seems to have become part of the general vocabulary when lacquer bindings, or indeed other Oriental lacquer objects, are discussed. Since the term also appears to be used for the covers of lacquer bindings that are actually made of pasteboard – which are no different from the pasteboards used for non-lacquered bindings – this is confusing if not misleading.[125]

[122] Ibid., p. 7.

[123] Ibid., p. 70; the use of parchment as a substrate for lacquer bindings is neither referenced nor is an example included in the book, while examples of chalked and painted leather covers are provided. The source of this statement therefore remains unknown. As parchment had become a rare material for Islamic bookbinders by the fifteenth century, its use for board material would be remarkable indeed.

[124] Ibid., pp. 70-71, 140; however, for object descriptions, concluding and illustrating each chapter, Haldane used the term pasteboard almost as often as *papier-mâché* when lacquer bindings were concerned: seven versus nine times in the Persian section; the three lacquer bindings in the Indian section are all described as being *papier-mâché*. This could point at a deliberate use of both terms: perhaps some boards were slightly damaged at the corners, revealing the material of the cores. If so, it signifies a difference between the two materials that is not specified. Did Haldane intend to define *papier-mâché* as a pulp substance, as opposed to pasteboard consisting of sheets of paper pasted together? On the other hand, if the core material of these lacquer bindings was not always visible, the terms could have been used randomly. Be that as it may, what is noteworthy is that the term *papier-mâché* seems to be used for lacquer bindings exclusively, though not consistently.

[125] See N.D. Khalili, B.W. Robinson and T. Stanley, *Lacquer of the Islamic lands* (1996); in this comprehensive work on lacquer objects, *papier-mâché* is used to describe the substrate (if it is not wood). Adam Gacek is more reserved, stating that the lacquer was applied on pasteboards "and possibly (especially in the later period) on *papier-mâché*"; A. Gacek, *Vademecum* (2009), p. 138. On page 29, however, discussing book covers, Gacek states "The most common boards were pasteboards which consisted of layers of sheets of paper, often reused, placed one on top of the other and glued together. *The same technique was used for what is known as papier-maché in connection with lacquered bindings*" (my italics). Avoiding any confusion, Déroche described the technique as being used on pasteboards, except for the few early examples made on leather drawn boards; F. Déroche, *Islamic codicology* (2006), p. 270. Moreover, when he discusses board materials he explicates: "Lacquer binding boards, [...], are traditionally dubbed papier mâché: this term in fact disguises the familiar pasteboard made out of layers of sheets of sized paper", p. 264.

Along with the increasing influence of Western styles on the decorative arts of the Ottoman empire in the eighteenth and nineteenth centuries, some technical adaptations or changes can be seen. In the section on Turkish bindings, the slipcase is mentioned as an example. Its appearance is associated with European influence and Haldane estimated its introduction in the first half of the eighteenth century.[126] In the same paragraphs the term "European format" is used to describe bindings without an envelope flap, as if to suggest that the type without a flap did not occur in earlier times, when the shape and design of the Islamic binding is not associated with Western influence.

5.3 *Porter*

In an instructive book that mainly covers the technical aspects and artistic considerations of Persian miniature painting, *Peinture et arts du livre* (1992), Yves Porter devoted one chapter to what he called "Reliure et operations particulières".[127] The study is based on historical treatises dealing with the craftsmanship of illuminators and calligraphers. Although the Indo-Persian source from the nineteenth century that Porter used to explicate binding techniques seems almost too recent to be informative on traditional techniques (*Resâle-ye jeld-sâzi*, dated 1812), actually it is very accurate in describing one of the characteristic features. There seems to be no other primary source explicitly making the distinction between the sewing system using two stations (*yek-bandi*, which would translate as 'one stitch') and the one using four stations (*do-bandi*, 'two-stitches').[128] The description of the latter includes the making of a loop on the spine, when the thread from the gathering underlying the one that is being sewn is linked to the sewing thread. This accords with the Islamic link-stitch sewing on four stations as described in Part Two, paragraph 2.1. [figs. 30-32] And what is more, the source actually suggests that sewing on four stations is profitable for elongated books.

Referring again to *Resâle-ye jeld-sâzi*, Porter struggled with the description of how the endbands were made; he indicates that the source text leaves out some steps in the process and is, in parts, too technical. The procedure includes the adhesion of a leather strip on the spine after sewing the textblock, then the preparation of the boards and continues with the sewing of the primary endbands. This seems to suggest that the leather strip is the spine-lining; had it referred to the endband cores, then the use of two strips would have been mentioned or one would expect that the position of where to put this leather – at head and tail – would have been explicated. The indication of leather, instead of cloth lining material, is all the more noteworthy as the treatise is a fairly late source; in this period cloth appears to be more commonly used for spine-linings than leather, but the text suggests that leather still was an appropriate choice for this specific application, at least in this geographic region.

The last detail of interest is the description of the primary endband sewing. It is advised to leave "un ou deux doigts de dépassement", not understood by Porter but it seems to indicate the distance between the edge of the textblock and the sewing position, or, to put it differently, the length of the tiedowns. According to the source, usually the space of two fingers should be left, while for smaller books one finger suffices.[129] This very practical instruction indicates the need for the artisans to be flexible in their approach and to have a sound understanding of the material artefacts.

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[126] D. Haldane, *Islamic bookbindings* (1983), p. 140.
[127] Y. Porter, *Peinture et arts du livre. Essai sur la littérature technique indo-persane* (1992), pp. 117-124.
[128] Ibid., p. 119. The terms *yek-bandi* and *do-bandi* refer to the number of stitches visible in the fold-line of the gathering, not to the number of sewing stations visible on the spine. Both methods accord with the common link-stitch used for the majority of Islamic bindings. The highly unlikely method of sewing that Porter describes at the beginning of this chapter – each gathering is supposedly sewn individually and with an additional sewing these gatherings would be linked together on the spine – seems to be a result of the incomplete information in the source text. The erroneous explanation may have been caused as well by his limited understanding of sewing structures.
[129] Ibid., pp. 119-120.

Equally interesting is the quotation of a sixteenth-century traveller from France, Jean Chardin, who described the habits and trades of the Persian people. After expressing his disappointment with the poor quality of paper making, Chardin voices astonishment about the work of Persian binders. He states that it will be difficult to believe, but these binders do not even know how to bind a book properly in one piece of leather. Instead, he says, they take two pieces that are glued together on the spine, to which he adds that although they do this neatly, this seam will show in time. He cannot have realised how important this observation is to students of book archaeology, since other sources from this particular region and period are lacking. That Porter himself did not emphasise the value of the description is probably due to the fact that the binding craft is not his field and at the time, the two-pieces technique had not been described yet; nevertheless in giving Chardin's observation, he provided a remarkable historical affirmation of the two-pieces technique.

Porter also quoted William Hoey, the officiating city magistrate in the city of Lucknow, Northern India, in 1879-1880. As a licence and tax officer Hoey described and commented on the Indian trades and manufactures in the region, which included the bookbinders' trade as well. Hoey offers information on the costs of some of the materials and he describes the use and the making of pasteboard, which he calls "country-made" – just as he qualifies the sheepskins used for covering the bindings as country-leather. His account does not add anything to our knowledge of techniques but his overall impression represents the Orientalist view of the European being superior to the Oriental: "The work of the oriental bookbinder has not the durability or finish of English work. His appliances are rude, and consist of a wooden screw-press, called *shikanja*, a long steel blade, called *saifa*, for cutting the edges, and a long coarse needle, '*suja*', for sewing".[130]

5.4 *Gruber*

In a collective volume containing eight contributions covering a variety of aspects of Islamic book arts, Christiane Gruber expressly introduced the manuscript as an artefact, not just a carrier of text.[131] Her description of the development of the Islamic book structure, from the horizontal format in the first few centuries of Islam to the vertical format from the tenth century onward, and its particular features, captures the character of the binding tradition. "The folios of the book are sewn together and then affixed to the spine, thus transforming the binding into a kind of skin that is inseparable from the quires of folios. In their technical treatises on the subject, a number of practitioners in fact describe the various parts of a bookbinding by comparing them to parts of the human body, thereby stressing the functional integrality of a binding's constituent members".[132] This recognition of the implicit strength of the construction and the total absence of a reference to the covers being a separate product is a refreshing approach.

5.5 *Miller*

The historian and conservator Julia Miller wrote *Books will speak plain* (2010) as a handbook for identifying and describing historical bindings.[133] The use for such a handbook illustrates that binding historians are increasingly aware that the materiality of the book has high information value. Miller, an exponent of the Western book-tradition but acquainted with the Oriental book as she participated in a conservation survey project in the Coptic Museum in

[130] W. Hoey, *A monograph on trade and manufactures in Northern India* (1880), pp. 122-123. An interesting detail mentioned by Hoey is the use of marbled paper, called *abri*, and the observation that it takes two days to make twelve books.
[131] Chr. Gruber, *The Islamic manuscript tradition. Ten centuries of book arts in Indiana University collections* (2010), pp. 3-50.
[132] Ibid., p. 15; the practitioners referred to are the authors of the historic treatises, of which Bakr al-Ishbili's text is the most prominent example.
[133] J. Miller, *Books will speak plain. A handbook for identifying and describing historical bindings* (2010).

Cairo,[134] incorporated some information about the Near Eastern binding traditions in her outline of the Western book tradition.[135] However, she concentrated on the Coptic binding tradition, which received its own section heading and twelve pages, and clustered the other book cultures in the region under the heading 'Beyond Egypt'. Put in the shadow of Coptic bindings, the Islamic book practices are mainly referred to when decorative techniques and designs are concerned.

An exception is made when the Western book in the nineteenth century is described: "[...] by the end of the nineteenth century, the structure of the bound book was remarkably similar to some aspects of fourth- and fifth-century Coptic bindings and almost identical to the style that was consistently used in Islamic binding since the twelfth century: unsupported, link-style sewing, limited spine linings, and a case-like construction".[136] As this European case-binding is generally dismissed as inferior to the earlier products of hand-bookbinders, the comparison also disqualifies the Islamic book as a sound structure. In the glossary the Type Two binding is defined as: "By the twelfth century, the earlier styles of Islamic binding [e.g. the box-binding] had merged into the style that remained constant through the rest of the Islamic hand-bookbinding tradition. The structure has these features: unsupported link sewing with relatively few sewing stations, cloth spine linings brought over as text-to-cover attachments, and a distinctive style of endbanding. The covers were generally made off the book with goatskin over pasteboards, made flush with the text block with a fore-edge flap on the lower cover. The case-to-text attachment is generally through a tight-back spine and the spine lining extensions. Most bindings have narrow hinge strips spanning the board and text block, and usually have paper or leather paste-downs generally referred to as doublures".[137] Note that the function of the primary endband is not mentioned, nor is the use of leather as spine-lining material or the dual, structural function of this binding component.

The inclusion of ten pages of guidelines to conduct a physical condition assessment, especially directed towards Islamic manuscripts, seems contradictory to the minor attention paid to the Islamic structural features in the body of the book, even though they are hidden in Appendix 3.[138] The rather extensive overview of characteristics in these guidelines, though not exhaustive, provides important additional material information lacking in the chapters outlining the history of binding. The guidelines to describe binding and structure were meant to support cataloguers with a limited knowledge of the manuscript's materiality, hence the elaboration on the materials and their properties (such as ink, leather or boards), and structural details (such as accordion folds or limp bindings) are quite extensive.

5.6 *D'Ottone*

Early Yemeni bindings often blend into the category of so-called 'Mamluk' bindings, yet they are in some ways distinguishable. Arianna D'Ottone examined two collections of Yemeni manuscripts in the Vatican Library and the Ambrosiana Library and reflected on the historic

[134] In 2009, Miller joined the team that conducted a conservation survey.
[135] J. Miller, *Books will speak plain* (2010), pp. xii-xiii; Miller chose to include the near Eastern book tradition of the first millennium since this book culture clearly preceded and influenced the Western (European) binding tradition, and explicitly refrained from outlining "the long, rich, and interesting history of the many non-European binding traditions from around the world". However, while describing the development of the Western book tradition of the second millennium, comparisons are made with the Islamic book Type Two, and especially decorative designs as they occur on Islamic bindings from the twelfth or thirteenth century onwards.
[136] Ibid., p. 177; two pages on the disapproval of the Western variant of this structure is further explicated: "Modern hand binders did not care for the sewing style, the simple case construction, and the perceived weakness of the binding style. [...] a sewing-and-case structure designed to perform best on lightweight texts was often misapplied to books too heavy for it with a resulting high level of damage among such books".
[137] Ibid., p. 442.
[138] Ibid., pp. 402-411.

sources and some recent literature on the subject.[139] She focussed on the tooling of the covers in particular, and presented two conclusions. Her observations give evidence that the tools were heated before stamping. According to D'Ottone this method of tooling is still a matter of ongoing dispute although the historic texts do point to the use of heat. Secondly she observed the presence of decorated borders using epigraphical stamps, containing scripts with short dedications or devotional inscriptions. This particular characteristic is thought to be indicative of Yemeni bindings.[140] In referring to the historic documentation, D'Ottone understood from the text of al-Muzaffar that the leather decoration of bookbindings was executed before the leather was pasted on the boards; from the sequence of the procedure described, however, it can be deduced that the leather is dyed and burnished, then the boards are mounted which is followed by more polishing, and only then the covers are marked for tooling, if tooling is required.[141]

5.7 *An assortment of (mis)perceptions*

The 2010 catalogue *Treasures of the Aga Khan Museum* offers an appendix with a glossary of terms used in the arts of the book.[142] The entry "Islamic bindings" includes three drawings representing the three categories of Déroche. Especially the reference to Type Three is unfortunate since this glossary designates the flapless type as a western-type binding, even suggesting they may have cords or clasps. The drawing further suggests that the covers extend beyond the edges of the textblock, which is also a Western feature. For additional information on the subject the reader is referred to Déroche, as if the information provided already derives from *Islamic codicology*. However, Déroche himself did not indicate a similarity between Western bindings and the Islamic binding Type Three, apart from not having a flap. Although the drawings in both books resemble one another – the ones in *Treasures* are obviously based on Déroche's – the original drawing clearly lacks the projecting boards.[143] Under the same entry in the glossary it is indicated that "The earliest Islamic bindings were box bindings or case bindings". Again this illustrates that the perception of the Islamic manuscript as a case-binding structure is widespread and very persistent.

Other myths of the structure's weakness can be found in many varieties. In a work about Qur'an manuscripts Colin Baker writes that "decorative endbands were not part of the primary sewing structure of the book, but, when used, were generally made with two coloured threads tightly woven together".[144] It suggests that the endbands are optional, though they certainly were not; they are very much part of the sewing structure. Another example is the introduction to the Islamic bindings preserved in Malta.[145] "The book was chain stitched [...]. The book was then attached to the cover from the endpapers that were first tipped to the textblock, though they [the textblock spines] were sometimes lined with thin cloth. The result was that many bindings came apart from the textblock". Somewhat further on it continues "The covers were cases made off the book". The suggestion that textblocks were only incidentally lined is incorrect, just as is the generalisation that endleaves were

[139] A. D'Ottone, 'Some remarks on Yemeni medieval bookbindings' (2007). "As for the type of book covers these Yemeni manuscripts belong to the most common Arabic-Islamic type of bookbinding that is the bookbinding with the fore-edge flap [...] even if sometimes this fore-edge flap has gone", p. 52.
[140] Ibid., pp. 52-54.
[141] Ibid., p. 50. See also A. Gacek, 'Instructions on the art of bookbinding' (1997), p. 63.
[142] M.S. Graves and B. Junod (eds.), *Treasures of the Aga Khan Museum. Arts of the book and calligraphy* (2010), pp. 351-354.
[143] See F. Déroche, *Islamic codicology* (2006), p. 258 and M.S. Graves and B. Junod (eds.), *Treasures of the Aga Khan Museum. Arts of the book and calligraphy* (2010), p. 352.
[144] C. Baker, *Qur'an manuscripts* (2007), p. 106.
[145] J.E. Critien, M. Camilleri, J. Schirò, *Fine bookbindings from the National Library of Malta and the Magistral Palace Library and archives, sovereign military order of Malta, Rome* (1999), p. 21.

tipped on. The authors probably indiscriminately copied from Bosch et al. when they wrote that covers were made as a case.

6 Structure as a conservation issue

Over the last few decades, several contributions on conservation topics have been published featuring Islamic manuscripts. Of course, topics include both condition problems of the textblock or binding, as well as structural form. For the present study, textblock-related problems such as copper corrosion or ink flaking are not relevant; papers on these issues are therefore not included. Of interest are all publications concerned with the structure of manuscripts and the materials used for their production, whether they provide conservation options or merely refer to the Islamic binding tradition. Reading these contributions, we should keep in mind that most of these authors are conservators trained in the Western book tradition. Their perspective is formed subconsciously by a standard based on the products of Western binding methods. The use of this standard to qualify structures and materials as they occur in the Islamic tradition is debatable, yet without more thorough knowledge of the exotic structure, decisions were based on this reference frame.

6.1 *The eighties and nineties of the twentieth century*

Although the first more or less experimental conservation treatments must have been carried out earlier, the first published reports to be found in professional journals are from the late eighties and early nineties of last century. Indeed, the first article even indicated a transitional period, as Islamic book conservation was moving towards a more professional level. In 1987, William Bull, member of the Society of Bookbinders and Book Restorers, stated that the practice to rebind Islamic manuscripts by Western methods was widespread. He described the usage of the Western method of sewing on supports and the construction of the 'hollow back', of which he wrote: "Both of these western methods of binding are of course perfectly good in themselves, but it has surely been a mistake to apply them indiscriminately to Islamic manuscripts to which they are almost always ill suited in one way or another".[146] He recommended the use of an alternative structure; the Islamic structure itself was also dismissed, since "deficiencies are known to exist".[147] Bull acknowledged the individual character and subsequent conservation needs of each manuscript before he described the treatment of one particular case. The suggested sewing structure consisted of a link-stitch sewing on multiple stations with the outermost sewing stations close to head and tail, the exact number depending on the size of the manuscript. The textblock spine was then to be lined with alum tawed goatskin. Additionally, the proposed new binding would be made with a hollow spine, using a flexible board in the hollow.[148] This construction was thought to provide protection and to enhance the book's functionality, especially with regard to the wish to achieve 'a flat opening'.[149] The considerations and treatment testify to a growing awareness of the characteristics of the Islamic book and of the shortcomings of Western binding techniques for these objects, yet, the proposed treatment was developed from a Western point of view.

In 1990, in accordance with Bull's observations, David Jacobs and Barbara Rodgers wrote that many of the Islamic manuscripts in the India Office Library had been rebound in Western styles, which were no longer considered appropriate and sometimes downright

[146] W. Bull, 'Rebinding Islamic manuscripts: a new direction' (1987), p. 23.
[147] Ibid., p. 31.
[148] Ibid., pp. 33-34.
[149] Ibid., pp. 31-32. Bull explained that the Islamic *rahl* allowed the manuscript to open only to 90 degrees, but the flat opening (an angle of 180 degrees) was required because of the Western bookstands used at the time.

dysfunctional and harmful to the objects. Therefore, the Binding Studio of the British Library was to develop a new method of binding, keeping in mind the demands of library use.[150] Their paper is an account of the new guidelines they developed and the methods which were used in that new context. Whenever resewing was required, the original structure was indicative for the new structure. That is, the old sewing stations could be used, but often positions were changed and stations added in order to reduce the strain on fragile paper or to stabilise large-size manuscripts. As an additional safety measure the chain stitch was often upgraded with an extra twist or knot to prevent the thread from pulling the fragile spine-folds of the paper.[151] Although the applied new endband structures were made to conform to the traditional Islamic endband, the sewing structure was 'improved' according to Western standards but Islamic techniques were used. The method described to attach the boards and to cover the manuscripts in full leather is based on Western techniques. As the drawing of the leather application shows, the leather was turned-in on all edges including the head and tail of the spine.[152] Endleaves were added because they were thought to enhance the board attachment. It is also noteworthy that boards were made slightly larger than the textblock (so-called square), supposedly in order to protect the edges of the textblock better than the original boards – which were flush to the edges – ever did. Especially since all the manuscripts were to be stored in clamshell boxes, this extra 'improvement' of the structure is remarkable. In my opinion this is a typical consequence of the Western perception of what constitutes 'sound structures' combined with a rather uniform preservation approach, in which the individual requirements of these artefacts are not always recognised.

In the same year Scott Husby presented a paper at the conference of the American Institute of Conservation, on the treatment of a number of Islamic manuscripts as preparatory work for an exhibition ('A jeweller's eye', opening November 1988) in the Freer and Sackler Gallery of the Smithsonian Institution.[153] The mainly fifteenth and sixteenth-century volumes suffered from inadequate rebindings in improper structures, or their condition "reflected [...] most common problems in books from this time and area. [...] The very weak sewing structure so typical of traditional Islamic bookbinding had broken down". Because the link-stitch sewing structure was disqualified as a proper structure, a different method was chosen when the textblocks needed resewing. Either a long-stitch sewn through a laminated support of airplane linen and Japanese paper was used, or a link-stitch was sewn all along the length of each gathering on more stations. The second option was combined with a subsequent spine lining of Japanese paper and airplane linen. Remarkably enough it was decided to not replicate the endbands. Although considered attractive, "in order for the chevron pattern to really show, these headbands need to be fairly wide which contributes to restricting the opening a bit and creates a point of vulnerability at the head and tail of the folios where the pages must flex around the tie down threads".[154] Clearly the interventive treatment was given serious thought. Yet, the function of the Islamic endband was not understood, and aesthetical considerations prevailed over practical solutions. While an endband could easily have been sewn on a small core, which would preserve the endband function without hampering the manuscript's opening, this was not considered worthwhile. The final result of this eclectic treatment reflects the general misconception of the traditional structure. Overlooked was the critical relationship of the endband sewing with the relatively simple link-stitch sewing and

[150] D. Jacobs and B. Rodgers, 'Developments in the conservation of Oriental (Islamic) manuscripts at the India Office Library, London' (1990), p. 110.
[151] Ibid., pp. 117-119.
[152] Ibid., p. 125. Neither text nor drawing explain the reason for this explicitly, but as the making of turn-ins across the spine was such a routine procedure in Western bookbinding, it probably was not given any particular thought. It does illustrate though, that the Islamic tabbed spines were not recognised.
[153] S. Husby, 'Islamic book conservation' (1991).
[154] Ibid., pp. 46-47.

spine-lining, and therefore a treatment was applied to 'solve' the problem through a Western approach. The observation that wide endbands could cause tension and hinder the ease with which a manuscript can be opened may be true, but for conservation purposes one only needs a small endband core and tiedowns to connect each gathering and the lining; the visual quality of the secondary endband is – for conservation purposes – of secondary importance.

Finally, a treatment report of a late medieval Yemeni manuscript, published in 1996, should be mentioned.[155] The manuscript had been rebound in an unsympathetic Western quarter binding and the book did not function well because of the excess of animal glue on the spine. The manuscript's paper was degraded and damaged, and, according to the report, it was decided that the paper was to be leafcasted, and a new binding had to be made. The conservation approach is well accounted for: "The conservation binding of the Yemenite Taj was designed to be sympathetic with Middle Eastern binding styles, but also durable and functional".[156] This already presents the point of view: the durability and functionality of Middle Eastern binding styles is not relied upon. The subsequent choice for a supported sewing and a Western binding structure is further explained in the following paragraph: "Middle Eastern bookbindings, it is safe to say, are typically structurally weak. The weak points in the classic form include the sewing (sometimes using silk, and no sewing supports), a flexible spine (using a single lining of cloth), and weak connections to the cover. Covers were usually made as a case, that is made separately from the textblock".

6.2 *The first decade of the twenty-first century*

The increase of articles and papers dealing with the examination and preservation of Islamic manuscripts of the past decade is indicative of maturation in the field. As Nil Baydar phrased it, while addressing traditional features and conservation problems of Turkish manuscripts: "Although there are not enough trained conservators in Turkey who adopt an ethical approach to conservation, conservation has recently and gradually become a field of science".[157] In this paper Baydar touched on the method of board attachment and leather application only briefly, without actually indicating the technique(s) used to produce the book. Although the sewing structure is also not discussed in great detail, it is stated that sewing stations were made by cutting or sawing the spine of the textblock. Furthermore this technique is said to be not just Turkish but used throughout the Islamic world.[158] The manuscripts in the UBL collection do not confirm this, nor do any of the literary sources to my knowledge. Usually, the gatherings are just pierced with a needle or perhaps pre-pierced with an awl. As a spine-lining material, Baydar only mentioned textile and paper. The omission of leather is significant, not only because leather was the principal lining material in the first centuries of the Ottoman era; it also seems to indicate that the leather joints in those manuscripts are not recognised as being part of the spine-lining and, as such, a structural component of the manuscript.

In 2010, at another IIC conference, Baydar presented some characteristics and techniques used in Islamic book making that have only recently been recognised.[159] One of them, concerning structure, is the wrapper binding with unsewn textblocks.[160] Specimens were located in Cairo (Egypt), Constantine (Algeria) and Konya (Turkey), all through rather

[155] G. Ruzicka et al., *A Yemenite Taj. A case history in cooperative book conservation* (1996).
[156] Ibid., p. 8.
[157] The paper was a contribution to the IIC (International Institute for Conservation) congress in Baltimore, 2-6 September 2002. See N. Baydar, 'Structural features and conservation problems of Turkish manuscripts and suggestions for solutions' (2002), p. 10.
[158] Ibid., p. 7.
[159] Idem., 'Newly identified techniques in the production of Islamic manuscripts' (2010), pp. 69-73.
[160] This type is discussed in Part Two, paragraph 2.6. See also K. Scheper, 'The conservation of the Middle Eastern manuscript collection in the Leiden University Library. Results of a conservation assessment survey' (2008), p. 68.

quick surveys in parts of the extended collections in the institutes involved. From this it must be assumed that more examples of this specific manuscript type will be found when one would actually start to look for them.

At the same conference Kristine Rose addressed the two-pieces technique, which she observed during a conservation project of the Turkish collection at the Chester Beatty Library; this was the first time that attention was paid to the use of two pieces of leather to cover full leather Islamic bindings.[161] Nearly half of the thirty-two manuscripts in this collection that needed extensive treatment appeared to be constructed using this technique. None of those manuscripts were very large and although they greatly differed in age, dating from the sixteenth to twentieth century, they were all produced with great care, and the overlapping pieces on the spine were hardly visible. Rose concluded that the occurrence of the technique is significant, for it does not corroborate with the case-binding structure usually associated with the Islamic binding tradition. The suggestion that this technique makes much sense on a practical level because it offered ways to economise on materials is true, as is the remark on the possible use of the technique to allow for a better fit of the binding.[162]

A third contribution at the IIC conference in 2010, by Silvia Pugliese, provided information on some other features.[163] Pugliese reported on the conservation project of the Oriental manuscript collection in the Marciana National Library, Venice. Roughly a hundred manuscripts retaining original Oriental bindings were examined, and the technical information was recorded. The thread used for the link-stitch sewing was analysed and appeared, in two-thirds of the cases, to be made from plant fibres while the remaining manuscripts were sewn with silk. Pugliese also mentioned the use of coloured thread for page-markers, stitched to the front-edge margins of the page. As a variation, bookmarks were also encountered consisting of longer strands, tied to the head endband.[164] Pugliese observed that most spine-linings were made of undyed fabric, others consisted of either leather or dyed cloth. She described over two-thirds of the original bindings as being covered in full leather, without mentioning, however, whether the two-pieces technique was noticed or not; presumably this oversight was due to unawareness of the existence of the technique and the thus the possible difference in composition that one must look for. The remaining manuscripts were made with partial leather bindings that had coloured or marbled papers on the boards. Subsequently, the majority of the bindings were described as case-binding structures, and as most of them had a flap, they were indicated as Type Two bindings. More interesting is the description of five limp bindings.[165] These limp bindings seem to be of Oriental origin and consist of brown leather without a flap, some of them with turn-ins, of others the leather was cut flush to the textblock. The textblocks of these items are sewn with the predominant link-stitch and the leather is, as usual, directly applied to the spine.

[161] K. Rose, 'Conservation of the Turkish collection at the Chester Beatty library: a new study of Turkish book construction' (2010).
[162] Ibid., pp. 48-49.
[163] S. Pugliese, 'Islamic bookbindings in the manuscript collection of the Marciana National Library in Venice' (2010).
[164] Ibid., p. 53. In the Leiden collections these fixed page-markers are not uncommon, but the bookmarkers affixed to the endband were only encountered three times, and on manuscripts of fairly recent date.
[165] Ibid., p. 53. Images of these limp bindings were not included and for lack of a more detailed description a comparison with the Leiden specimens is not possible. (Unanswered questions are: Do these manuscripts have an endband sewing and are there signs of a spine-lining? Are they completely without boards and were doublures applied?) Still, the presence of such limp leather bindings in other collections seems to suggest a wider use of this particular binding technique. The limp bindings are discussed further in Part Five, paragraph 4.4.

As part of a graduate programme (2005), Katherine Beaty investigated the materials and the structure of an eighteenth-century Qur'an. Introducing the treatment of the Qur'an at hand, Beaty described the book tradition briefly and stated that "Islamic bindings are made off the book similar to a case binding".[166] This illustrates how easily young professionals copy from the literature whilst the counter-evidence is in front of them, on the workbench in the form of a real object. Indeed, almost immediately following that assertion she described the damaged manuscript at hand as a full leather binding made in two pieces. She observed that "[...] when each board was covered, a flap of leather was left at the spine [...] pared so thinly [that] the two leather surfaces blend together, so that the overlap is barely visible. [...] the flaps of each of the boards can be pasted over the spine individually".[167] Beaty in fact disqualified the structure as a case-binding by describing the technique that she observed had been used to make this binding. With respect to treatment decisions, familiar conservation techniques and materials – deriving from Western book conservation – were preferred over authentic techniques. Thus, Japanese paper was chosen as a spine-lining material instead of cloth, even though cloth would have better supported the primary endband sewing and board attachment. Furthermore, the repaired cover was reattached by means of a paper hollow tube, decidedly a Western invention.[168] Beaty accounted for the alteration of the structure by explaining that this solution enhanced the opening of the textblock without putting stress on the spine.[169]

6.3 *Model making practice*

One of the best ways to try and thoroughly understand a book structure is to make models of it. When an opportunity presented itself in 2002 to do so under the guidance of an experienced conservator, I attended a *Fortbildungskurs* entitled *Der orientalische Bucheinband,* at the *Fachhochschule für angewandte Wissenschaft und Kunst*, in Hildesheim (Germany). The experience was extremely useful, not least because the manuscript structure we ended up producing was not exactly an Islamic one. Notwithstanding all the images we looked at and the characteristics we discussed, the final product was a hybrid binding, with both Islamic and Western features. This was done intentionally, at least for a large part. The instructor explained the adaptation of the sewing structure (we had to sew the gatherings through the cloth, used as the spine-lining afterwards) as an improvement to the otherwise weak structure. The leather turn-ins we made at head and tail of the spine – instead of tabs – were not explicitly accounted for, and none of the students questioned this particular aspect. In retrospect, I think the tab was just not recognised as a characteristic at the time. Also typical for a Western interpretation of a poorly-understood feature was the way we applied a leather inner joint. Instead of using a leather spine-lining with flanges, or – the other possibility – an additional strip of leather pasted as a guard in the joint, we applied the strip of leather even

[166] K. Beaty, '21st century remedies to 19th century repairs of an 18th century Koran: materials analysis, treatment, and housing' (2005), p. 4.
[167] Ibid., p. 4.
[168] Ibid., p. 17. The initial use of hollow backs followed from the desire of late sixteenth century Western binders to decorate the flat spines of their leather bindings lavishly with gold; tight spines inevitably had to flex so much that a rich decoration was bound to lose its lustre. The introduction of the hollow tube followed from this development. The paper hollow has its merits in book conservation. However, since its use alters the functioning of an Islamic manuscript to such a large extent and also introduces new tensions in the structure, the application of a hollow is not an obvious solution. Apart from the structural consequences, the leather covering and specifically the spine endings need to be considered. A tab on a hollow would make an odd and hybrid solution, while a turned-in leather spine, as Beaty chose to make, is not an elegant option either, even though it is consistent with the Western interpretation of the binding.
[169] For less explicit reasons the method is also described as a current conservation option by Valentina Sagaria Rossi, see the reworked and extended manual based on *Manuel de codicologie*: F. Deroche and V. Sagaria Rossi, *I manoscritti in caratteri arabi* (2012), pp. 36-38.

before sewing the textblock. It was folded around the outer gatherings and sewn with the textblock, similar to the leather joint strengtheners used in the nineteenth century on Western printed books.

Five years later another workshop was offered at the University of Melbourne. After a three day symposium on the care and conservation of Middle Eastern manuscripts, a two day workshop on structure was organised by the Centre for Cultural Materials Conservation, of the University of Melbourne, Australia, in November 2007. Again I was fortunate enough to attend. Partly because of the wealth of information exchanged in the three days prior to the workshop, I expected a more authentic approach. Nevertheless, once more the model we were to make was adapted to Western standards. Interestingly, the instructor justified the decision to change the structure (we used a link-stitch sewing on four stations in the way Coptic manuscripts are sewn) for reasons of strength. It was argued that the damage of many manuscripts – detached boards, broken joints, deteriorated sewing thread – proved the flaws in the structure. However, it is debatable if the additional stations, so close to the position of the tiedowns, really increase the strength of the structure significantly. I also questioned the necessity to aim for an increase in strength for manuscripts now kept under museum conditions, or those used sporadically in research institutes. Much of the damage many manuscripts suffer is strongly related to intensive use, real wear and tear, combined with the natural aging of the materials. Nonetheless, I made the model according to the instructions given. Apart from the 'improved' sewing structure, we made turn-ins at head and tail of the spine, and the leather inner joint was applied (as a variant of the sewn joint strengthener in the 'Hildesheim model') by gluing the leather strip around the spine-fold of a loose bifolio, that subsequently was adhered onto the spine edge of the outer gatherings. Thus, the smaller side of the leather guard was hidden between two pages stuck together at the spine edge, and the other, broader side was used as the inner joint. The extra bifolio functioned as an endleaf in an un-Islamic fashion, adding to the final result of a hybrid model that gave the impression of being an Islamic manuscript, but, when closely examined, shows details not found on authentic manuscripts.

The inclination to improve the original structure and adjust it using Western binding elements appeared to be persistent among Western conservators. At another, more recent workshop on Islamic bookbinding that I did not attend,[170] many images of original bindings were shown and the 'general' binding technique was discussed, including information concerning the application of the leather covering with the one or the two-pieces technique. Subsequently a model was made using most of the original features, but again for reasons of strength some Western binding elements were introduced on purpose.[171] It seems this practice is not restricted to model making; the same approach is recognisable in the conservation approach of many conservators who are rooted in the Western book tradition.

Coming from that Western tradition myself, the tendency to compare the two traditions is not at all unfamiliar to me. Indeed, my initial acquaintance with Islamic manuscripts and their sometimes poor condition made me wonder why the binding tradition appeared to be such a conservative one. I asked myself why, when so many items clearly did not survive the ages intact, was the construction not altered over time? For comparison, I looked at the materiality, the structure and appearance of the Western book, which displays major changes over the centuries.[172] For what reasons did Islamic bookbinders abide by this

[170] A one-week course was held at Montefiascone, Italy, 2011. One of the attendees was so kind as to discuss the produced model with me.

[171] The tab, for example, was intentionally not made, a turn-in at the head and tail of the spine was made instead. The instructor acknowledged that turn-ins are not generally found on Islamic bindings, but it was felt that the joints would be stronger with turn-ins, and therefore this adaptation was standard procedure for conservation and rebinding purposes.

[172] That is not to say that the development in the Western bookbinding tradition is an upward trend in terms of strength or quality. On the contrary, for a large part the technical and material changes reflect

one structure, although they did develop new decoration patterns and embellishment techniques? Fortunately, conservation treatments offered the opportunity to see and feel the physical evidence of the varieties and the intrinsic strength of the constructions. Based on these original structures I started to make more models, in which I refrained from alterations and supposed improvements. These model objects, with their new materials still in full strength, effectively show that the Islamic manuscript structure is not a weak one. The construction is the result of the aim to produce a manuscript which can be made fairly quickly, and yet is functional and durable. The flexibility within the structure leaves all options open with regard to the final product; whether modest or luxurious materials and decoration techniques were to be used was entirely up to the binder or commissioner. This answered my questions adequately.

The misinterpretation and depreciation of the Islamic binding tradition is of fundamental importance in the discussion of how these objects are best preserved. Usually, the Islamic tradition is explained in a single-model format, which overlooks all the distinctive variations, and then the format is disqualified as a proper structure. This point of view is the basis of many binding courses and conservation instructions, which has huge consequences for the care and conservation of Islamic manuscripts. The inclination to explain the Islamic manuscript structure by comparison with Western techniques or bookbinding developments, and to compare isolated techniques with Western counterparts without the context of the whole construction, should change.[173] Ultimately, the essence of conservation is that we do *not* think in terms of single formats and uniformity, but instead, of individual manuscripts and heterogeneity. Accordingly, every item then requires an individual approach carried out by an attentive conservation expert.

7 The sum of the parts

The literature on Islamic manuscript structures goes back nearly a thousand years. These historic documents have a clear and direct relation with most of the manuscripts produced in the Islamic world, either contemporary with the treatises or made in the centuries afterwards. The historic treatises not only inform us about bookbinding techniques, they also provide a wider view of the bookbinding workshop, introducing the tools, equipment and adhesives that were used by the craftsmen. These treatises are not precise enough to guide a novice in the trade through the whole process of manuscript manufacture; the instructions are sometimes almost fragmentary and not one of the historic authors describes the final stages of the binding procedure. However, the great value of these primary sources for present research is that they serve as a benchmark for the physical objects that have survived and were surveyed in this study. Although they do not describe every binding feature that can be found, still many characteristics are represented and, most important, the differences in structure that were encountered appear to be actually documented. Thus these historic documents validate the research findings and provide a further argument to reconsider the current characterisation of the Islamic binding structures.

The bulk of the secondary literature has been generated over the last fifty years, and laid a firm foundation for further studies. Ground-breaking work was done by scholars who

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the response of binders to developments in the book market, the ever increasing demand for more and affordable books. In addition, it seems we easily forget that from the preserved medieval Western books, also only a very small number of manuscripts survived in their original bindings, often damaged or repaired to the same extent as their Middle Eastern counterparts.

[173] At the thirteenth Symposium of care and conservation of manuscripts in Copenhagen, in October 2012, I examined this inclination to regard the Western bookbinding tradition as superior over Islamic bindings; the paper was published under the same title: 'Neither weak nor simple. Adjusting our perception of Islamic manuscript structures' (2014).

were not material specialists; their lack of expertise in this area explains some misinterpretations but at the same time makes their achievement all the more impressive. Over the last decade the number of publications has seemed to multiply, addressing diverse aspects of the physical manuscript. There appears to be a widely felt need to classify these manuscripts, which is illustrated by the general embrace of the typology introduced by Déroche. Many recent reference works as well as publications on conservation issues refer to Type One, Type Two or Type Three bindings as appropriate. However, it has also become apparent that this typology does not suffice as a system for classifying the real differences in structure.

PART FOUR MULTIPLICITY WITHIN THE TRADITION
Account of the methodology and quantitative results of the survey

1 Methodology

1.1 *General procedure*

In 2010 a pilot survey was carried out to gain information on the varieties in shape and composition that could be found in the manuscripts in the Leiden collections written in Arabic script. A preliminary sample of manuscripts was selected by assessing the first hundred books of every thousand. All manuscripts with original Islamic structures and bindings – any minor repairs or adaptations notwithstanding – within this range were examined. From this initial survey the structural and material elements could be established which would need to be incorporated in a database for the larger survey on which the present study is based. The pilot study also provided a most welcome experience to build an adequate database for this purpose.[1] Additionally, the preliminary assessment served to answer some questions concerning the criteria for selection: what degree of historic interference or damage was acceptable, and when was a repaired manuscript disqualified from being valuable for this research? Lastly, decisions as to which features needed to be included and which details could or should be ignored were largely based on this pilot. Of course, not all the functionalities could be foreseen that the database eventually required, and several anomalous features only gradually appeared to deserve their own entry field in a database record. Thus, as was to be expected, even after starting the assessment small changes and additions to the database design proved to be necessary.

The database was designed to contain concrete and visible facts about each manuscript's structure, in order to generate objective and consistent descriptions and allow for cross-searches and comparison. It was built so as to leave no room for subjective interpretation; for example, either a binding is covered in full leather or it is not – in which case it is probably a partial leather binding, although there is an option "other" for the few diverging volumes. Subjective qualifications were avoided. As a consequence, the ornamentation of the binding was not classified, because 'rich', 'fine' or 'common' are hard to measure or define. Moreover, it is extremely difficult to keep a fixed, consistent standard for subjective qualifications over a long period of time, and as the assessment of a thousand manuscripts unavoidably stretches out over a substantial period, unintended differences in classification would have to be expected. Nevertheless, it was accepted that now and then a remark would have to be made concerning the quality of the work when it was remarkably clumsy or crude, or, on the other side of the scale, very refined. The main reason for noting such impressions was to allow for easier reference or selection in a later stage of the survey, when cross-comparisons between manuscripts with similar features were to be made.

While setting up the project, it was tempting to combine the description of the physical make-up of the manuscripts with a condition or damage survey.[2] The underlying idea of a combined survey would be to make the most of the opportunity: the physical condition of many of these manuscripts may not otherwise be brought to a conservator's attention. Given the intrinsic value of the selected volumes – they represent part of the history of Islamic

[1] General results of this initial survey were presented at the conference *New approaches to book and paper conservation,* Horn, May 2011, and published in the preprints: K. Scheper, 'Refining the classification of Islamic manuscript structures' (2011). For the initial survey *Access 2000* was used. For the definitive survey, forming the basis for present analysis, the database was extended and redesigned in Filemaker Pro 10.0v1.

[2] A model for such a combined survey project is that of the bound manuscripts in the library of the monastery of Saint Catherine on Mount Sinai. See: N. Pickwoad, 'The condition survey of the manuscripts in the monastery of Saint Catherine on Mount Sinai' (2004), pp. 33-61.

bookbinding – their preservation is of major concern, which argues in favour of an extension of the survey. On the other hand, within the overall Arabic manuscript collection the selection forms only a minor part, and other, deselected manuscripts may have condition problems that are more urgent for different reasons. Additionally, it was not to be expected that extra means were to be found to tackle the condition issues, so the records would only provide data that support a theoretical opportunity to address preservation problems, and not be directly applied in practice to develop a conservation programme.[3] For those reasons, it was decided to abandon the idea of diagnosing the condition, and confine the survey to a coherent description of the material and structural composition of the manuscripts.

Every item in the Arabic manuscript collection was inspected in order to decide whether it should be selected for this study, starting with the first acquired volumes and ending with the latest acquisitions. The triage was first carried out on the basis of the book's visual appearance; bindings evidently made in the West were put back on the shelves. All other items were checked on authentic value, using the criteria described in Part One, paragraph 5.2. When selected, a manuscript was examined and all required specific characteristics were subsequently recorded in the database. Simple optical techniques were used to examine the books. Raking light (oblique light) and the use of a magnifying glass proved especially helpful for discerning the two-pieces technique. In some cases rubbings were made when cloth hinges underneath the doublures were suspected but not visible: rubbing the surface with a soft pencil over a thin paper revealed the texture of the material underneath. Digital images, enlarged on the computer screen, shed light on details that remained difficult to discern with the naked eye, such as the pattern of a secondary endband.

After completing the physical examination of the last volume, the relevant bibliographical information from available catalogues and inventories was added to the records in the database, in so far as this data was available.[4] Subsequently, the database was cross-searched and mined for information.

1.2 *Explanation of the database and form design*

In short, six technical components form the basis of a coherent structure that we recognise as being Islamic: sewing technique; spine-lining; endbanding; covering scheme; method of board attachment; inner joint composition. They constitute the red line in the survey, and the database and form sheet had to be designed around these sections accordingly. As one of the main goals of the survey was to demonstrate the diversity within the Islamic tradition, the manuscripts' construction and the materials used with respect to these specific binding components had to be recorded in detail. Additionally, to pinpoint what variations or divergent methods might be regarded as being decisive for classifying sub-traditions, the varieties in the composite parts had to be linked to available information on the origin of the manuscripts.

[3] The UBL's conservation workshop has a limited capacity and to embark on a conservation project such as this, extra hands and budget would be required.

[4] Title or short content description, language, date and origin (insofar as provided) were extracted from: P. Voorhoeve, *Handlist of Arabic manuscripts in the library of the University of Leiden and other collections in the Netherlands* (1957, 2nd ed. 1980); J.J. Witkam, *Catalogue of Arabic manuscripts in the library of the University of Leiden and other collections in the Netherlands*, fascicules 1-5 (1983-89); J.J. Witkam, *Inventory of the Oriental manuscripts in Leiden University Library* (2006-2007), http://www.islamicmanuscripts.info/inventories/leiden/index.html (accessed January-August 2013); J. Schmidt, *Catalogue of Turkish manuscripts in the library of Leiden University and other collections in the Netherlands*, volumes 1, 2 and 3 (2000-2002-2006); T. Iskandar, *Catalogue of Malay, Minangkabau, and South Sumatran manuscripts in the Netherlands* (1999); E.P. Wieringa, *Catalogue of Malay and Minangkabau manuscripts in the library of Leiden University and other collections in the Netherlands*, volumes 1 and 2 (1998-2007).

Would it be possible to indicate other material characteristics with the potential to help establish the origin of a manuscript? To answer that question, and to allow for analysis of the data which might provide insights that could not be predicted beforehand, more physical aspects needed to be incorporated in the survey. With enough data, trends in time and space might be revealed. Among the features regarded as potentially informative was the manuscript's format (apart from its dimensions, and if not the general vertical format: oblong, square, elongated); whether the thread used for sewing and primary endbanding was the same or of a different kind; the endband pattern; the finishing of the inner joints such as the application of stubs, paste-downs or separate hinges; the use of region-dependent materials; the treatment of the spine-ends; the absence of boards; the absence of the envelope flap; the presence of page-markers.

To record the technical components regarded as essential for this research, a database was built with 22 headings to describe each selected volume. The headings dealing with distinct parts of the binding were subdivided into a list of check-boxes to allow for consistent and quick recording.[5] After entering the manuscript's classmark and dimensions, the item was examined for traces of rebinding, the presence of repairs – either native or Western – or signs of a recent conservation treatment.[6] When the volume deviated from the general vertical format one of the checkboxes denoting the diverging format was checked: oblong, square or elongated. This was followed by detailed recording of the visible technical features and materials used, for the categories 'method of sewing', 'lining', 'endbanding', 'board attachment', 'covering scheme', 'type of interior covering', and presence of an envelope flap.

In general, the fundamental techniques used to construct the book – the sewing, lining, and application of the primary endbands – basically reflect the tradition in which the bookbinder was trained. These steps in the binding process were not so much influenced by budgetary issues or esthetical considerations. As the results from the pilot indicated that the majority of the manuscripts are sewn with a link-stitch sewing over two positions, of course the diverging remainder is the category of particular interest. What sewing structure was chosen when the predominant link-stitch was not used, and why and when? The section "sewing structure" consisted of check-boxes for various link-stitches, options for stabbed sewing, supportive sewing and absence of sewing. "Not visible because of too tight a structure" was also an option.

One of the surprising findings from the pilot survey was the frequent use of leather as spine-lining material, while this feature is not described in the relevant literature, the primary sources excluded. Since the lining is crucial for the stability of the textblock and overall binding structure, this structural element and the differences that could be encountered in both choice of material and method of application, also with regard to the board attachment, deserved a key-function in the survey.

Although the application of endbands seems to have been remarkably consistent over the centuries, varieties occur which are worth examining. The most prominent anomaly emerging from the pilot survey was the Southeast Asian endband, which has a special feature in the form of tufts on the outer ends, at the joint. For this specific characteristic a check-box was included under the heading "endbands". Less striking variations were found in the pattern of the secondary endband, and therefore a check-box for "chevron pattern" and one

[5] See Appendix III for an empty form-sheet of the database, as used to assess each volume.

[6] The relevance of the evidence of rebinding is explained in Part One, paragraph 5.2. With the assessed manuscripts, repairs did not interfere with the visibility of structural components to such an extent that it obscured most characteristics, otherwise the item would not have been selected. However, a repair could obscure particular features, such as the application method of covering leather, for example, which would subsequently be noted down. When the manuscript had been recently treated, that is, since 2000 when the UBL conservation workshop was set up, the treatment report was consulted to provide additional information on the former condition.

for "other pattern" sufficed. The diverging pattern was then described in a text-field for remarks.

With regard to the appearance of the bindings, two main groups – full leather bindings and partial leather bindings – had to be distinguished that both ramify further. Full leather bindings were examined for evidence of the two-pieces technique or the use of one single sheet of leather. Moreover, with the prospect of gaining more knowledge on the development of these different covering schemes, it needed to be clear which manuscripts were to be disqualified as useful informants in this respect, in order to avoid blurring the results. This required check-boxes to indicate bindings too damaged to detect the precise covering technique, or lacking convincing proof of either the one piece or the two-pieces technique.

The ramification of the group of çaharkuşe bindings extended to five subcategories. Some of the partial leather bindings have all their edges covered with leather – which would offer best protection – while others have no leather strips on the horizontal edges. In both varieties specimens with and without a leather strip on the front edge of the envelope flap can be found. With this covering scheme it seems likely that economic motives were involved, therefore, the material used to cover the board panels was also recorded, as the choice of material could be another budgetary indicator.[7] Relatively expensive materials like decorative cloth or marbled paper can be found, as well as cheaper materials such as rather plain, monochrome dyed paper. Finally, when partial leather bindings were further embellished with tooling or application of leather overlays, this was also recorded.[8] In addition, there were partial leather bindings with a leather spine only, that did not comfortably fit in the çaharkuşe category.

Although the role of tradition, habit and fashion must not be underestimated, the treatment and finishing of the inside of the covers are of interest because factors such as economy and material strength are likely to have been of influence. The materials a binder could chose from were leather, textile, or paper, in several degrees of quality, which could be further embellished. Again, the decorative quality and luxuriousness of the materials and techniques used may be indicative for the status or value of the book, while durability or availability of the materials would have been basic issues of concern. Especially for the less embellished bindings it can be assumed that binders did not choose a material casually, since price differences would have been significant.[9] Because of this, both substance and composition of the interior of the binding were recorded.

Under the heading "spine endings" the outer ends of the spine covering are described. As explained before, the specific features of the spine-ending bear information about the technique used by the binder to attach the boards to the textblock. Also, a recent study of a small collection of manuscripts from Xinjiang, now kept in the UBL, has revealed that the finishing of these spine-endings may provide a clue as to the origin of manuscripts. Both aspects have been expanded on in Part Two. The key categories are "tabbed" or "turned-in"; the category "flush" indicates that the spine-end was not turned in, but leaves the option open that it once was tabbed. Unfortunately, due to severe damage on the outer ends of the

[7] On the other hand, the full leather covering technique may have prevailed in peripheral regions where decorated papers were not a regular commodity.

[8] Leather overlays were only recorded for the partial leather bindings as they especially signify an elaborate technique on bindings that otherwise could be classified as being on the 'cheaper end of the scale', whereas on full leather bindings this distinction is harder to make. Indeed, leather overlays are often found on full leather bindings which are not necessarily richly embellished, while many exquisitely tooled full leather bindings have no overlays.

[9] It is generally thought that materials were more costly than labour, and leather more expensive than cloth or paper, though there are few written accounts that provide information on the costs of bindings. See: J. Benson, 'Satisfying an appetite for books: innovation, production, and modernization in later Islamic bookbinding' (forthcoming).

spines, many bindings no longer reveal their original make-up. When the leather on the spine is torn or crumbled away below the endband, it becomes impossible to see whether a spine-end was tabbed or cut flush. However, from evidence on the inside of the boards it is often possible to establish that the leather on these dilapidated spines was not turned-in. Many inner joints display part of the leather turn-in with a clearly cut edge adjacent to the spine, which proves that the leather was cut at the joints to allow for the leather on the board edges to be turned-in, indicating at the same time that the leather on the spine was left to extend. [figs. 121-124] For these damaged bindings, a check-box "spine-ends not detectable" was required. All items thus marked could have been made with tabbed spine-ends or flush ones, but it was established that the leather on the spine was not turned in.

A peculiar component not mentioned in the historic sources, nor clarified in the secondary literature on Islamic manuscripts, is the use of page-markers.[10] They are frequently encountered in the UBL collections and this element also seems to demonstrate a fairly consistent tradition in technique and use of materials. Although this is a feature of the textblock, it seems that page-markers were applied by the bookbinder, or perhaps the owner of the volume, rather than the copyist. Since so little is known of their application, even though their use may be obvious, it was decided to record all occurrences of manuscripts with page-markers. A check-box was added to indicate their presence in a particular manuscript; how and of what material the page-marker was made and its precise location was noted down in the 'remarks' field.

The presence of a fore-edge and envelope flap was recorded straightforwardly: either a flap was extant or traces of the former presence of a flap were visible, or the volume was made without a flap. The doublures of the fore-edge and envelope flap were recorded separately as these linings more often than not consist of separate pieces and different kinds of materials. When no board was used in the fore-edge flap this was noted in the remarks-field. The width of the joints adjacent to the fore-edge flap was not measured, only when the difference in width between the two was significant this was recorded in the remarks-field.

Check-boxes were used to record all these visible components, while text-fields were used to register data like classmarks, measurements, origin, date and comments. An image-field was included to contain photographs of the cover or other specifics. The object was measured from head to tail (height), spine to fore-edge of the textblock (width) and front cover to back cover (thickness); the thickness of the fore-edge flap is not included in these dimensions.[11]

In expectation of the unexpected, a separate text field was included to record additional observations. This remarks-field was also introduced as a place to record all other particularities which occurred so sporadically that they required no field of their own, or to describe the exact execution of a specific feature, such as a diverging secondary endband pattern. Furthermore, remarkable characteristics were noted here, such as paper filigree in pages of a textblock or a surprisingly coloured leather. In this field subjectivity was allowed, in fact, it could not be avoided. For example, when the covers had a more than average diverging board-thickness, a more than average diverging thread thickness or remarkably long or short link-stitches or tiedowns, it was noted in this field. In this I followed the logic of the three-level assessment Nicholas Pickwoad described: when you have an image in your mind of what is ordinary – in the case of board-thickness 'medium' – then thin or thick boards

[10] As far as I am aware, Adem Gacek is the only author who describes them, however briefly, under 'Notabilia and finger tabs', A. Gacek, *Arabic manuscripts. A vademecum for readers* (2009), pp. 168-169.
[11] A substantial number of manuscripts have lost their envelope flap, so to include the thickness of the flap would necessitate two measurements: one with and one without the flap. Secondly, the shape of the flap is sometimes distorted or so ill-fitting on the book that it distorts the shape of the textblock or the position of the front cover when closed.

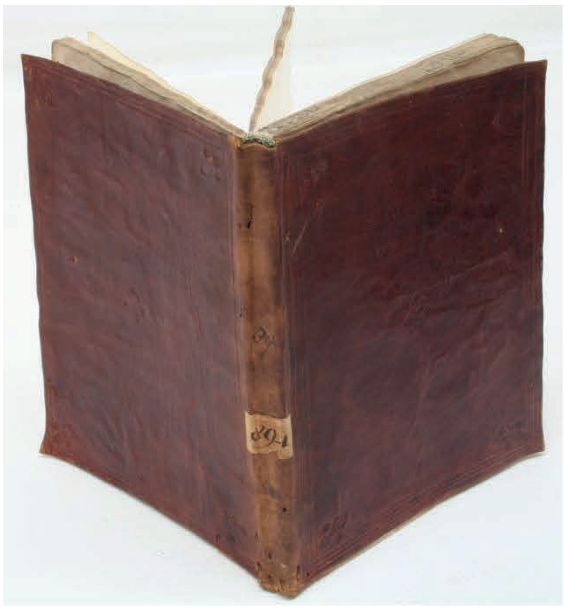

Fig. 121. Or. 894 (1659). A limp leather binding; the leather covers are lined with one sheet of paper onto which the turn-ins are made, there are no boards. The spine ends are damaged and it is not possible to say whether they were tabbed or cut flush.

Fig. 122. Or. 894 (1659). The leather of the covering was cut at the joint position in order to make the turn-ins. The cuts are clearly visible at head and tail, adjacent to the joint. In this case, the turn-ins are not covered by a doublure or an endleaf.

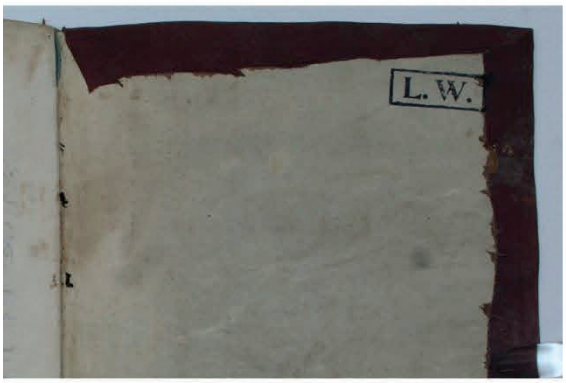

Fig. 123. Or. 894. Detail of the front cover. On the right side of the joint, the cloth spine-lining flange shows through the paste-down. At the head, the turn-in of the leather attests the practice of cutting the leather at the joint position to allow for the making of the turn-ins.

Fig. 124. Or. 511. The cut in the leather that was made to accommodate its turning-in over the board is visible. The leather was cut at an angle, which leaves a small corner of the back board uncovered. It indicates that the covering leather was not turn-in on the spine.

Fig. 125. Or. 1647. The tiedowns are visible on the endband core, and additional loops of thread were wound around the core in order to cover the hole strip of leather.

Fig. 126. Or. 1654. The endband, of the diverging 'wound' kind, appears to be original; the tiedowns are found in each gathering.

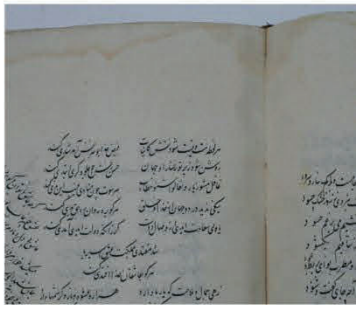

Fig. 127. Or. 1654. The yellow tie-downs are of the same kind as the sewing thread used for the link-stitch.

stand out.[12] Lastly, specific treatments like a painted or dyed textblock edge were recorded, as well as a diverging shape of the flap, the use of uncommon board material, the presence of a leather strap at the point of the flap, the presence of an enclosure or anything else that may not just be manuscript specific but region or time specific. By searching key words within this text field, comparable observations could be retrieved later fairly easily.

The fields "content", "date" and "origin" were only filled in after completion of the autopsy, so as to avoid any presupposition that this information could invoke while still examining the manuscripts. While consulting the collection's catalogues and inventories to add this data, it became clear that not all sources provided information on origin at the same level of detail. Only the more recent ones, those of Schmidt (on the Turkish manuscripts) and Witkam (which cover classmarks Or. 14.001–14.471) can be regarded as thorough in this respect. In the other sources, dates are generally included, as well as the name of the copyist, but references to the place where the manuscript was copied are not always mentioned. Hence, when a manuscript's description does not include information on origin, it remains uncertain whether it is omitted in the manuscript's colophon or if an origin *is* given but it was not reproduced in the description. The *Inventories* of Witkam deserve special attention in this respect. The manuscripts that he described by autopsy contain all provenance information encountered; these volumes can be discerned by the use of an asterisk preceding the Ar.-number that is given in square brackets. The other item descriptions based on older catalogues (such as the CCA, CCO,[13] and Voorhoeve) could potentially have further information. As a supplementary source, I used the descriptions of Max Weisweiler, because he also focussed on provenance for his binding research.[14] Finally, part of the latest acquisitions have been described by Arnoud Vrolijk, curator of the Oriental manuscripts and rare books since 2006, and his descriptions have been used when applicable. To indicate whether or not a specific manuscript description was expected to contain full provenance information, an additional check-box was added to the database.

1.3 *The Malay collection*

Finally, a specific part of the Southeast Asian collection was assessed, the so called Malay collection. This part of the Leiden Oriental collections contains many manuscripts written in the Malay language, though not solely; others are written in languages such as Javanese or Buginese. In fact, the collection consists of many manuscripts from Indonesia, the collection's name therefore neither refers to the origin of manuscripts.[15] The extension of the survey to this part of the UBL collections was motivated by the rather specific material characteristics of the Southeast Asian manuscripts found in the Arabic, or Middle Eastern collection.[16] With clear identifiable physical features, the bindings from this part of the Islamic world stand out as a group, however, within the Middle Eastern collection this group is relatively small with only 39 volumes. An initial search in the Malay collection revealed that a significant number of manuscripts with similar features could be found. In order to select manuscripts by the

[12] N. Pickwoad, 'The condition survey of the manuscripts in the monastery of Saint Catherine on Mount Sinai' (2004), p. 39.
[13] The CCO stands for *Catalogus codicum orientalium Bibliothecae Academiae Lugduno-Batavae*, compiled by R.P.A. Dozy and P. de Jong (1851-1877), CCA for *Catalogus codicum Arabicorum Bibliothecae Academiae Lugduno-Batavae*, compiled by M.J. de Goeje, M.Th. Houtsma and Th.W. Juynboll (1888-1907).
[14] M. Weisweiler, *Der islamische Bucheinband des Mittelalters* (1962), pp. 176-188.
[15] Just like the manuscripts in the Arabic collection, which are not exclusively written in the Arabic language, but often in Persian or Ottoman Turkish, nor do they necessarily originate from the Arabic world. The designation *Arabic* collection refers to the script in which at least the main part of a volume was written.
[16] Volumes from the Indonesian archipelago were sometimes placed in the Middle Eastern collection when they were (predominantly) written in Arabic, instead of in Malay or Indonesian languages. See also Part One, paragraph 5.1.

same criteria as for the main survey, only manuscripts in Arabic script with bindings displaying the physical features of the Islamic tradition were selected. Although the languages may be different and the objects were made at a long distance from the Arabic world, the selection criterion was not different from the survey of the Arabic manuscripts, which includes many manuscripts in Ottoman Turkish and Persian and other languages still.[17] Accordingly, Malay manuscripts in Arabic script with original, regional bindings can be considered to belong to the same cultural tradition[18], thus they were selected and examined, and the information was processed in exactly the same manner as the manuscripts from the Arabic collection. However, the data retrieved from this additional assessment has not been included in the overview of the general characteristics and figures with respect to the number of occurrences, resulting from the main survey (which includes 1056 volumes). The assessment of these Southeast Asian manuscripts serves a comparison with the Southeast Asian volumes in the Arabic collection that displayed seemingly anomalous features. The analysis of the data gained from the Malay collection is represented in the paragraphs on Southeast Asian material only. For information on the provenance of these collections, the *Inventories* of Witkam were used, as well as Wieringa's *Catalogue of Malay and Minangkabau manuscripts in the library of Leiden University* and *Catalogue of Malay, Minangkabau, and South Sumatran manuscripts in the Netherlands* by Iskandar.[19]

1.4 *Excluded textblock features*

The present study strongly focuses on the structure and technical aspects of the binding, and many physical aspects of the textblock were not incorporated in the survey. Aesthetical characteristics, prone to subjective judgement, were excluded as well. In the paragraphs below an account is given of these decisions.

Although the stylistic characteristics of an illumination may possibly be related to a certain region or period, it is rather difficult to classify the decorative styles and techniques used to beautify the bulk of manuscripts produced outside the well-known court ateliers. The complications are twofold. In the first place, specialist knowledge is necessary to assess the illuminations. The artists who executed these borders and frames were trained in different schools and they all have their own characteristic elements, both in colour palette as well as style, which may look almost the same to the untrained eye. My eye certainly qualifies as untrained in this respect. Sufficient knowledge of Arabic in order to read inscriptions, dedications, or simply to distinguish between an illuminated title or an ex-libris would be another requirement that I do not possess. One could argue that the presence of illuminated opening pages alone would be an important aspect to document, however, the condition of many manuscripts renders a useful recording of this feature difficult. When texts have been resewn, rearranged with other texts or when they have been badly distorted, the former presence of an opening page may be obscured. Obviously, the presence of a visible title page *can* be described but the possible absence of one is more difficult to prove. As a consequence, every volume would have to be meticulously examined for traces of formerly present leaves, and even when remnants of leaves are found, one could not be certain that the missing leaves were illuminated. Illuminated opening pages are also known to have migrated from one manuscript to another. Moreover, with uncertain evidence, inscriptions of owners or stylistic

[17] As we will see in Part Five, paragraph 9, the criterion of script may appear somewhat arbitrary for the Southeast Asian region, nevertheless it provided a way to restrict this sub-survey to a manageable portion of the Malay collection.

[18] See also the conclusion of M. Plomp, 'Traditional bookbindings from Indonesia. Materials and decorations' (1993), p. 591.

[19] E.P. Wieringa, *Catalogue of Malay and Minangkabau manuscripts in the library of Leiden University and other collections in the Netherlands* (1998); T. Iskandar, *Catalogue of Malay, Minangkabau, and South Sumatran manuscripts in the Netherlands* (1999); J.J. Witkam, *Inventories* (2006-2007).

indications become less meaningful. Ultimately, the assessment would require significantly more time, without necessarily generating much useful information.

The usefulness of other textblock elements and the effort required to assemble the information were similarly evaluated. Although some scholars have pointed to the thickness of gatherings as a subject requiring further study[20], this feature was not included in the database. In many manuscripts, the gathering structure is not homogenous, so every gathering would need to be checked for its assemblage. Moreover, from the pilot-survey a relation between gathering thickness and sewing structure did not emerge. For the same reasons, manuscripts were not examined for the occurrence of non-conjoint or 'coupled' leaves, a bifolio comprising two single sheets adhered together at the spine-fold. Such leaves are used quite regularly, and possibly more often as middle folios than the inner or outer folios of a gathering. There is no reason to assume, however, that this might influence the construction of the book with regard to sewing, lining and covering in any way. Nevertheless, an incidental remark was made when a manuscript appeared to be made of many coupled or otherwise assembled leaves, not because of a link with the manuscript's structure, but because the particularity may appear to be relevant in another context when future study is conducted.

Other excluded textblock characteristics are the writing surface, the presence of coloured papers or other paper decoration techniques, the type of inks, and codicological aspects concerning the use of a ruling board, the number of lines per page and rubrication. Of these, perhaps the decision to not include the nature of the writing substrate needs the most explanation. For would it not be useful to know if a manuscript was written on Islamic or Western paper, and if the paper was handmade or machine made? Indeed, the type of substrate would provide insight to a certain extent, for example, Western papers were not used before the fourteenth century, and machine made papers cannot have been used until approximately 1800. It is also known that the industry of Islamic papermaking declined gradually in the Ottoman period, but then, in certain regions – especially the peripheral ones – traditional papermaking continued since the import of Western paper did not easily reach these areas. And there are more significant uncertainties. No secure method of dating handmade Islamic papers exists as they lack watermarks; although some characteristics may point to fabrication in the Middle East, North Africa or Central Asia, neither regions nor periods of the papers displaying such characteristics can easily be identified. Therefore, any conclusion based on such a vague and assumed origin would be, at the least, very provisional, and at worst provide illusory information.

As for European handmade papers, the watermarks of course can be a great help when identifying the paper maker and period in which the paper was produced, provided that the watermark matches a watermark description in one of the watermark reference books or databases. Accordingly, such papers provide a terminus post quem. However, European papers were shipped in large quantities to Istanbul and probably elsewhere, but there is no clear overview of how the commodity was traded from there on. As a consequence, the watermarks do not add further information on the provenance of a manuscript. The same is true for the trade in machine-made paper, to which it has to be added that machine-made paper does not always contain a 'watermark'; a terminus post quem is therefore not so easily established other than that machine-made paper from woodpulp was not produced before the early nineteenth century. In conclusion, the type of paper is not a clear informant about the origin of the manuscript, whereas it would be time-consuming to incorporate this matter into the survey. Especially since many volumes are composite manuscripts (approximately a quarter of the corpus), to describe the different papers accurately would require a different approach, including a description of the separate texts, which was not considered profitable enough for the present study. As a result, the writing substrate was not included under any of

[20] COMSt Newsletter 5 (2013), p. 2.

the form headings, since that would suggest a coherent and thorough examination. Nevertheless, when a textblock consisted of dluwang or machine-made paper it was noted in the "remarks field", since that information straightforwardly points to respectively an identifiable region and a time-period of origin.

The handwriting itself is of codicological use. Manuscripts can be written in a 'formal', that is calligraphic, or an 'informal', personal hand.[21] However, most calligraphic script types are linked to rather wide regions and periods, and although many varieties within the different styles are known, progressive developments of types render it difficult to be very precise; moreover, a coherent framework to classify scripts still awaits development.[22] Apart from that, to distinguish between the calligraphic hands requires palaeographic training. The consulted catalogues only sporadically offer the script types. *Nasta'līq*, *naskh* and *maghribī* script are the types most often included in the object description. It seemed meaningful to introduce the mentioning of *maghribī* script into the database, but not the others. *Naskh* developed from the late tenth century onwards and became so widespread, developing into many regional varieties and forms, that its appliance is not helpful for locating manuscripts. *Nasta'līq* appeared in late fourteenth-century Iran, and although this is known as the Persian script par excellence, it was also widely used in regional variations in Mughal India and Ottoman Turkey. Given the breadth of this area, it adds only general information which cannot be used to locate manuscripts written in this style. It is true that *maghribī* script is also related to a rather large geographic region, including Southern Spain, North Africa and sub-Saharan Africa, so it may not be very precise, but its use does distinguish the Islamic West from the Islamic East.[23]

Covering the other features mentioned above I can be brief. The use of a ruling board (*miṣṭara*) is so universal in the Islamic world that it offers no clues about origin, and the same can be said of the use of soot ink, and even iron gall ink, or a mixture of both. Rubrication too is a common scribal technique, and is therefore not included, and although some coloured inks could perhaps offer slightly more information, technical analysis would be required, which was beyond the possibilities of the present study. The use of coloured and decorated papers may hint at the value or significance of a manuscript, but too little is known about this topic to use it as a firm guide; several examples, at least, can be given in which the use of coloured papers appears arbitrary.[24]

Finally, the presence of written titles on the tail edge of the textblock has not been recorded. The information value of this characteristic on the use of these manuscripts is clear, however, it does not tell us anything in direct relation to the making of the book. Indeed, this usually abbreviated title or catch-title was probably applied only after the volume was placed on a shelf in a certain collection, which could be long after the making of the manuscript.

1.5 *Exclusion of binding decoration*

This study focusses on the technique of Islamic manuscript making, not on art historical aspects. There are multiple reasons for not including stylistic characteristics of the binding's ornamentation. First of all, lack of a proper terminology for binding decoration hampers recording. As a consequence, the decorative elements can only be covered by elaborate description, combined with images or rubbings. Such an approach could certainly lead to the development of a more adequate vocabulary; however, this work could not be undertaken within the scope of the present study.

[21] A. Gacek, *Vademecum* (2009), pp. 241-243.
[22] The need for further research is explained by F. Déroche, *Islamic codicology* (2006), pp. 205-211.
[23] Ibid., pp. 147-149.
[24] See for example Or. 26.676, in which several leaves are made by adhering two short pieces of differently coloured paper in order to form a full page. See also Gacek, *Vademecum* (2009), p. 276, and Déroche, *Islamic codicology* (2006), pp. 60-61.

For the recording of the binding's ornamentation to be meaningful, it would be necessary to measure the quality of the work as well. The occurrence of different stylistic shapes and trends in itself is not informative enough. Indeed, it seems that when decorative schemes were developed, initially they were executed with high craftsmanship. However, as such schemes were copied and spread, the execution of the work and quality of the tools could vary enormously. There is, however, no objective instrument to qualify the workmanship.

Additionally, what complicates the study of binding decoration is that it is known that binders travelled, bringing along their tools to different parts of the world. Also, stamps and tools that were discarded by one binder could be sold to another, and tools could be copied. What is not known is to what extent these trades and movements occurred and how it influenced the binding profession. As only a relative small amount of bindings can be retraced to a certain workshop, the so-called court atelier production, we are left with a huge amount of less distinguishable bindings and decoration techniques. Without further understanding of the binding trade and movements of artisans, the majority of these books cannot offer much usable data on the basis of decoration alone.

The last argument is that it should be remembered that the present study includes resewn manuscripts. Such manuscripts can either retain their original binding, or a new cover could have been provided in the process. To further complicate the situation, the reuse of other and possibly older boards is also not unknown. Even meticulous examination cannot always be conclusive as to which solution the binder chose. For that reason there is a substantial number of bindings that we cannot rely on to be contemporary with the manuscript. If the decoration of bindings was to be examined and combined with the other data, it would be better to conduct a sub-survey, including only the manuscripts preserved with their first sewing and binding. That way, a study of decorative characteristics could generate data about time and place, and these results could eventually be part of the framework for understanding the stylistic features. For the present study, however, the benefit of such a subsurvey did not outweigh the required time to incorporate this issue.

1.6 *Excluded binding features*

For book-archaeological research, even seemingly small details can provide interesting information. However, not every feature was considered potentially valuable for building a framework of information for the Islamic bookbinding tradition at this stage of that process. If neither the pilot survey nor practical experience acquired from conservation treatments had previously drawn attention to these characteristics as being important, they were not included in the present study. They are listed below in random order.

In order to refrain from subjective interpretation, none of the materials were described by their colour. General qualifications, even with the aid of a colour chart, are disputable as many colours have faded or yellowed under the influence of light, storage conditions and deterioration processes. In most cases it is impossible to establish to what extent discolourations occurred, but even when this obstacle should be disregarded, it seems to have little or no relevance whether a leather or paper is described as dark red or olive green. Thus, neither the colour of the covering materials nor the sewing thread was systematically recorded. However, remarks were made on incidental occurrences such as the use of several colours of sewing thread in one volume. It was also noted whether such instances seemed intentional or if it was evidently done arbitrarily, as the latter corroborates my belief that generally no colour schemes were used in sewing. This is contrary to the assertion of Jacobs and Rogers that binders *did* use some colours on purpose.[25] With regard to

[25] D. Jacobs and B. Rogers, 'Developments in the conservation of Oriental (Islamic) manuscripts at the India Office Library, London' (1990), p. 117; they do not support their statement with arguments or figures; the issue is elaborated on in Part Two, paragraph 2.1.

the secondary endbands, colour schemes were not included either, at least not initially; certain manuscripts were at a later stage re-examined as a set and as such the colours of their endbands could become an issue. Also, regardless of the precise colour, whether or not the link-stitch sewing and primary endband sewing were carried out with the same thread was recorded.

The thickness of the sewing thread was not measured, because a trustworthy – or scientific – assessment of the thread thickness would require multiple measurements throughout the book, adding considerably to the required time investment while the use of such data for this specific study remains questionable. Nevertheless, when the sewing thread proved to be substantially thicker or thinner than average, it was noted in the remarks-field. Thus, threads diverging from what was to be expected (and considered average) were recorded, following the logic of the three-level assessment described earlier. In the case of thread-thickness average is relatively thin, so what stands out is 'very thin' and 'thick' or 'coarse' thread.

The nature of the threads, whether animal or vegetal, was not described because it is impossible to always discern whether a thread is made of linen, cotton or silk with the naked eye. To establish this with certainty, analytical examination of fibres under a microscope would be necessary. Quite similarly, with regard to the leather covering it was decided not to include the species of animal. Although in some cases one can be fairly certain by visual examination of the leather grain alone that a book is bound in sheep or goat, a large number of bindings are covered with leather that is not easily determined. These skins are neither convincingly sheep nor goat, the hair follicle pattern may hint at hair sheep but could also belong to a sheep-goat, the offspring of a sheep and a goat, while it is equally possible that certain goat species have skins that resemble the follicle pattern of hair sheep. To my knowledge no reliable and conclusive study exists on this subject. As sheepskins are considered to be the cheapest hides available, the inability to determine the animal which was the source of the leather is unfortunate, since the economical aspect of the matter could prove to be interesting. Other species that can be expected to have been used apart from goat and sheep are donkey, mule, camel and different types of cervine.

Another feature that was not recorded is the exact length of the link-stitch sewing stitch or its relation to the height of the textblock. There does not seem to be a relationship with the size of the manuscript as examples of both small books with remarkably long stitches as well as large books with short stitches were found. The length of the tiedowns of the endbands was also excluded as a survey issue. Apart from the fact that the length of the tiedown may vary throughout the book – so to register meaningful data all warps should be measured to determine an average length per book – it seems that this characteristic is typically a result of arbitrariness or personal routine.

Whether the tiedowns were bundled in order to sew the secondary endband, and if so, in what quantity they were bundled, is not recorded. It will certainly be interesting to focus on the making of endbands in a further study, since characteristics like this may provide further insights. At the same time, the decision to bundle the tiedowns in pairs of two, or groups of three or four threads, is likely to be affected by the quality and thickness of the thread to be used for the secondary endband sewing and the thickness of the gatherings. Thick thread requires more space between the stiches than thin thread; thin gatherings lead to closely spaced tiedowns which sooner require their bundling. Economics could be another influencing factor; an increase in the bundling of tiedowns would diminish the number of movements the binder needed to make and thus speed up the sewing process. With these variables, a direct relation between the bundling of the tiedowns and a binder's method or local tradition is not to be expected.

Another aspect of the endband sewing that was not systematically studied is the fastening system of the threads. Knots were found tied on the textblock spine as well as in the spine-fold of the outer gatherings, and even sometimes in the spine-fold of tipped on

endleaves, but whether there is a predominant method for attaching the thread has not been identified.

Laminated paper sheets are used in a majority of the boards, and wastepaper was regularly used for this purpose for obvious reasons: even when paper was not scarce, wastepaper would have been less expensive. The use of wastepaper, however, was not systematically examined, as access to the boards depends on the condition of the covering leather or presence of damage at the joints or corners, which means that it is not an equally accessible feature for all manuscripts. The thickness of the boards is another aspect that was not methodically measured, as the covers are a composite entity. The board thickness varies according to the number of sheets used, and the thickness of the original paper. Small differences can hardly be measured since the thickness of the leather is also included in the measuring process, which adds another source of variability. Of course, when boards were omitted altogether that was considered an important factor, to be recorded in a check-box.

As pointed out earlier, awareness of the differences in the covering scheme is crucial to understand the manufacturing of a manuscript. Small details in the finishing of the covering were not recorded at this point, for instance the treatment of the corners on the inside of the board, which can be mitred, overlapping or pleated. As the boards are flush with the textblock, the doublures cover almost the entire inside of the covers; they leave only a small rim of the turn-ins visible which hinders the examination of the corner treatment. A second aspect that was not examined is the finishing of the turn-ins after pasting them onto the inside of the boards. The turn-ins may not have been finished at all, or can have been cut in situ so as to end up with nice straight edges (although in general the neat paring of the leather does not necessarily require this extra step). In either case, which was the most common method has not been ascertained.

Notwithstanding these considerations, it is easy to imagine that future study of the development of Islamic book-history will require a more detailed assessment of the manuscripts. The examination of the items may then stretch further and proceed, for example, to include facts about discarded and reused manuscript material in binding components, or focus on colour use and other aesthetical aspects. Should this ever happen, it will be fairly simple to extend the current database with extra sections or more check-boxes per heading. The fact that the present design of the database is not unalterable, but flexible and extendable, is a further argument for the decisions now made.

1.7 *Excluded categories*

As the survey clearly focuses on construction, manuscripts without a construction were excluded from the study. Consequently, North and West African manuscripts consisting of single loose leaves only – folios instead of bifolios – were not included. Even though they may be enclosed in original wrappers and pouches of leather or textile, the lack of structural elements renders these items useless for the present study. Indeed, the fact that manuscripts from these regions commonly exist of loose folia, held together by means of wrappers, satchels and pouches, is well known. These particular artefacts form an isolated category that cannot be compared directly with bound manuscripts.[26] They also differ essentially from the unsewn manuscripts with connective strips and wrapper bindings. Firstly, the latter exist of gatherings of folded bifolios, and the connective strips provide a kind of linkage between the gatherings. Additionally, the wrapper bindings of these textblocks display a strong similarity to the bindings of bound manuscripts, both in their making as well as in their physical appearance. In fact, these items could easily have been sewn and bound in a later stage,

[26] With this specific genre, the decorative patterns and techniques on both wrappers and pouches are often rather different from the decoration schemes found on bound volumes. Also the closing system of these wrappers diverges from the traditional binding, with a leather strap attached to the point of the envelope flap. This is used to wrap around the packed manuscript, which necessitates that the flap closes over the front cover instead of being tucked underneath.

possibly even using the former wrapper binding, whereas the manuscripts consisting of single leaves necessarily remain unsewn, unless, of course, they were sewn with a stabbed technique. Stabbed sewing would allow further treatment like lining and board attachment, although endband sewing would still be complicated. In principle, such stabbed manuscripts would be included in the survey, the most important reason being that it is extremely hard to distinguish stabbed volumes of former loose, unsewn leaves from regularly (originally) stabbed manuscripts.

Another category not included in the survey concerns manuscripts from the Middle East which, though (partly) written in Arabic and bound in the region, belong to a different cultural or religious tradition. When bindings displayed characteristics attributed to the Syriac or Byzantine tradition, they were deselected.

Finally, manuscripts with a concertina structure, or so-called accordion books, were excluded. The very nature of this codex type, which usually contains a collection of calligraphic examples or miniature paintings, hinders the estimation of the binding's relation to the content in terms of date and origin, but more important is that the construction of the album leaves consists of flexible cloth hinges without sewing, spine-lining or endbanding. Therefore, the structure is not comparable with sewn textblocks.

1.8 *Considerations regarding the degree of validity of the findings*

All techniques described in Part Two have a section in the database. The frequency of occurrence concerning these different composite parts and that of various details are dealt with in the next sub-chapter. Every binding included in the survey added information to the final, quantitative results. Still, some manuscripts were more useful than others. This depended most of all on the combination of two factors: whether a manuscript could be attributed to a certain date or place of origin and whether its binding could be related to the textblock as the original one. Manuscripts providing both essentials were used to map the multiplicity of the Islamic binding tradition. These results are found in Part Five.

This group of 'extra informative' manuscripts in the corpus was identified when data regarding the place of origin of a manuscript was included in the corresponding database records, as described above. As it turned out, only seventeen percent of all entries appeared to have a location of origin. Fortunately, copyists noted down a date much more often, more than half of the volumes are dated.[27] Subsequently, the genuineness of the binding as the original structure had to be confirmed for all datable manuscripts and those with a known place of manufacture. This was an important step, for in order to be able to use the characteristics of the binding and construction as a method of tracing the origin of other artefacts for which no colophon information is available, the authenticity of these bindings and sewing structures needed to be established. Therefore the first, original binding structures were distinguished from 'second' structures,[28] still belonging to the Islamic manuscript tradition but not necessarily corresponding with the information provided in the colophon. To do so, the spine-folds of the gatherings were checked for presence of paper

[27] When the catalogues or inventories mentioned the occurrence of several hands and several dates, the latest date was included in the database.

[28] It is not always possible to determine whether rebindings are a second, or perhaps a third or even fourth rebinding. When only one other pair of sewing stations is visible it seems that we are dealing with a first rebinding, but in fact the binder could have used or stayed very close to the former sewing positions, thus obscuring traces of the earlier sewing. Furthermore, evidence may be hidden underneath the fold-line repairs; patches of paper can cover one or multiple former sewing stations. 'Second' therefore should be read as 'not the first' sewing structure. It is also important to note that in such cases, the binding itself is not necessarily new or younger than the manuscript. While the manuscript may have required new sewing thread, the leather cover could have been quite unscathed and therefore reused by the binder. By the same token, he could have used an existing cover more or less the same size as the textblock, adjusting only the width of the spine to make the binding fit.

repairs, especially underneath the tiedowns or closer towards the middle of the fold. When small patches of paper have been applied in the spine-fold, this clearly indicates resewing. In my corpus, 249 manuscripts were repaired in this manner. Furthermore, unmended spine-folds were checked for traces of former sewing stations, although this proved to be more difficult; particularly in the soft, fibrous Arabic paper such previously used holes are hard to detect as they tend to close again under the pressure of a new sewing, or from flexing during subsequent usage. Even so, in 156 textblocks such proof was found. In total then, 316 manuscripts of the whole corpus are certain to have a second sewing.

Another feature pointing at rebinding is a typical method some binders used to safeguard annotations in the margins. It was not uncommon for the edges of the whole textblock to be trimmed after resewing, in order to improve the ease of browsing and enhance the neat appearance of the book. To prevent the loss of parts of annotated folia, the margin could be cut perpendicular to the edge so that the part of the paper containing text could be folded towards the middle of the page. Although the presence of such folded margins does not necessarily prove that the textblock was trimmed and bound at least twice, it appeared that most of them were. However, the manuscripts were not methodically checked for this characteristic and it is likely that specimens were overlooked; therefore the feature was not used as specific indication of rebinding.

The distinction between 'first' and 'later' binding structures does not affect or compromise the quantification of the overall results in this Part: every included volume is a product of the Islamic binding tradition. Therefore the findings can be quantified, to provide information on the predominant structures, materials used, the varieties and anomalies. Only when we focus on the group of located and dated manuscripts – in the next Part – to procure stronger indications as to the origin of these different structures and materials and remarkable characteristics, and to establish trends in the use of these materials and techniques, the aspect of original structures becomes essential.

2 Survey results – quantitative analysis

2.1 *Datable and localisable manuscripts*

Out of the approximately 6.000 manuscripts in the Leiden Arabic collection, eventually 1056 volumes were selected and examined. Of those, only 457 have a catalogue or inventory description that we can trust to be exhaustive in terms of information in the colophon with regard to both date and place of origin. As mentioned above, the other catalogue or inventory descriptions often include a date, but there may actually be information available on the origin that is not found in the descriptions. For easy reference, the first group will be called A and the remaining manuscripts, 599 in total, will be referred to as group B. Comparing the percentages of located manuscripts within group A with those of group B, it appears that the first group contains a relatively large number of manuscripts with information on origin. It can therefore be assumed that more data could become available if catalogue descriptions of the remainder of the manuscripts were supplemented. However, we will also have to accept that a large number of copyists simply did not provide information on their whereabouts. Additionally, the lack of a date or place of manufacturing may well result from damage to the manuscript; as the colophons are often written on the last page, they are prone to wear and tear and may have gone missing altogether. Even in group A, only 62 volumes (14% of the group, 66.5% relative to the total number of localised manuscripts) contained a precise reference to the city or village of their origin. In group B no more than 30 manuscripts (5% of the group, 33.5% relative to the total number of localised manuscripts) appeared to contain a place name. In total, another 77 manuscripts were located by different means; in these cases a broader area of origin was mentioned in the catalogue or inventory description (32 manuscripts in group A, and 45 in group B; 7% in both cases).

As indicated above, copyists tended to include a date of completion far more often than the place where the work was executed. In our sample, 588 manuscripts are dated. Another 72 were approximately dated by the specialist describing the items. In addition, for 41 manuscripts there is a terminus ante quem thanks to the inscription of an owner, and in nine cases the manuscripts have a clear terminus post quem due to the historical nature of the work. In eleven cases the manuscripts were not exactly undated but the information provided was so unspecific that the information is not useful, or the colophon date was doubtful (possibly the copied date of an earlier copy) or simply impossible, as in the case of a manuscript that was already acquired by the library prior to its date (Or. 734). As a consequence, 335 manuscripts (32%) remain completely undated. In group A, 274 manuscripts contain a precise date in the colophon; relative to the total number of dated volumes that is 47%, in group B the number is 314 or 53%.

2.2 *Sewing*

Apart from the work of the copyist, the making of a codex starts with assembling and sewing the gatherings. In our sample, 950 manuscripts were sewn with a link-stitch. Of these, 850 were sewn with the predominant link-stitch on two stations (80% of the total, 89% of the link-stitched volumes). The other 100 manuscripts were sewn with a link-stitch sewing on more stations, 49 of them on four stations and 51 on three, five or more stations.[29]

The remaining manuscripts are either sewn differently, or not sewn at all. 38 Manuscripts were sewn with a stabbed sewing technique, two of those were overcasted and nineteen were side-sewn. The exact pattern of sewing of the other stabbed manuscripts was difficult to establish. A smaller group was sewn on supports, 30 in total, but fourteen of these are clearly of Western origin as a repair sewing; in these manuscripts the holes of the former link-stitch sewing stations are still visible. The other sixteen volumes sewn on supports bear evidence of Oriental origin. Of those, ten were sewn on leather or parchment strips, the majority of them are sewn across and only two are sewn around the support, including one manuscript that is sewn on one leather support, which is an odd, uncommon structure. Thin cords were used with the other six volumes; one of those was sewn with a two-on system and the other five were sewn gathering by gathering.[30]

In nine cases the sewing was so tight that the spine-folds could not be examined without causing damage, so that the type of sewing could not be determined. In 27 instances the manuscript was not sewn at all. In this group, twelve volumes had connective strips adhered onto the textblock spine, consisting of leather (six instances), cloth (two instances) or paper (four instances). No traces of connective strips or adhesive residues could be found on the other unsewn manuscripts. One manuscript has individually sewn gatherings but there is no connection between the gatherings, and the binding of this textblock is wrapped around it without any form of attachment.[31] In terms of structure, this manuscript can be considered to be unsewn, which means that in the further analysis of the data the group of unsewn manuscripts with wrapper bindings is reckoned to consist of 28 volumes.

Of the 149 manuscripts in which former sewing stations of a link-stitch on two stations were recognised, three are now stabbed, eleven sewn on four stations, and twelve on supports.

[29] How the link-stitch on four stations diverges from the link-stitch on three or five stations has been elaborated in Part Two, paragraph 2.1

[30] With two-on sewing, two gatherings are sewn simultaneously; when the thread then passes the sewing support on the spine, it changes over to the other gathering. Though the manuscripts sewn on supports are original Islamic structures, they attest to the influence of Western bookbinding techniques. This phenomenon is discussed further in Part Five.

[31] In the University of Michigan Library a similarly sewn manuscript was noticed, see: E. Kropf, 'Historical repair, recycling, and recovering phenomena in the Islamic bindings of the University of Michigan Library: exploring the codicological evidence' (2013), pp. 26-27.

With regard to the sewing thread, it appears that with the majority of the sewn manuscripts (643 volumes or 62.5%), the thread used for the link-stitch sewing was also used for sewing the primary endbands. With 275 (27% of the sewn manuscripts) manuscripts, the thread of the tiedowns is different from the one used to sew the gatherings. Several manuscripts were sewn with different colours of thread, in which case a remark was made because the tiedowns, naturally, could not match all of these different sewing threads. In all other cases, either none or not enough of the tiedowns remains to make the comparison, or the manuscript did not open sufficiently so as to be able to examine the thread. Since these statistics include resewn or repaired volumes, could the diverging endband threads be an indication of replacement endbands? No evidence for this assumption was found. Of the original volumes with tiedowns in a colour different from the sewing, only 10% of the volumes display repairs to the spine, which would allow for, and thus could indicate, a replacement endband.

2.3 *Spine-lining*

The majority of the textblock spines are lined, 1004 in total, and the materials used for lining are leather, cloth, paper and dluwang, sometimes in combination. Leather was used in 227 manuscripts, nearly 22%. In twelve cases in which the leather lining is combined with leather doublures, there is no visible edge in or close to the inner joint, which seems to indicate that the spine-lining extends beyond the edges of the spine to also form the doublures; this technique makes up 5% of the leather doublures. For want of access to the spine, in most cases it could not be determined if in these instances the spine-lining is made of one or two separate pieces of leather. All volumes with a leather lining attest the usage of the leather flanges to strengthen the board attachment on the inside, except for one rebound volume and one volume sewn on supports. With the first, the flanges of the primary leather spine-lining were cut and a second cloth lining was applied, with extending sides used for board attachment; with the latter, the sewing supports were used for board attachment which hindered the application of the flanges to the inside of the boards.

With 636 manuscripts, cloth was applied as spine-lining material, indicating that this is the most common method: the group makes up 60% of the total.[32] It appears that the flanges of the cloth were also usually adhered on the inside of the boards, to strengthen the board attachment; 476 manuscripts attest of this practice, that is three quarters of the cloth linings. However, with 89 manuscripts, 14% of the total with cloth linings, the flanges of the lining can be found pasted along the gutter of the outer textblock leaf. With 34 manuscripts or 5% of the group of textile linings, there are no extensions of the cloth lining; it seems that in these cases the lining was cut at the shoulder of the textblock. For the remaining 6% of the specimens with a cloth lining, there was no damage to give access to the structure, nor was it possible to detect the cloth flanges underneath the doublure or along the spine edge of the textblock; in these cases the construction of board attachment could not be determined.

When cloth was used and the colour or weft pattern of the fabric was clearly visible, a note was made in the remarks-field. However, it was not possible to systematically record every cloth-lined manuscript in detail because often only a small part or just a few threads of the cloth were actually visible. Nevertheless, the examined specimens attest the use of coloured (blue, red, black, green), chequered (mainly blue and natural coloured) and block-printed textiles. In four instances, the cloth was used on the bias.

[32] In Part Five, paragraph 2.1, the dates of the manuscripts are combined with this data, which points at a preference for leather in the earliest centuries while cloth was favoured from the second half of the seventeenth century onwards. This may be an additional explication of the lower instances of leather now encountered: chances that older manuscripts were rebound (with a increased chance that the binder used cloth for the lining) or did not survive altogether is appreciable and therefore more instances of cloth linings would be expected.

Paper or dluwang was observed on 64 manuscripts. Half of these linings consist of multiple layers, in which case it was not always possible to deduce whether one or the other or a combination of both was used. Also, paper linings were found to have been used together with cloth or leather, as the materials in combination provided additional strength.

With 96 manuscripts in the sample (9% of the total), the spine-lining material was inaccessible so that it could not be specified. In another 52 cases (5% of the total), it appeared that no lining at all was used. Taking into account the 28 unsewn textblocks that have to be deducted from this number, this leaves a group of 24 sewn and bound manuscripts without a spine-lining, which is approximately 2.5% of the total.

2.4 *Endbands*

A little over 900 specimens, 86% of the total, had the predominant Islamic endband, or at least clear traces of this type. This consists of tiedowns and a secondary endband sewn over a core with two, and sometimes three threads. The large majority attests the sensible use of the spine-lining, which is applied before the endbands are sewn and is thus incorporated into the sewing structure: in 721 cases it could be established that the primary tiedowns were sewn through the lining. Deducting the 28 unsewn manuscripts this is 70% of the total. It should be noted that this percentage would be much higher had all manuscripts provided access to their sewing structure on the spine. However, this structural connection could not be confirmed for 130 volumes because of the sound condition of the cover spine and inner joints. Additionally, in another 58 cases so much damage was found with the spine-lining and tiedowns that the evidence of the structure could no longer be determined. In two cases the tiedowns seem to be sewn before the spine-lining was applied; at least one of these manuscripts is repaired and resewn and the structure is meddled with. In only 24 cases, sewn manuscript structures lacked a spine-lining and therefore the primary endbands were sewn directly through the paper gatherings, without the support of the lining material.

In the group with the predominant endband structure, 749 manuscripts have a secondary endband with a traditional chevron pattern. Within this group, an irregularity was encountered twice, when different colour schemes were used for head and tail endband. For 38 manuscripts a pattern other than the chevron was found, though closely linked in production to the dominant type: vertically striped endbands occurred eight times, and those with diagonal stripes eleven times (see figs. 108-110 in Part Two).

Another, more prominently diverging endband structure is of a type sewn in one colour only, with the thread direction of the secondary endband different from all other secondary Islamic endbands. In this type, the sewing thread is wound around the endband core, as with the endband anchoring threads, but multiple windings are performed between the tiedowns so as to completely cover the core. It resembles a Western primary wound endband, however, this Islamic version seems to be applied on top of a traditional (Islamic) primary endband which distinguishes it from the Western tradition.[33] [figs. 125-127]

In three cases the endband sewing does not conform to any known type: the anchoring threads and decorative sewing consist of a single colour only and it remains uncertain whether these endbands were made with a primary and secondary sewing, or if they were sewn according to another, unknown sewing scheme. Two other endbands stand out because the secondary sewing is also attached to the leather tab.[34] With two endbands the sewing was so dense that the precise pattern was not detectable, five times the endbands

[33] Typically, this Western wound endband sewing anchors the endband core to the textblock and as such it is the primary endband; it was either left uncovered or a secondary endband sewing or saddle stitch connecting the covering material was applied. See J. Szirmai, *The archaeology of medieval bookbinding* (1999), pp. 206-210.

[34] This type of sewing, which connects the endband to the covering material, brings to mind the Carolingian and Romanesque thong or tab endbands. See J. Szirmai, *Archaeology* (1999), pp.121-125, 160-161.

were not visible because they are tucked underneath a firmly shaped leather tab. Another 22 sewn and bound manuscripts (2% of the total) were made without endbands.[35] In the group with the predominant Islamic endband structure there were 25 instances (2.8% of the total) in which the tiedowns were not regularly sewn through the spine-folds of each gathering, instead they were sewn more sparingly or more crudely, often piercing the textblock randomly.

Fringed endbands were found eighteen times, three of them made with three instead of two colours. The fringes were formed either by the secondary sewing thread, forming loops at the turning point at the joints, or by the core material consisting of silk threads or thin colourful cloth strips, that were left to extend beyond the joints. In four cases the secondary sewing thread was wrapped around the endband structure horizontally after finishing. Thus the thread is tied to the base of the endband and lies on the edge of the paper (see fig. 115 in Part Two). Once this technique was combined with fringes.

A category of its own is the saw-cut endband; sixteen endbands of this type were encountered in the survey. They are characterised by a cut in the textblock edge from board to board, a few millimetres away from the spine. A single thread is laid in this incision (in most cases, at least) and thus the tiedowns are secured in place: they cannot move in the direction of the spine. This type of endband either has a leather endband core with uncut outer ends or no endband core at all, and typically the colours used for the secondary endband sewing are white and red. In one of these specimens, a small strip of red fabric was used instead of thread.

The vast majority of the endband cores are made of a strip of leather, however, in eleven instances the core is made of either a stiffer material, like rolled parchment (two times) or rigid twig-like plant fibre (three times), or a flexible cord or bundle of threads. With the exception of the endband types in which the cores are used as a decorative, frilly element, the extending ends (the slips) of the endband core are usually cut after the secondary sewing is done. However, in eleven cases the leather endband slips were not cut, but either pasted onto the outer textblock leaves close to the gutter, or onto the textblock spine. With two textile endband cores the outer ends also extended; once they were found pasted underneath the doublure and once they were adhered onto the outer leaves of the textblock.

2.5 *Covering*

The basic categories in covering schemes are full leather and partial leather bindings, but these categories are not useful without further subdivisions. Both main groups are rather complex. As pointed out before, the group of full leather bindings is divided into those made out of one piece of leather, and those made with the two-pieces technique. However, during the assessment a third category came to light: a composite, full leather binding made with multiple pieces of leather, not randomly applied but following a specific scheme which has characteristics in common with the partial leather bindings. Although the group is small – consisting of only five bindings – the technique and composition are very particular and are explained below.

Apart from the five composite leather bindings, 683 bindings were fully covered in leather. Of those, 319 volumes were bound with one piece of leather only, while with 243 volumes the two-pieces technique was used. Due to severe damage it was not possible to determine what technique was used in 45 cases, and with 73 full leather manuscripts old repairs prohibit the analysis. For the remaining three bindings no evidence was found

[35] As will be explained later, this mainly concerns structures with two or three gatherings only, with very long link-stitches or link-stitches on four stations, probably to save time and because it is not really feasible to make a proper traditional endband on two or three tiedowns only. The endbands were also occasionally omitted on the stabbed sewn manuscripts, as well as on some of the relatively recent manuscripts sewn on cords.

convincingly in favour of one of the techniques. The vast majority of the leather used is tanned but four times the leather appears to be alum tawed instead.

The five composite full leather bindings are intriguing and require further description. The technique itself is easily overlooked because the final result is not really different from a typical well made decorated full leather binding; that alone leaves one wondering why such a more complicated technique was chosen. And complicated these composite bindings are indeed. The leather used to cover the centre panels of the covers and the envelope flap is of a different colour than the leather used to cover board edges, the spine and the fore-edge flap (provided there is a flap). Furthermore, the two central board panels abut with the edges of the pieces of leather covering the board edges and the spine; they do not overlap the pared leather on the edges and spine as is usual with partial leather bindings. In addition, all leather pieces are pared to the same thickness so that the difference between them cannot be felt. Finally, the edges are tooled as if to further disguise the fact that several pieces of leather were used.

The understanding of this technique becomes even more complicated when we find that two divergent methods of production can be distinguished. The most surprising is the covering scheme in which the board edges are not covered with strips of leather that are turned-in. Rather conversely, this part of the exterior is made with the turned-outs of the leather doublures.[36] [figs. 128-131]

Both types of composite leather covering schemes are quite similar to that of a çaharkuşe binding, except that the board panels are covered with leather in a colour diverging from the spine and edges instead of paper or cloth, and that this material does not overlap but exactly fits the adjoining strips of leather on the edges. Though they could be categorised either way, for the present study these bindings were not counted as çaharkuşe bindings, but as full leather bindings. Ultimately, it seems fair to say that it was the intention of the binders to produce a cover that resembled a normal full leather binding, not a çaharkuşe binding.

The group of partial leather bindings is very heterogeneous. The most important category is the çaharkuşe binding. Strictly speaking, çaharkuşe bindings have leather strips on all edges, a leather spine and leather on the fore-edge of the envelope flap, provided they have a flap. All partial leather bindings made without a flap but with leather strips on all edges can also be classified as a çaharkuşe binding. There are, however, other variants which force us to stretch the definition of a çaharkuşe binding quite a bit. As a first variation, there are bindings on which leather strips were omitted at the head and tail edges of the boards. Although these coverings can no longer pass off as a 'leather-frame binding' in the strictest sense, this type of binding clearly evolved as a simpler version of the çaharkuşe type. But then, to complicate matters even more, in both these çaharkuşe groups we can find bindings that have no leather strip(s) covering the edges of the envelope-flap. [figs. 132-134] For want of a better term and for the sake of expediency while undertaking the assessment, these bindings were still denoted as çaharkuşe bindings, with the annotation that either the leather strips on the board edges and/or the leather strip on the fore-edge of the envelope flap were omitted. This way, it was possible to immediately distinguish these bindings from other partial leather bindings such as the lacquer binding and the simple paper binding, which are

[36] To use leather doublures so much larger than the textblock so that their protruding edges can be used to turn-out over the board edges so as to cover part of the exterior boards seems an unlikely technique. However, the Leiden examples are not the only ones to attest this practice. The Library of Congress houses at least one other example; I thank Paul Hepworth for bringing this specimen to my attention, by sharing a photograph taken by Yasmeen Khan, conservator of the Rare Book collections of the Library of Congress. Apart from the two specimens included in the survey, there is another example in the UBL collections – Or. 8350 – that was, unfortunately, too damaged and interfered with to be selected for the present study.

Fig. 128. Or. 1570 (1560, though resewn). A composite leather binding. The leather doublures were turned-out to cover the outer edges of the exterior, instead of the leather covering being turned-in. Separate pieces of leather were used for the spine and fore-edge flap, and to cover the boards.

Fig. 129. Or. 1570. Detail: the upper corner of the front board. The arrows point at the abutting edges of the pieces of leather.

Fig. 130. Or. 1570. The envelope flap. The red arrows point at the edges of the turned-out black leather doublure, where they abut with red leather which covers the rest of the envelope flap. The black arrow points at the edge of this red leather, adjacent to the fore-edge flap, which is covered with the same black leather as was used for the doublures. Thus, the red leather panel on the flap is fully framed by the black leather.

Fig. 131. Or. 1570. Inner joint of the front cover. The leather doublure shows no trace of an edge on the interior. The silver frame lines do not cover or disguise a cut edge, instead, the leather extended beyond the board edges and was turned out, in order to cover the edges of the exterior.

discussed below. However, when writing about bindings belonging to this category it seems better to describe the composition of the partial leather bindings in detail, and refrain from using the term çaharkuşe when it is not accurately describing the composition of the binding.

As touched upon above, not every partial leather binding is a çaharkuşe type. The exemptions are bindings that only have their spine covered in leather.[37] [fig. 135, and for comparison with a partial leather binding of the çaharkuşe type without a flap, fig. 136] Of course, this leather also covers the outer joints and overlaps the boards from a few millimetres up to a centimetre, where it is adhered. Yet, with these bindings no other part of the exterior of the binding is covered in leather: neither head nor tail edges nor the fore-edges of the boards. These bindings were not provided with a flap and therefore there is no second strip of leather covering the fore-edge flap. Concerning their outer form and appearance, a further division has to be made because two very different genres are found in this category with leather on the spine only. The first is the lacquer binding, usually considered a special type at the higher end of the book trade.[38] [fig. 137] The other is one of the cheapest bindings conceivable, with the thin boards simply covered in paper and no other embellishment whatsoever.

In total, there are 361 partial leather bindings (34% of the total). Of these, 345 are a çaharkuşe binding type. The most common subdivision within this type, with leather strips on all edges, was found 129 times. In 39 instances it was impossible to tell whether a full çaharkuşe binding had a leather strip on the fore-edge of the envelope flap, due to the loss of the flap. With 79 specimens the strip of leather on the fore-edge of the envelope flap clearly was omitted; 30 volumes were simply made without a flap but had all the edges covered with leather.

The çaharkuşe binding, without leather on the head and tail edges of the boards, is a little less common with 98 occurrences. A relatively small number of these partial leather bindings, 26 volumes, did have the front edge of the envelope flap covered with a strip of leather, whereas a leather strip was omitted on the front edge of the envelope flap with 59 volumes. With nine bindings in this group, only a remnant of the fore-edge flap was left, which made it impossible to establish whether the fore-edge of the envelope flaps had been covered with leather. The remaining four partial leather bindings of this type were made without a flap but leather was applied to the fore-edges of the boards. The apparent economising by not covering some of the board edges with leather does not necessarily mean that these bindings were made in the cheapest way, for 37 of these partial leather bindings were covered with decorated paper.

In total, 217 çaharkuşe bindings are covered with decorated paper and 119 have a monochrome coloured paper covering; nineteen bindings are tooled, in twelve instances a stamp was pressed on a leather overlay, three others have a paper overlay. Although most of the decorated papers are marbled, some papers were made with block-print or stencilling techniques, and brocade papers were found a few times. A relative small group of five

[37] Even for these bindings, the term 'half leather binding' as used in the West is not appropriate, for that designation would imply the use of leather on the corners. According to Western bookbinding description, a leather spine only would qualify as a quarter leather binding, also considered a meaningless term to describe Islamic bindings.

[38] Usually, lacquer bindings are described as a separate type of Islamic bindings. Indeed, with their painted boards they obviously form a special category. However, when we want to define manuscript structures on the basis of the materials and techniques used for the construction, the term lacquer binding is inadequate as all lacquer boards appear to have been attached by means of the spine-leather; the inner joint construction can vary and is discussed in Part Five, paragraph 6.3. It should also be noted that lacquer bindings occur with and without fore-edge and envelope flap. When they do have a fore-edge flap covered in leather, technically speaking they can be classified as çaharkuşe type on which the horizontal edges of the boards are not covered with leather. However, this clearly does not solve the problem of terminology satisfactorily.

Fig. 132. Or. 151 (1539). A partial leather binding with leather strips covering the edges of the board, but not the fore-edge flap.

Fig. 133. Or. 795 (1635, Damascus). A partial leather binding without leather strips on the horizontal edges and the fore-edge of the envelope flap; only the fore-edge of the front board and the fore-edge flap are covered in leather, in addition to the spine.

Fig. 134. Or. 860. A partial leather binding without leather strips on the horizontal edges and the flap, although the fore-edge of the front board is covered in leather.

Fig. 135. Or. 765 (seventeenth century). A partial leather binding with a leather spine only. The boards are very thin.

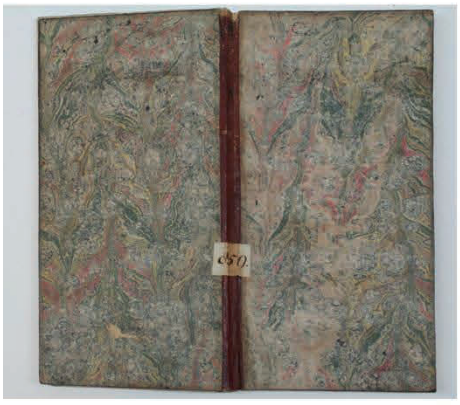

Fig. 136. Or. 859. A partial leather binding with very small strips of leather on the edges. The boards are very thin, and the binding has no flap.

Fig. 137. Or. 11.957 (eighteenth century, Persia). A partial leather binding with lacquered boards. The boards were attached using the two-pieces technique (the arrow points at the edge of the outer layer which is starting to come loose).

volumes have a cloth board covering instead of paper, and with two bindings the covers are painted with traditional frame lines and a central medallion, as if they were tooled. One volume is no longer classifiable because the original composition of the covering has been interfered with over time, and one binding is remarkably decorated with paper cuttings in different colours adhered to a primary covering of silk.

Another remarkable phenomenon is that 25 çaharkuşe bindings were made with the two-pieces technique, which is 7% of this category, a considerable number. The significance of these particular exemplars is that they support the theory that partial leather bindings are built-on structures, see also Part Two, paragraph 3.4.

The other partial leather bindings, sixteen in total, only have their spines covered with leather. Of these, seven bindings have lacquer boards. The other nine volumes have thin boards and are simply covered in paper – albeit decorated: eight of them are marbled and one has a block-printed paper covering. It is of particular interest to look at the composition of the leather spine. With the lacquer bindings, the two-pieces technique was used five times, while with the paper covered boards, the leather spine consists of one piece of leather only. The reason for this difference is quite easily explained when taking into account the making of the lacquer boards, which will be elaborated on in the next Part.

A small incoherent group of covering types makes up a rest-category, consisting of seven manuscripts, including two full paper bindings and a full cloth binding, one manuscript with a cloth wrapper binding, and two leather bindings additionally covered with cloth – presumably not originally. Finally, one partial leather binding was found with the lay-out of a Western half-leather binding.

2.6 *Treatment of the spine at head and tail*

Unfortunately, a substantial number of bindings are damaged at the spine to such an extent that the treatment of the leather covering at head and tail can no longer be determined: 394 manuscripts, almost 37% of the total, cannot offer information on their manufacturing in this respect. It is clear, however, that with the remaining manuscripts, the majority of the leather spines – 410 volumes – were made with extensions at head and tail. The spine-ends of 58 manuscripts were described as 'semi-tabbed', a category that was introduced to denote spine-ends from which the leather does not protrude in a tongue-like fashion but is clearly cut, although not quite flush with the boards. These spine-endings are folded neatly over the endbands beyond which they do not extend. Within the group of tabbed bindings, two specimens stand out because they have fringed tabs: cuts were made in the extending leather parallel to the length of the spine. Another variant has spine-ends with long indented tabs, as if a cord had been tied around the length of the spine over the joints and tabs at head and tail, a feature found in a small group of only five manuscripts. In addition, 29 repair spines were recorded as tabbed.

The occurrence of tabs is not solely related to either the one piece or the two-pieces technique, tabbed spine-ends are found on all full leather bindings. On bindings made with the two-pieces technique, however, they were found slightly more often than on the full leather bindings made in one piece. The numbers of (surviving) tabs lay around the 50% in both groups. Tabs occur equally often on partial leather bindings.

The spine-ends of 148 manuscripts are now cut flush with the boards. Sometimes the tattered edges appear to hint at a former existence of a tab, but with these bindings there is no convincing evidence that tabs were the original form, nor is there proof that the spine-ends had been originally clipped.

There are 75 instances of turned in spine-ends; 28 of those are found on the loose wrapper bindings containing unsewn manuscripts, as was to be expected, and one is a wrapper binding on a sewn textblock. The other 46 bindings with turn-ins – 4% of the total – form a group of bound manuscripts which were regular in all other aspects.

2.7 *Fore-edge and envelope flap*

The large majority of the manuscripts have or had a fore-edge and envelope-flap, 871 volumes or 82.5% in total. The remaining volumes were made without a flap. Of the flapless bindings, 66 have no or hardly any boards, which is 35% of this group. This is a very high percentage, given that only 6.3% of the whole corpus consists of covers without boards. Comparing full leather bindings with partial leather bindings, the number of flapless bindings in the former is relatively high: 18% while only 11% of the partial leather bindings were made without a flap. In relation to the presence of a flap, there is a negligible difference in the percentages between the full leather bindings in one piece and those made with the two-pieces technique.

2.8 *Inner joints*

As described above in paragraph 2.3, 227 manuscripts have leather spine-linings and in 207 of those cases the extending sides, pasted onto the inside of the boards, are still visible as the inner joint. With twelve of these volumes it appears that the spine-lining extensions continue across the inside of the boards to the fore-edge and thus form the doublure proper.

While the extensions of cloth linings were also commonly used to strengthen the board attachment, in 476 cases, we find that with 460 of these volumes the cloth inner joints were subsequently covered one way or another. There are only sixteen occurrences in which the cloth flanges are visible, often with resewn manuscripts. The methods used to finish the inner board covering and joint are various. In 34 instances a leather stub from the leather doublure is pasted over the inner joint; in 46 instances a separate leather strip was pasted in the joint, along the gutter of the outer leaf of the textblock and onto the board. No examples were found of a cloth strip with the same purpose. Paper strips, however, were used 170 times, consisting of plain, coloured or marbled paper. In 52 instances these added strips, both paper and leather, were pasted on top of instead of underneath the doublure, which may point at a repair procedure rather than an original structure; with nineteen of those it was explicitly noted that the inner joint is probably a later addition. The most common covering of the inner cloth joints, however, is an extended paper doublure (that is, a doublure with a stub), a tipped-on endleaf or a paste-down of the outer leaf of the outer gathering. The varieties in structure of the endleaves are described below, in paragraph 2.9.

In 170 manuscripts the situation of the inner joint could not be detected, due to damage and missing parts, or because of interfering repairs. A last, diverse group is formed by bound volumes in which the inner joints remained uncovered, 25 in total. In this group we mainly find the manuscripts with lacquer covers and limp leather bindings. For both these binding types the omission of an inner joint can be understood as the inside of the covers often lack a lining; the interior of lacquered boards are often painted as well, and some of the limp leather bindings consist of the thick leather covering only (see Part Five, paragraph 4.4).

2.9 *Doublures and endleaves*

Most doublures consist of paper, in 851 manuscripts or 81% of the total.[39] The majority of these were plain papers, 401 in total; a somewhat smaller number of manuscripts – 317 – have doublures made of coloured papers, and in 133 manuscripts decorated papers were used. Among the decorated papers, marbled papers are predominant, with 107 occurrences. Six of those are monochrome blue on cream paper, in one volume different marbled papers were used to cover the inside of the front and back board and flap. In three manuscripts the marbled doublures consist of remnant pieces pasted together to make a full doublure. The other decorated papers used as doublures are block-printed (ten times), dyed, gold sprinkled paper (nine times) and brocade papers (gold stamping on a multi-coloured surface, found two

[39] Western repair endleaves, usually in the form of a tipped in bifolio or sewn endleaf section and clearly recognisable as non-native by the sewing thread or other changes in the manuscript's composition, were not included in these numbers.

times). Another substantial group is formed by leather doublures, 140 in total. In this group we find the twelve doublures that are probably the extensions of the spine-lining piece(s). Also, several block-stamped leathers were found (fourteen), and a few were painted with floral patterns. Only seven manuscripts have cloth doublures. In five instances the inside of the board consists of a painted surface. Presumably this painted layer is applied to a thin ground of gesso, perhaps on an additional layer of paper but quite possibly directly on the inside of the board; no paper fibres are visible underneath the paint nor can any other surface structure be detected. With 24 manuscripts the inside of the covers are lined with dluwang, mostly found as a paste-down, and fourteen manuscripts have no covering of the inside of the boards at all. The remainder is not included in the overview of traditional methods as they have Western repair endleaves.

Leather was the primary choice of material for lining the fore-edge flap; it is flexible, and evidently stronger and more durable than cloth. This leather lining of the fore-edge and envelope flap is sometimes continuous with the doublure, 80 of the 140 leather doublures of the back board extend beyond the joint and also form the lining of both flaps. Another 55 manuscripts have leather doublures of the fore-edge and envelope flap, combined with paper or cloth doublures on the boards; in 51 of these cases the lining of both flap parts consist of a continuous piece of leather, in only four cases the envelope flap and the fore-edge flap are lined with separate pieces of leather. Including the 140 full leather doublures and 55 leather flap linings already mentioned, leather is used to line the fore-edge flap and adjacent joints 642 times, which is 74% of the total number of bindings with flaps. The use of cloth is not uncommon, with 95 occurrences. Paper was noted as the lining of the fore-edge flap 102 times, but part of this group also has leather strips pasted in the joints, presumably for reasons of strength. The application of the paper covering the core in the fore-edge flap is probably a way of economising: small left-over strips of leather could be used for the joints. Some of the paper linings of the fore-edge flap are later additions or repairs. Dluwang was found nineteen times.

In 28 manuscripts the edges of the doublure, stub or separate inner joint are in some way decoratively cut. The technique occurred with three block-stamped leather doublures which appear to be the earliest examples, the edges of the stubs of these doublures are neatly and symmetrically cut. [Fig. 91] The decorative cut edges of the paper doublures vary widely in quality, some of them are fine and delicate, others are crudely executed.

According to the definition, doublures cover the inside surface of the boards, but structurally they are not part of the textblock, in contrast to a paste-down. As a consequence, the paper linings of the board that also cover the inner joint and have some attachment with the textblock need to be examined carefully before they can be classified either as a doublure or an endleaf. A paper leaf with a stub that was first adhered onto the inside of the cover, then onto the inner joint and along the gutter of the outer leaf of the textblock qualifies as a doublure; this structure was found in 138 volumes. However, a paper lining of the cover that is made from a guarded leaf with a stub folded around the outer gathering and thus sewn with the manuscript, qualifies as an endpaper. Although the shape of the entity is the same, applied this way it becomes a different element: a paste-down. This technique occurred twenty times. A method resembling this structure is formed by pasting down the outer leaf of the outer gathering, one half of a bifolio; this was encountered 44 times. Still another method is the use of a bifolio, pasted along the gutter of the outer gathering, of which the outer half is used as a paste-down. This tipped on bifolio was recorded 97 times, quite regularly only at the front of a manuscript, combined with a paste-down of the outer leaf at the back. This will be further explained below, in Part Five, paragraph 6.2. Finally, a paper guard sewn with the outer gatherings was used nine times to cover the inner joints, and once a guarded leaf was sewn with the outer gathering with the stub of the leaf on the external side of the textblock, pasted onto the inside of the board before a doublure was applied. Ten manuscripts were provided with additional endleaf sections when they were resewn.

2.10 *Bindings without paste-paper boards*

About 6% of the bindings are made without boards, 70 manuscripts in total. The majority of these bindings still have a traditional binding in terms of turn-ins and doublures. With nine manuscripts in this group is clear that there are no boards at all, as these manuscripts have no doublures. On the inside of the covers we see the flesh side of the leather and there are no traces of adhesive to suggest the former presence of doublures: these bindings were intentionally made as limp leather coverings. With the rest of the group the lack of a board cannot be definitively ascertained because the leather has turn-ins and the inside is covered by the doublures, but the thinness and in most cases the limpness of the covers indicate an absence of boards, although sometimes it may be possible that the covers are lined with one or two sheets of paper. Those sheets may have been of assistance when the turn-ins were made. Nevertheless, these very thin covers were considered boardless. A significantly large part of this boardless group was made without a flap: 66 specimens or 94%, versus 17.5% of the total corpus never had a flap.

The boardless bindings are almost always covered in full leather. In seventeen instances the two-pieces technique was used. One specimen without boards is a cloth wrapper binding and one is a çaharkuşe binding, which is quite remarkable as the paper covering lacks the strength of leather; it seems likely that one or two sheets of paper were used to line the covering before the doublures were adhered. Two other partial leather bindings have leather spines only and thin, flexible paper boards.

Another diverging set of manuscripts appeared to have boards made of leather instead of paste-paper. At least twelve specimens were found. The nature of the core substance can only be determined when damage gives access to the core, because the finishing and tooling of these covers is not different from leather covered paste-paper boards. The last group of manuscripts with diverging boards, however, are recognisable by their outer appearance. This group contains boards made of a woven mat of plant fibre, probably rattan or bamboo, with the pattern of that material visible and tangible on the inside of the boards. The rattan strips are approximately half a centimetre wide and the grain of the woven sheets is at a 45% angle with the horizontal and vertical axis of the board. Although several volumes with boards such as these were encountered in the Arabic collection, only two were recorded for the survey.

2.11 *Oblong bindings, page-markers and other phenomena*

In the survey, nine oblong bindings were recorded. They are denoted as *safina* format: the gatherings are sewn along the short side and usually the item is rotated clock-wise when read, because the text is written parallel to the spine.[40] The items are all relatively small, 11x21 centimetres is average, and typically thin and light, which gives them a highly portable character. While these oblong formats clearly diverge from the common vertical format, differences within the large group of the latter can also be found. There are two types: 83 manuscripts are denoted as elongated, and five volumes are rather squarish. The average size of the elongated manuscripts is close to 25x16 centimetres, and some of these bindings have thick boards. The squarish formats have an average size of 13.5x12 centimetres. Differences in shape of the book and the ratio of the board length and width in relation to the origin of the items will be elaborated on in the next Part.

Only a small number of manuscripts, 29, have page-markers attached to some of the textblock leaves. These page-markers are made of textile, paper or leather. Although each of these materials is fixed to the fore-edge of a folio, different methods by which this was achieved were recorded in the survey. Paper and leather page-markers are adhered onto the surface of the paper, while threads are laced through the paper. As a consequence, the paper and leather page-markers might disappear once the adhesive deteriorates or dries out,

[40] In Turkish the term is *cönk*.

without leaving much of a trace. As the threads are more strongly connected to the paper they are less prone to loss. Leather page-markers were encountered only twice, in very different shapes. Once they are cut in a crudely shaped half-mandorla form, made from a larger, presumably discarded piece of tooled leather, the other manuscript has small rectangular shaped leather tabs with gilded edges. Small strips of paper used as tabs were found twice, once in combination with laced on threads. In several cases the threads themselves also occurred in combinations, pointing at different occasions at which these page-markers were applied. For example, in Cod. Or. 2C blue silk threads are knotted in a triangle and black threads are laced on with a simple loop. Finally, some manuscripts have all their page-markers knotted to the fore-edge margin in descending order, starting close to the top of the leaf. In other manuscripts the page-markers are more or less bundled in the middle of the fore-edge, which renders it more difficult to select a specific one. Still others have them applied rather randomly across the fore-edge.

Three times a flexible reading aid was found, a braided cord of coloured threads, fastened on the textblock spine. Six textblocks were encountered with decorated edges. For this, floral patterns were used, painted in gold, sometimes applied when the textblock edge was first coloured with blue or red dye.

2.12 *In conclusion*

The figures do indeed suggest that there is an archetypical Islamic binding, which remains constant irrespective of time or place. The chief sewing structure is a link-stitch sewing, with 950 occurrences out of the 1056. Over a thousand manuscripts attest the use of a functional spine-lining, stabilising the sewing and endband structure, and providing support for the board attachment. The endband sewing consistently comprises a primary and a secondary sewing. More or less two-thirds of the bindings are covered fully in leather, while one third of the volumes is partially covered in leather. Both categories point at the manufacture of the binding on the textblock, and as such they are clearly counter-indicative of the case-binding theory. The large majority of the bindings have a fore-edge and envelope flap. Yet, from the survey we also learn that alongside this unity there is variety.

In and of itself, the overview of materials and techniques used does not yet help us to retrace the history of the Islamic bookmaking tradition, but it does illustrate the richness of the culture and the diversity of the artefacts. Despite its constancy, the Islamic bookbinding tradition appears to be anything but static and monomorphic. This knowledge may help us to look beyond what we expect to see, and make visible a wider range of sewing systems, an exciting variety of covering schemes, surprising materials and intriguing endband structures and patterns; characteristics that deviate from the archetype but ones that cannot be dismissed as anomalies. These are variations that also belong to the Islamic manuscript tradition. The extent to which this awareness may be of help in distinguishing local traditions will be examined in the next Part.

PART FIVE MAPPING THE VARIATIONS IN TIME AND PLACE
Datable and localisable features and a further interpretation of the findings

So far, the quantitative overview of the survey results has outlined the diversity of materials and techniques used to make books in the Islamic world. Already the UBL collections inform us that the diversity is significant. Now, when we focus on only those manuscripts that have retained their original binding *and* whose origin is known, certain trends can be recognised, and tentative or even firm conclusions can be drawn that gradually paint us an image of the development of the Islamic bookbinding tradition. These specific manuscripts provide building blocks for the codicological framework. From the changes in the use of materials and methods in this 'elite' selection, we can see patterns occurring and start exploring the reasons behind these transitions.

1 Sewing

1.1 *The ratio of the different sewing structures*

As stated before, not much is known about the sewing schemes in the first centuries of the Islamic tradition, and no examples from this period can be found in the UBL. However, since the development of the so-called Type Two binding, it is clear that the predominant sewing structure consists of a link-stitch on two stations; the first chart illustrates the ratio of the different sewing structures in general, without being corrected for repair sewings. [chart 1]

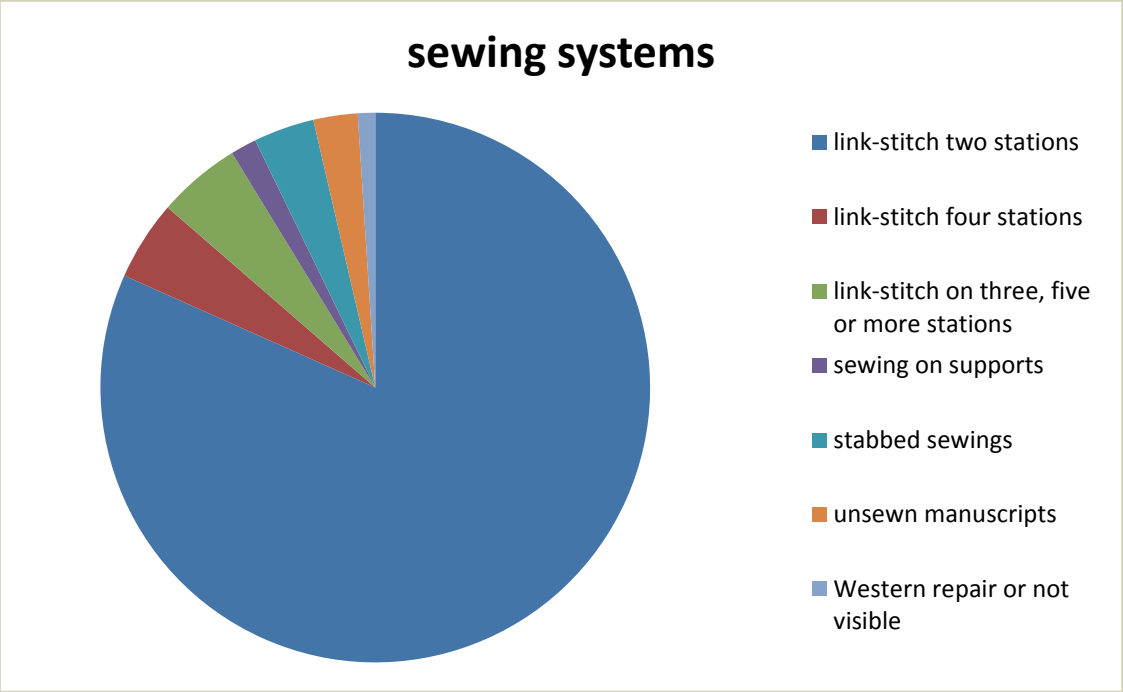

Chart 1. Subdivision of sewing structures in the whole corpus of the Arabic collection, 1056 manuscripts.

When undated and resewn volumes are deselected from the survey results and the remaining data is divided according to sewing structure, and then arranged by date of occurrence, it becomes clear that the link-stitch sewing on two stations is predominant throughout the

centuries.[1] [chart 2] This chart also illustrates the gradual introduction of an important variation on the unsupported link-stitch sewing, the specific version on four stations. In addition, it demonstrates the relatively high number of variant sewing structures in the eighteenth and nineteenth centuries, and the fact that the unsewn textblocks with connective strips were almost solely used in the nineteenth century. The twentieth century shows a continuous use of the dominant link-stitch, as well as the variety in techniques, though the number of stabbed manuscripts has increased.

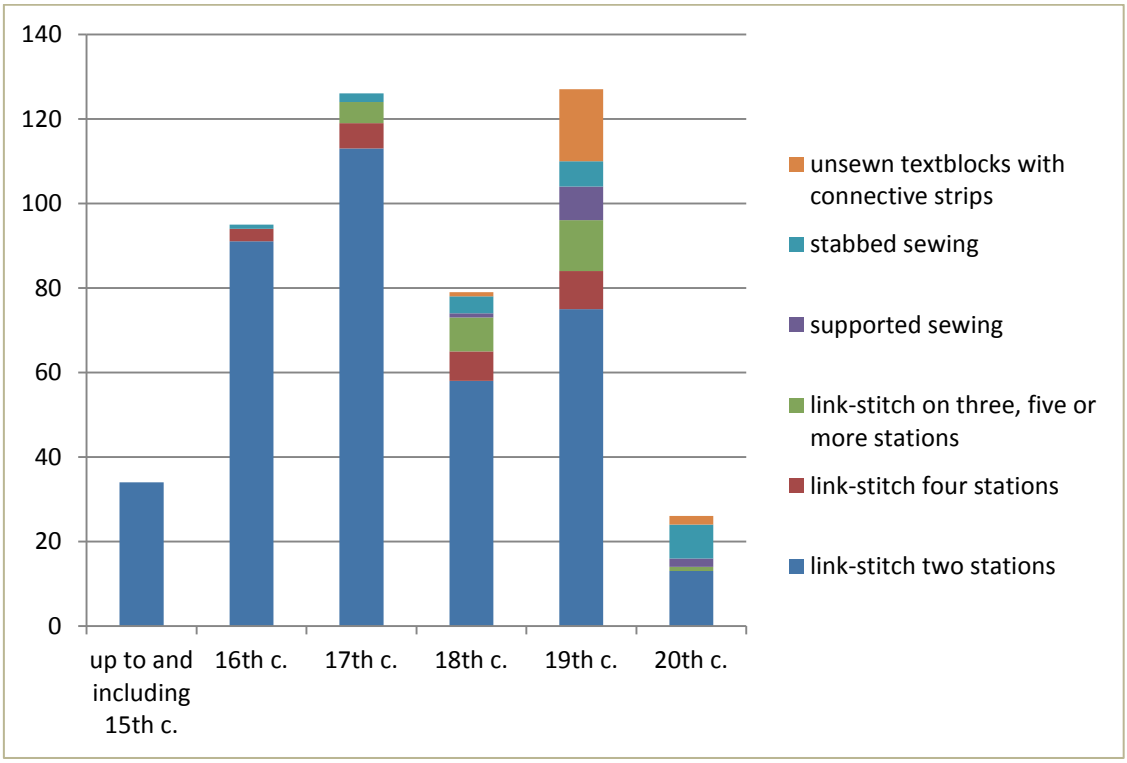

Chart 2. Occurrence of the different sewing structures as used throughout the centuries, with exclusion of the resewn and undated manuscripts.

As explained in Part Four, the information on places of origin is more limited than data on dates, which hinders the ascription of sewing structures to regions. It is clear, however, that the link-stitch sewing on two stations is predominant in most regions of the Islamic world, though it seems to have less relevance in certain parts of North and West Africa.[2] Remarkably, in Southeast Asia this sewing scheme was not found at all. [chart 3]

[1] In Part One the history of the Oriental collection was outlined, and there it was explained that few acquisitions were added during the eighteenth century. Even though in the nineteenth century, and especially in the twentieth century the collections increased significantly, the effect of the 'quiet eighteenth century' is visible throughout the results.

[2] In the UBL collections, the majority of the manuscripts explicitly described as having a North African origin are Berber manuscripts which were stabbed. These manuscripts are often nineteenth-century volumes and the overview of the Maghribi sewing structures is therefore probably not representative of the actual production of the manuscript structures from that region. Of course, the link-stitch sewing is hardly found in sub-Saharan Africa where the manuscripts largely consist of loose leaves and are kept in wrapper bindings and pouches or bags.

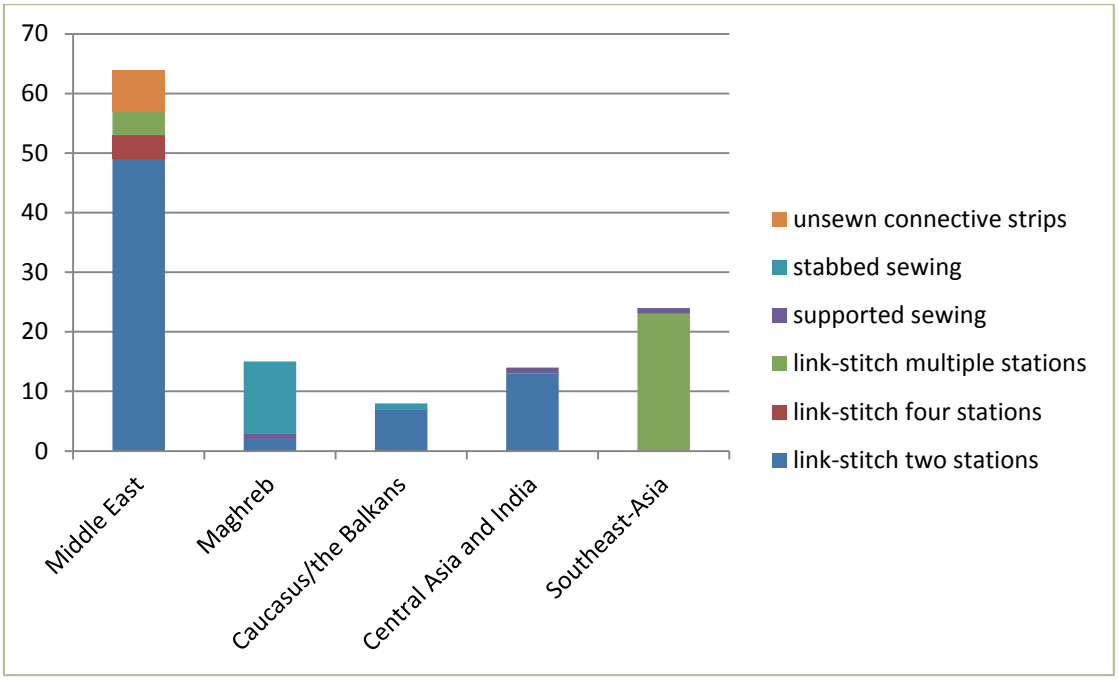

Chart 3. The occurrence of the diverse sewing structures in the Islamic world, according to the localised manuscripts in the survey selection, with the exclusion of resewn volumes.

1.2 *The traditional link-stitch sewing with sewn-on leather doublures*

Two volumes, Or. 241 and Or. 1313, were sewn with the link-stitch on two stations, yet they are described separately since their sewing structures include a piece or two pieces of leather, as long as the spine and as wide as the covers. After sewing and binding, these pieces of leather were used to cover the inside of the binding [figs. 138, 142-143], but they clearly also have a significant function in the construction. The outer gatherings of both manuscripts have six sewing stations, and when these first and last gatherings were sewn, the thread passes through the leather lining several times. In Or. 241, the smaller of the two volumes, this diverging sewing structure was only used in the outer gatherings and all other gatherings were sewn with the common link-stitch. In Or. 1313, however, we find that the second gathering is sewn on four stations, and this gathering seems to function as a stepping-link between the outer gatherings and the rest of the textblock. [figs. 139-141] Both textblocks are connected to the leather lining with these diverging sewing tours only, the other gatherings are regularly sewn on two stations and the leather lining is not incorporated into their sewing.

The structures bear a strong resemblance to the al-Andalus structure, differing only in the material that was used for the lining: leather, instead of cloth.[3] Unfortunately, the manuscripts are undated and a colophon in which a precise place of origin could be mentioned is lacking in both volumes. However, Or. 241, a fragment of the Qur'an, written in a large Maghribi script, is described in Theodor Nöldeke's *Geschichte der Qorâns*, which suggested a North African origin and dated the volume fifteenth century.[4] Or. 1313 is the fourth volume of a set, the commentary on Mālikī Islamic law by Abu al-Hasan al-Saghir, which makes it possible to date the volume after 1155. The second volume of the same set is kept in the Bibliothèque Nationale, BNF 1054, which, according to Baron de Slane is dated thirteenth

[3] T. Espejo, and A. Beny, 'Book I from the collection of Arabic manuscripts from the Historical Archives of the Province of Málaga: an example of al-Andalus binding' (2009), pp. 121-133.
[4] Th. Nöldeke, *Geschichte der Qorâns* (1860), p. 348. The date is further supported by a *waqf* (bequest statement) dated 911AH (1505CE).

Fig. 138. Or. 241 (r) and Or. 1313 (l). The two leather bindings show a certain likeness in the decoration scheme.

Fig. 139. Or. 1313. The first gathering is sewn on six stations and passes through the piece of leather used for lining the textblock spine, which also covers the inside of the boards. A primary endband was sewn as well.

Fig. 140. Or. 1313. The second gathering is sewn on four stations, and it seems the next gathering is sewn simultaneously.

Fig. 141. Or. 1313. The sewing thread in the third gathering; its stations are positioned in accordance with the inner stations of the previous gathering.

Fig. 142. Or. 1313. Although a few leaves are missing, the sewing thread and multiple stations, also piercing the leather, are visible.

Fig. 143. Or. 241 (r) and Or. 1313 (l). The leather, secured with the sewing thread, was used to cover the inside of the binding. The edges of the covering leather were turned-in over these doublures.

century.[5] He also described the manuscript as "Maure-Espagnole". Or. 1313 is written on Islamic paper, but Or. 241 is copied on Western paper which provides a watermark. It consists of a hand or glove, topped by a star-like shape; papers with this watermark were made in Spain from the second quarter of the fourteenth century onwards.[6]

Both bindings are full leather bindings made in one piece, and in both cases the turn-ins of the covering were pasted over the leather doublures, which are in fact the paste-downs from the sewn-on spine-lining. It is noteworthy that the turn-ins cover the doublure, as it is similar to the technique used with cloth doublures, and is not found with any of the other leather doublures in the UBL collection (which are always applied after the turn-ins were made). The leather bindings are blind tooled with small tools and their designs are comparable. The leather doublures are not decorated. Or. 241 seems to have no boards, the covers of Or. 1313 were strengthened with laminated waste paper sheets and are relatively flexible. This later also has a flap, while Or. 241 has none, although the fore-edge turn-in of the back cover appears to be meddled with which may indicate a later interference and could point at the former presence of a flap. Both manuscripts have common primary endbands, though the endband cores of Or. 241 consist of parchment. The secondary endband sewing of Or. 1313 is diagonally striped.

As we lack concrete information on the origin of these manuscripts and their bindings, their position in the al-Andalus binding tradition is uncertain. Was this type of construction, which included a lining-doublure in the sewing structure, developed in the Maghreb or in Al-Andalus? Were both leather and cloth used for this purpose in al-Andalus, although leather was not found by Espejo and Beny? Or does the use of leather bear a stronger relation to bookbinding in North Africa? The sewn lining-doublure structure of these two manuscripts concur with the description in the thirteenth-century Maghribi treatise of al-Ishbili, see Part Three, paragraph 1.3. Did then the al-Andalus variation of using cloth in this sewing structure evolve from that structure, which may have developed in the Maghreb in the thirteenth century? At this point, the development of this specific structure remains tentative, and the two manuscripts may also have been made in the Iberian Peninsula; it is not unlikely that al-Andalus bindings were transported to the Maghreb.

1.3 *Traditional link-stitch sewing on more than two stations*

The variant link-stitch sewing that is closest related to the predominant sewing technique on two stations is the link-stitch using four stations in which the sewing thread does not pass continuously in the spine-fold; the technique was described and illustrated in Part Two, paragraph 2.1.[7] The technique was used for resewing damaged manuscripts, but also as a first sewing structure in new manuscripts. As an original structure, it is found with certainty in manuscripts with an established Ottoman provenance; other items lack clear information in their colophons.

In and of itself, a link-stitch sewing on four stations was not a new invention. We know of such sewing systems from Coptic and Ethiopic traditions, and it can also be found on Syriac and Byzantine manuscripts. All these traditions seem to have their own particular

[5] M. de Slane, *Catalogue des manuscrits Arabes* (1883-1895), p. 131.

[6] O. Valls I Subirà, *Paper and watermarks in Catalonia* (1970), p. 404. After describing the wide use of the sign of the hand or glove in later centuries and in various countries, Valls I Subirà states: "Returning to the fourteenth century we find hands topped by a flower or star, used over a long period, and – during the fifteenth century – with letters in addition". The watermark in Or. 241 has no letters accompanying the watermark. This particular watermark type was not found in early Italian papers of Fabriano, see J. E. Labarre et al., *Zonghi's watermarks. Monumenta chartæ papyraceæ historiam illustrantia* 3 (1953).

[7] This paragraph also explains the significant technical difference between this particular link-stitch sewing, and the link-stitch using multiple sewing stations in which the thread remains inside the fold-line of the gathering. With the latter, usually three, five or more stations were used, although a few specimens with four stations were encountered.

method, which includes a specific method of board attachment, which makes it possible to distinguish between them; the structures can actually be used to determine the manuscript's cultural origin. The Coptic structure, sewn with one needle, consists of a continuous thread in the spine-fold of the gatherings while the sewing thread forms regular chains on the spines of the textblock; the Syriac book attests a similar method of sewing, though other material characteristics make it possible to distinguish them from Coptic structures. The Ethiopic manuscript is sewn instead with two sets of threads and needles: one thread only moves between sewing stations one and two, the other between three and four. The Byzantine structure can be distinguished because the textblock is often sewn in two halves, both starting with attaching the sewing thread to the boards; the halves then connect in the middle of the textblock spine.[8] Additionally, in all these traditions the sewing thread is also used to connect the boards to the textblock, which is uncommon in the Islamic tradition.[9]

What is particularly distinctive for the Islamic sewing on four stations is the passing of sewing thread between the second and third station on the spine side of the textblock. This follows from the sewing scheme: when the thread exits from the second station, it does link with the sewing thread from the previous gathering but it does not return into the same station, as is common in Coptic, Ethiopic, and Byzantine structures. Instead, the thread loops around the sewing thread from the previous gathering passing over the spine, and it enters at the third sewing station, to continue unto the fourth station, thus forming the second stitch inside the spine-fold. When the thread exits again at the fourth station, it makes a loop around the previous link-stitch on the spine and then continues on to the next gathering to be sewn. Of course, when a binding is undamaged the threads on the spine-side of the textblock are not visible, but the difference between a link-stitch on two and on four stations is clearly visible inside the gatherings, as is the difference between this specific sewing scheme and Coptic or Byzantine structures.

The discovery that the Islamic tradition has its own particular sewing scheme (the link-stitch on four stations), apart from the link-stitch sewing on two stations, that distinguishes it from neighbouring bookbinding traditions, is a result in itself. It can be assumed that Islamic binders knew of these variant sewing schemes used in other cultures, perhaps even used them as a starting point to develop their own technique. Why and how exactly this development took place is as yet uncertain. Nevertheless, this distinctive Islamic sewing scheme is of course useful in building a codicological framework. Accordingly, awareness of this phenomenon concerns conservation specialists.[10] But how can the survey findings help us understand the rationale for its usage?

Initially, this particular sewing scheme seems to represent a repair practice, as the oldest examples are found in resewn manuscripts from the twelfth to the fifteenth century. In some of these manuscripts the paper in the spine-fold was repaired with small patches of paper, evidence of the earlier sewing, in other instances former holes can be found underneath the current sewing thread. Either way, the binder decided to use a sewing pattern

[8] I have made this comparison before in a paper I presented at the *International meeting of bookbinding* in Istanbul (November 2012). Technicalities on the Coptic, Ethiopic and Byzantine structures can be found in J. Szirmai, *The archaeology of medieval bookbinding* (1999).

[9] In part of the early Coptic codices leather thongs were applied for board attachment, instead of using the sewing thread, which does not affect the observation that the Islamic tradition stands out in terms of sewing and board attachment.

[10] For this specific audience, I elaborated on the unfavourable consequences of conservation techniques which alter the sewing structure at two conferences: the *14th Symposium on care and conservation of manuscripts* in Copenhagen (October 2012) and the *International meeting of bookbinding* in Istanbul (November 2012). See: 'Neither weak nor simple. Adjusting our perception of Islamic manuscript structures' (2014), pp. 253-269, and 'Preserving the Islamic manuscript as an artefact. Some object characteristics and treatment considerations' (2014), pp. 98-104.

that would by-pass the weakened part in the paper spine-fold. Obviously, this resulted in a stronger and more durable structure.

The first occurrence of manuscripts originally sewn on four stations dates from the middle of the sixteenth century.[11] Not every volume displays characteristics that can help explain the use of the diverging sewing schedule: they may have an average format, thickness and gathering structure, and a normal textblock substrate not justifying a change in sewing structure. In those cases, it seems the structure was chosen for no other reason than that the binder preferred it as a superior sewing over the link-stitch on two stations. Two of these specimens have dyed textblock edges, with vegetal patterns painted in gold, suggesting that indeed these items were made with much care.

However, when an entire manuscript consists of only two or three gatherings, it is evident that the method is used intentionally, for technical reasons. Several thin volumes have their few gatherings sewn on four stations, while two specimens – Or. 2190 and Or. 1676C, both consisting of two gatherings – were sewn on three stations. [fig. 144] As the outer stations are placed relatively close to head and tail, this results in a fairly stable structure. In most of these thin manuscripts the outer sewing stations take over the function of the primary warp stitches, and in these instances the items have no endbands. They were too thin anyway to allow for a proper endband, and so this sewing structure is a functional alternative for the predominant one.

Another good reason for using the link-stitch on four stations is found with nineteenth-century volumes, written on flimsy machine made paper, such as Or. 11.058. [fig. 145] It seems that they were intentionally sewn on four stations, as the doubled number of stations would have lessened the risk of tearing, both during the act of sewing as well as later when the manuscripts were used. These volumes were further strengthened with traditional endband structures, which affirms their careful manufacture. However, apart from being a replacement sewing method and one used for particular fragile manuscripts, eventually the technique using four sewing stations may have evolved into an economical method for the production of volumes with multiple gathering volumes as well. Three manuscripts, Or. 6.632A-C, dated 1859 and purchased in Yemen, appeared to have a very irregular primary endband sewing, with the tiedowns applied rather sparingly. In these volumes, the sewing on four stations makes sense as the outer positions supply strength to compensate for the omission of tiedowns. In one other example, Or. 14.098, dated 1790, the outer stations are also located relatively close to head and tail, so that the primary endband sewing could be omitted altogether, which is real economising.

Three manuscripts display the use of the same sewing scheme except that six stations were used; the thread between the second and third, and between the fourth and fifth station passes over the spine side of the textblock. Or. 2761 is an interesting example of this technique, since it is an elongated manuscript, measuring 31 by 11 centimetres. [fig. 146] As such, it corroborates the theory of the intentional use of multiple stations for larger manuscripts.[12] On the other hand, Or. 14.515 is sewn on six stations in the same manner although it has a regular format. The last example, Or. 11.121, consists of one gathering only, which explains the absence of an endband and the use again of sewing stations close to head and tail instead. In addition to the evident material differences between these three items, there is no coherency in their origin as they date from 1655 (copied in Palestine), 1749 (place unknown), and 1873 (copied in Iraq).

[11] These original examples are of particular interest. Raby and Tanındı mentioned the link-stitch on four stations in their study on fifteenth-century bindings and explicitly stated that this particular sewing structure was only encountered in "restored bindings". See J. Raby and Z. Tanındı, *Turkish bookbinding in the 15th century* (1993), pp. 215-216; and further in Part Three, paragraph 5.1. The oldest examples are Or. 5 and Or. 945, dated 1553 and 1566 respectively.

[12] See for the historical source on this method Y. Porter, *Peinture et arts du livre. Essai sur la littérature technique indo-persane* (1992), p. 119.

Unfortunately not all examples were dated, and the lack of sufficient data on the origin of manuscripts for which this diverging link-stich was used hinders the identification of the chronological development of the technique's utilisation. Based on the current findings, the sewing scheme on four stations seems to have started out as a repair technique, but then proved useful enough so that binders started applying it as an original sewing structure in their regular binding practice.[13]

1.4 *A diverging link-stitch sewing on three or more stations*

Though belonging to the family of unsupported sewing, the link-stitch sewing on three or more positions with the thread passing continuously in the spine-fold forms a distinctive sewing method. Obviously, it comprises at least one additional sewing station – compared to the predominant sewing scheme – and therefore provides extra stability to the sewn textblock. This type of sewing seems to be directly related to the Coptic sewing system.

Of the 42 specimens using this sewing structure, only three were made in the Middle East. Each of these volumes was sewn on three stations. They appear to belong to an identifiable category, because the manuscripts contain Christian texts (the Four Gospels, *Imitatio Christi* by Thomas a Kempis, and a composite volume comprising of a dispute between a monk and a Muslim and a sermon by St. John Chrysostom), and two of them can be located: they were copied in Aleppo and Tripoli in Syria.[14] The origin of the third one is unknown, but the laminated paper boards consist of wastepaper containing text in Syriac script.[15] With this information all three manuscripts can be linked to the Arab-Christian community which helps to explain the use of a sewing structure akin to the Coptic – and is associated with the early Christian bookbinding tradition.

From the survey it appeared that all other manuscripts sewn with a link-stitch on multiple stations with a thread continuous in the spine-fold, originate from Southeast Asia. It is, however, difficult to imagine how the Coptic tradition can have influenced the development of the regional specific variety in Southeast Asia, as their geographic and chronologic occurrences are so widely divided. The reconstruction of the spread of the manuscript culture is complicated by the loss of the oldest manuscripts made in the Southeast Asian region. Since the oldest surviving manuscript structure with a multiple link-stitch sewing dates from the seventeenth century, there is a large hiatus in our material evidence. The possibility should not be ruled out that the people of Southeast Asia developed their own sewing technique, grafted onto the traditional Islamic bookbinding methods and certainly designed to reach a similar visual result – a flat, tight spine – but with their own signature. Judging from other remarkable divergences in binding details, it seems a certain urge and creativeness existed to develop an individual style. However, this explanation alone may not be entirely satisfactory. With an increase in the number of stations in the sewing, the time needed for the sewing also increases. Since economical considerations influence a bookbinder's approach, material aspects may have also played a part in these developments. A significant portion of the manuscripts from Southeast Asia is written on dluwang; although the oldest manuscript in the UBL collection from this region, dated from the seventeenth century, is not entirely written on dluwang, its endleaves and lining of the flap consist of

[13] Evyn Kropf noticed the technique while describing material characteristics of the Islamic manuscript collection in the Michigan University Library, see her: 'Historical repair, recycling, and recovering phenomena in the Islamic bindings of the University of Michigan Library: exploring the codicological evidence' (2013), p. 15. She confirmed its usage on quite thin or particularly tall or elongated volumes, often without endbands, and recorded cases where the four stations sewing represented a repair technique (personal e-mail exchange 11-06-2013).

[14] Or. 701 and Or. 2084.

[15] Or. 18.274. The sewing of the latter displays a further characteristic belonging to the Syriac tradition: the linking stitches on the spine connect three rather than two gatherings, thus the sewing thread forms longer loops and the chain has a more compact shape.

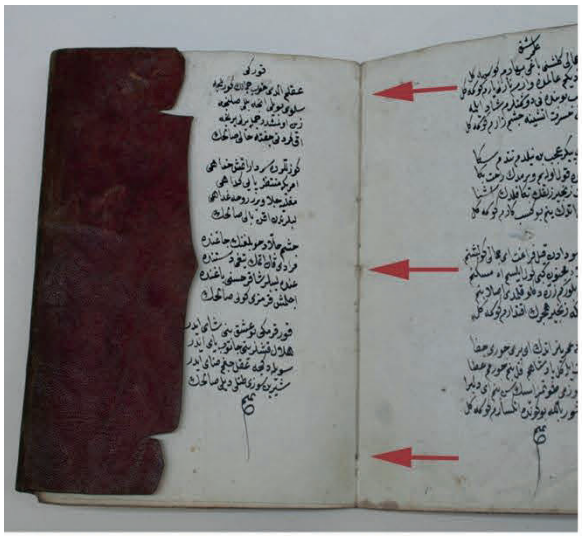

Fig. 144. Or. 1676c (after 1817). An example of a thin textblock, consisting of two gatherings only, sewn on three stations.

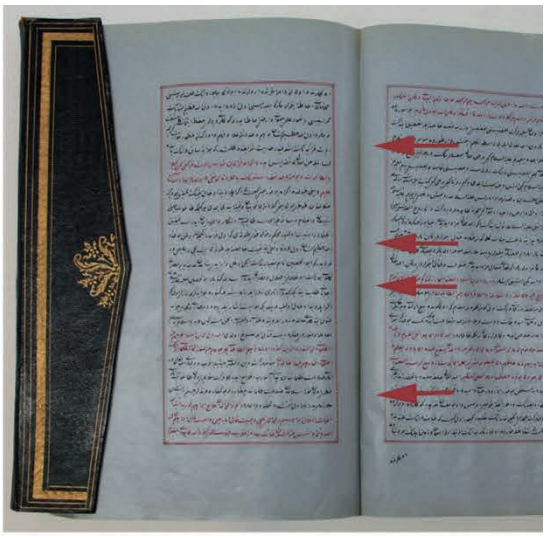

Fig. 145. Or. 11.058. (1863) An example of a textblock consisting of thin machine-made paper, sewn on four stations and provided with endbands.

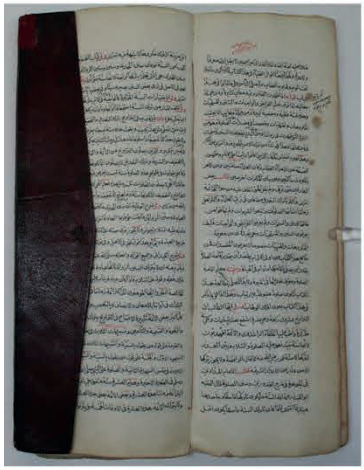

Fig. 146. Or. 2761 (1655, Palestine). The textblock is sewn on six stations and has traditional endbands.

Fig. 147. Or. 12.645 (1888). The textblock is sewn on two cords, the arrows point at where the extending slips were pasted onto the boards.

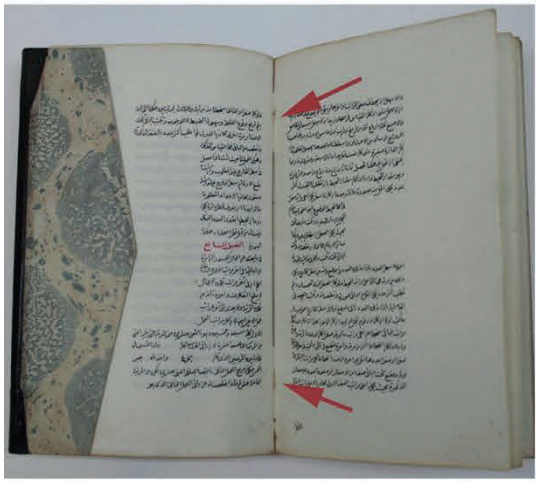

Fig. 148. Or. 25.723 (1788). The tackets are visible between the link-stitch and the endband warps.

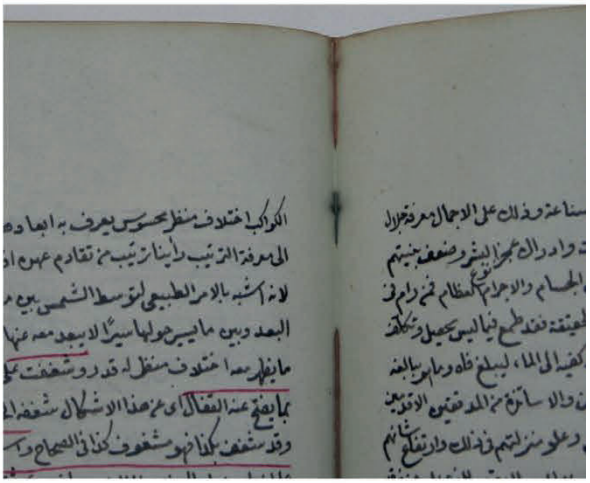

Fig. 149. Or. 25.723 (1788). Detail of one of the tackets.

dluwang which attest the early use of this material. Notwithstanding its flexibility and strength, perhaps the professional binders noticed that the material was more prone to tearing than paper, and as a consequence they may have adapted their sewing system.

Another interesting aspect of the Southeast Asian book tradition is that the craftsmen did not turn to the Chinese tradition for inspiration. Chinese books, consisting of very thin papers, have the fold-line of the bifolios positioned at the front-edge so that only one side of each paper can be written on. This construction dictated the use of the stabbed sewing technique since there were no spine-folds at the spine side to sew. Malay manuscripts in Arabic script clearly are not based on these constructions, nor did the binders borrow the stabbing technique.

1.5 *Sewing on supports*

Sixteen manuscripts have an original sewing structure using supports, and within this group two trends are discernible. The volumes were either sewn in Southeast Asia, in which case they were sewn on flat strips, or they originate from the Middle East or North Africa, in which case they were sewn on two cords. All of these Southeast Asian volumes date from the nineteenth century. Sometimes their sewing supports consist of strips of leather but in a few cases the material is not visible and caused no discolouration, so the use of parchment cannot be excluded.[16] Mostly the gatherings were sewn across, which is the more economical method, though twice the thread passes around the supports. The extending slips of the sewing supports were used to strengthen the board attachment; they were pasted onto the inside of the boards. The lack of data on provenance leaves us without information about the origin and development of this structure, which is very different from the regular Southeast Asian link-stitch sewing on multiple stations. It is quite possible that the introduction of supports is related to the arrival of Europeans in the region.

The volumes in the other group, sewn on two cords, are of a relatively recent date as well. The oldest manuscript was copied in 1859 (Or. 11.524), followed by two more nineteenth-century volumes (Or. 12.645 and Or. 11.969), then two manuscripts dated 1902 and 1924 (Or. 22.934 and Or. 23.341). The cords are so thin that they do not appear as ribs on the spine. Two times a saw-cut in the spine-folds was found which allowed for recessed supports. The gatherings have four sewing stations, with the two cords more or less positioned where the two link-stitches normally would have been, and the outer linking stitches closer to head and tail. [fig. 147] The extending slips of the supports were pasted on the inside of the boards, except for one specimen with laced-on boards, which seems to reflect a direct European influence. Two of these volumes display a further Western feature, as the leather on their spines is turned-in, and one specimen has boards which are cut slightly larger than the textblock; otherwise, the outer appearance of these manuscripts accords with the Islamic tradition, including the presence of an envelope flap.[17] It gives these relatively late manuscripts a somewhat hybrid character, similar to that of many Arabic printed books from the same period, as became apparent from a preliminary examination of the UBL printed Oriental collection, which will be elaborated on in the next chapter.

1.6 *Stabbed sewings*

The most prominent aspect related to the group of stabbed bindings is the high number of Berber manuscripts. The total corpus contains thirteen Berber manuscripts, and twelve of them are stabbed. In two cases a former link-stitch on two stations can be established, with the other volumes the stabbed sewing seems to be original. Two other originally stabbed

[16] This group of supported sewing structures was illustrated in Part Two, paragraph 2.3 and figs. 45-49.
[17] The technique of sewing on supports may have been borrowed from Western binders; Islamic bookbinders stayed close to their own tradition, as is attested by the overall construction, the application of endbands and covering schemes. In the West, books from this period sewn on thin supports almost exclusively have hollow spines.

manuscripts, in Arabic, also originate from North Africa, and one from Macedonia. Four others were purchased in Yemen and the stabbed sewing technique in these volumes is combined with the deviating saw-cut endband structure, which includes an extra stabbing position near head and tail. In a few cases the textblock spine was lined with cloth prior to the stabbing and the extensions of the cloth were folded in the direction of the textblock; then, when the sewing thread pierces the stack of gatherings it also passes through this cloth. After sewing, the extending sides of the lining were folded backwards in the direction of the boards and pasted onto the inside of the boards, for firmer attachment. Noteworthy is that one of the manuscripts now sewn on two cord supports was formerly stabbed (Or. 23.341). As stabbed textblocks do not open very well, this could indicate that one of the manuscript's owners felt that the stabbed sewing hampered his use of the book. It may also hint at the possible use of stabbed sewing as a temporary means of keeping the textblock together, until it was sold and brought to a binder.

The relative smallness of the group of stabbed textblocks hinders the drawing of conclusions. It is obvious that the sewing technique was a cheap and quick repair technique, but to suggest a theory for its use as an initial sewing method would be premature. Most likely there are several reasons, among which is the tradition in West Africa in which many loose-leaved manuscripts circulate, the possible absence of professional craftsmen in peripheral areas and the economy of labour.

1.7 *Tackets*

Only one manuscript was found with tackets in its separate gatherings, Or. 25.723, dated 1787. This is a composite volume, a collection of texts on astronomy, and of the five texts only the third and the last one have been tacketed.[18] The individual tackets consist of small stitches made with a thread, and each gathering is secured with two tackets, close to head and tail. [figs. 148, 149] It is uncertain whether tackets were mainly used to assist the scribe in his preparations for textblock decoration, the pricking and ruling of the folios, or if they primarily served to keep a gathering together while it was circulated for copying purposes; the use of tackets in Islamic manuscript culture has yet to be studied.[19] What is remarkable in our specimen is that although the text is finished, open spaces indicate that illustrations were planned, but never applied. Were these particular gatherings held together by tackets to allow for distribution to the craftsman who would add the drawings? If so, one wonders why the illustration in this manuscript were never made. In order to verify the occurrence of tackets in Islamic manuscripts and understand their function, it seems logical to first examine illustrated volumes, or, as in the example of Or. 25.723, manuscripts that were intended to be illustrated. A subsequent comparison with items only containing text may then shed light on the usage of tackets in this manner.

1.8 *Unsewn manuscripts*

As previously explained, unsewn manuscripts in wrapper bindings are not to be confused with African manuscripts consisting of single leaves. Instead, they are volumes consisting of proper gatherings, usually made of four or five bifolios; the indication 'unsewn' explicitly points out that these objects *could* have been sewn but were not. At best, the gatherings were held together with connective strips of leather, cloth or paper, pasted on the spine of the textblock. The 28 specimens encountered in the UBL were mostly made in the nineteenth century, the oldest is dated 1739, two are from the very early twentieth century. Only a small number of them are localised: three separate volumes and a set of four originate from Egypt,

[18] A tacket, in this context, is a provisional or temporary sewing stitch, to keep the individual bifolios of a gathering together as long as the textblock was not completed.
[19] See J.P. Gumbert, 'The tacketed quire: an exercise in comparative codicology' (2011), pp. 305-308.

all others are of unknown origin. In this respect it is interesting to quote the Arabist Edward William Lane (1801-1876), who lived in Egypt for many years:[20]

> The leaves of the books are seldom sewed together; but they are usually enclosed in a cover bound with leather; and mostly have, also, an outer case (called *zurf*) of pasteboard and leather. Five sheets, or double leaves, are commonly placed together, one within another; composing what is called a *karra's*. The leaves are thus arranged, in small parcels, without being sewed, in order that one book may be of use to a number of persons at the same time; each taking a karra's. The books are laid flat, one upon another, and the name is written upon the front of the outer case, or upon the edge of the leaves.[21]

Lane saw this practice in Egypt in the second quarter of the nineteenth century, which corroborates with the period of manufacture of most of the unsewn manuscripts identified during the survey.

The relative age of these objects of course influences the condition of the paper. Some of the unsewn textblocks are rather heavily used, while others are not completely pristine but certainly show no signs of much use. In Part Two, paragraph 2.1, I suggested the theory that this method of keeping the textblocks together could well have been a retailer's fashion; the connective strips pasted onto the spine of the gatherings would have provided just enough coherence for the textblock to be consulted by a potential customer. However, this kind of usage cannot explain the degree of dilapidation of the heaviest damaged items, unless the unsewn manuscript was eventually sold but not taken to a binder by its new owner. On the contrary, this person must have used the volume in its more vulnerable, unsewn condition. Lane's observation provides another possible answer. Russell Jones explains the comment as an indication of the loose separate gatherings being used for studying practices, as several students could use a single manuscript simultaneously.[22] Another possibility would be that the separate gatherings circulated for copying practices. Such practice may explain the rather thumbed condition of some of these volumes. What contradicts these ideas though, is the application of the connective strips. The strips were pasted onto the textblock spine and thus, they are adhered to the outer bifolio of every gathering. This obviously hinders a free distribution of complete individual gatherings. Were the connective strips applied then in a later stage or only in specific situations?

When the manuscripts were checked for quire signatures, they were found in half of the volumes. These signatures support the theory of the loose gatherings being used or circulated separately. With regard to the content, it appears that these texts are rather common or popular texts. Combining these observations, they suggest that these unsewn manuscripts with wrapper bindings were, indeed, bookseller's items. He could store them in the shop in this fashion since the loose gatherings were well protected and presentable. And while waiting for potential buyers, he could perhaps lend the loose gatherings to students or people who wanted to make their own copy of the work, thereby potentially making a little money out of them in another way. Then, when a customer presented himself, the bookseller could make several offers, varying in luxuriousness and cost. Apart from offering a completely new copy, the bookseller could propose to have the gatherings on hand sent to a bookbinder

[20] The quotation was brought to my attention by Russell Jones, who used it in one of his studies of Malay manuscript structures. See: R. Jones, 'Malay manuscripts: gatherings and soiled pages' (1999), p. 99.

[21] E.W. Lane, *An account of the manners and customs of the modern Egyptians, written in Egypt during the years 1833-1835* (1836), vol. 1, p. 265. The description is illustrated with a pen drawing of books and the implements for writing. The unsewn nature of the book itself is not visible, the drawing represents the book safely stored within its slipcase.

[22] R. Jones, 'Malay manuscripts: gatherings and soiled pages' (1999), p. 100.

to have them properly bound. A more economical option would be for the buyer to purchase the manuscripts in the wrapper binding as presented in the shop. Should the prospective owner chose the latter option, it is possible that the connective strips were added at that moment to provide some connection between the gatherings, probably just enough for the anticipated personal usage of the manuscript.

Other questions concerning this particular type of the manuscript remain. When did the wrapper binding come into use? Where was it first used and is the theory above correct? Equivalents of the type have also been found in the printed collection of the UBL; these have the connective strips and wrapper bindings with a flap quite similar to the unsewn manuscripts, see paragraph 2.4 in the next Part. The occurrence of unsewn printed books with wrapper bindings certainly needs to be looked into further as well.

2 Spine-lining

2.1 *Material*

We have seen that after sewing, almost all textblock spines were lined with either leather or cloth. Leather linings were the commonest in the earlier centuries. In total, 227 volumes were originally lined with leather of which more than 160 are dated. The vast majority of those were made before 1650. No more than eight manuscripts from the eighteenth century were lined with leather, and there are only two occurrences in the first half of the nineteenth century, the latest in 1821. Cloth linings, on the other hand, have been used throughout the ages. In the centuries up to 1500, textile was used as often as leather. Though the use of leather was dominant in the sixteenth century, during the seventeenth century we see a decline in its use compared with cloth. In the first quarter of that century 25 leather and fourteen cloth linings were counted; from 1626 to 1650 there are thirteen leather and eighteen cloth linings; from 1651-1675 there are only eight leather versus 28 cloth linings; and two versus ten were counted in the last quarter of that century. After that, cloth quite convincingly became the predominant lining material; in the eighteenth century it was used on 58 dated manuscripts (88% of the dated volumes in this period) and in the nineteenth century on 88 dated manuscripts (98% of the dated volumes), with 21 occurrences in the twentieth century when leather was no longer used. [chart 4]

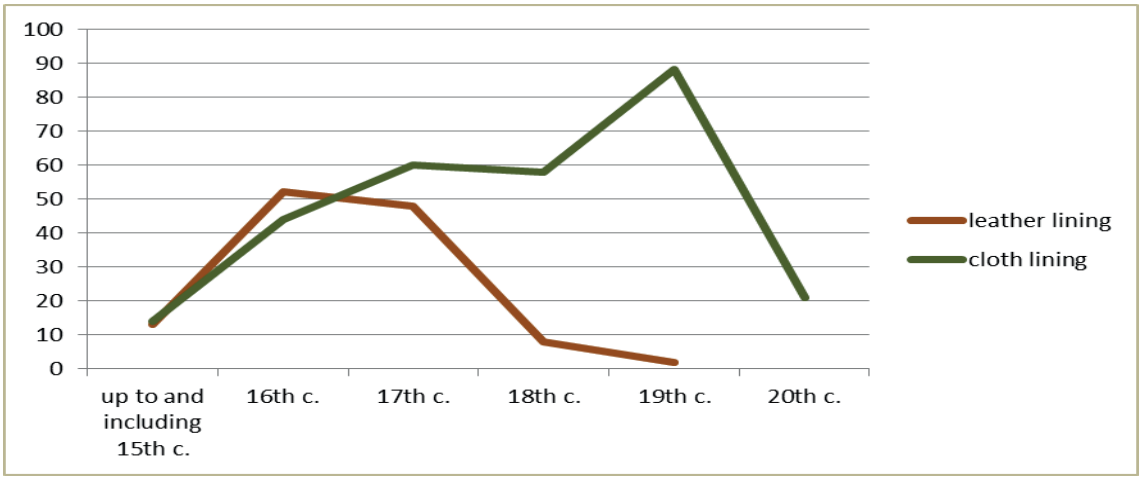

Chart 4. Comparison of the numbers of bindings with leather linings and cloth linings over the centuries, resewn volumes excluded.

2.2 *Function*

The primary function of all spine-linings is to offer stability to the sewn textblock, and to provide support for the primary endband sewing. With the majority of the bindings, the lining material was also utilised to strengthen the board attachment. It is only with regard to this second function of the lining that we can find a difference in the use of leather, compared to cloth. When leather was used, the flanges were always pasted onto the inside of the boards, except for a rebound manuscript in which the original leather flanges were cut and a new cloth lining was applied, and one volume (Or. 25.300) dating from the nineteenth century. This was sewn on supports and the leather lining does not extend beyond the sides of the spine, presumably because the support slips – which were pasted onto the inside of the boards to support board attachment – interfered with the application of the flanges. For all the other volumes, the leather inner joints formed by the extended sides of the lining were left visible, almost without exception. In nineteen instances the leather inner joint is covered by a paste-down, a stub from the doublure or a separate inner hinge, but most of these additional inner joint materials seem to have been applied as a repair.

There are some remarkable differences in the way the extending sides of the cloth lining were treated. First, only 77% of the cloth-lined volumes with an original sewing structure display their function as board attachment. Although this may seem a high percentage, the flanges of leather spine-linings were always attached to the boards except for the two instances described above; the difference in the application between the two materials is therefore noteworthy. In the group of the cloth linings, when the extending sides were not pasted onto the boards, then the flanges were pasted onto the outer leaves of the textblock. This composition was found in 59 instances (14%); in seventeen other cases (4%) the extending sides were cut off altogether. It is difficult to establish a trend in this alternative treatment of the lining. In the group with the flanges pasted onto the gutter of the textblock, the variant sewing structures are in line with the general numbers, although no Southeast Asian sewing methods were found. What is remarkable though, within this set, is the high number of bindings made without a flap: 26 of the 59 volumes (44%, more than twice as much as the average). Although only a few of these manuscripts have a clear provenance (four items were copied in Turkey, two in Bukhara, one in Kabul and one in Pakistan), most of the flapless bindings are written in Persian. With regard to date, two manuscripts were copied in the seventeenth century, nine in the eighteenth, seventeen in the nineteenth and two in the twentieth century. This does seem to point at a development over time which may have taken place mainly in Iran, the Indian subcontinent and Central Asia. Technically, the decision to paste the cloth flanges onto the textblock instead of onto the boards was perhaps made to avoid tension on, and eventually damage to the endbands. For it must have been noticed by binders – as they repaired older works – that cloth linings became detached from the textblock spines over time, in which case the endband threads were prone to break or cut the paper, because the leather covering would pull the cloth lining away from the spine.

It is difficult to find a common factor in the relatively small group of manuscripts with cloth linings of which the flanges were cut in the joints (or that perhaps never extended beyond the width of the textblock spine). The technical motivation for this practice is not known; why would binders want to cut part of the material that could otherwise be used to strengthen the construction? It is possible that some of these textblocks previously had a regular construction; if the joints started tearing but the sewing structure remained intact, a binder might have cut away the remnants of the flanges and pasted the intact textblock into a new binding, or a repaired version of its old binding. The inner joints of these bindings were either finished with extra strips of paper or leather, or they were covered with a paste-down. In the group of cloth linings cut along the joint a similar large percentage of flapless bindings is noticeable (47%). The relation to the eastern areas of the Middle East and Central Asia seems less strong, though.

Four times a cloth lining cut on the bias was found; the treads of the fabric are not aligned with the spine but instead, the fabric is cut diagonally to the grain. It is tempting to think that some binders used this method of lining application because it results in stronger joints; the fabric in the joint is less prone to tearing because of the direction of the treads. However, the number of occurrences is very small, and besides there is one instance, Or. 6292, that clearly points at a random application of the cloth. This manuscript was lined, after resewing, with two pieces of cloth; the edges overlap in the middle of the spine. The piece of lining covering the upper half of the spine has its threads aligned in the common horizontal and vertical direction, while the lower piece was applied on the bias. This suggests an economic usage of scraps of cloth rather than an intentional technical motivation.

No lining at all was found on 24 specimens, the unsewn manuscripts not included. Eight of these are thin manuscripts, up to 1.0 centimetre including boards, which explains the absence of the lining, as well as the absence of endbands on six of them. Five others have a stabbed sewing and no endbands or an irregular primary endband, in which case the omission of a spine-lining is not surprising either. The group includes two Malay manuscripts, which were sewn with a link-stitch on multiple stations and do have a leather covered binding with a flap, but the binding and textblock are not structurally connected, nor do they show traces of former attachment. One of these bindings even has the inside of the leather spine covered with the same paper as the doublures. This strongly suggests that the cover was originally made as a wrapper binding.

Finally, there is a remarkable difference between lining types in Southeast Asia and the rest of Islamic world. In Southeast Asia, the linings are multi-layered and often so stiff that the spine-folds of the gatherings are hardly accessible. In certain cases a combination of layers of leather, paper and dluwang was found. The rigid lining seems to have been used primarily to secure the tiedowns and the shape of the book, with only part of the layers used to strengthen the board attachment.

3 Endbanding

3.1 *Patterns*

It is evident that the chevron sewing is by far the most frequently used pattern in secondary endband sewing. Usually, the weft thread passes underneath coupled tiedowns; they can be bundled in the twos or threes but alternating patterns such as 1-2-1-2 were also found. Whatever the exact division, the regularity of the sewing patterns demonstrates that binders did not sew the secondary endbands randomly. The only four manuscripts with a different endband at head and tail, either in colour or pattern, may be the result of later repairs, unforeseen circumstances such as running out of the right colour or simply the inexperience of a starting craftsman.

While the predominant endband type is found throughout the centuries and in all regions of the Islamic world, it is quite clear that in Southeast Asia specific variants were developed. [chart 5] They are discernible by several distinctive characteristics, although not all these features are necessarily found in each endband. The first feature is the fringed sides of the endbands, made from either the endband core or the secondary sewing thread. Then the secondary endband thread may be tied around the base of the endband once or twice, after sewing. Thirdly, the endband core often consists of thread or strips of cloth and sometimes of bamboo-like plant material. Finally, the secondary endband may be sewn with three colours. Perhaps equally important is that none of these features was found on manuscripts originating from other regions, therefore, it seems reasonable to conclude they

are part of the Southeast Asian tradition.[23] As such, they represent valuable characteristics in the material framework.

Another noteworthy variant within the group of traditional, chevron-type endbands, is the saw-cut endband. The difference is a technical alteration of the primary sewing but rather stands out, which is why the type is elaborated further in paragraph 3.2 and 3.4 below.

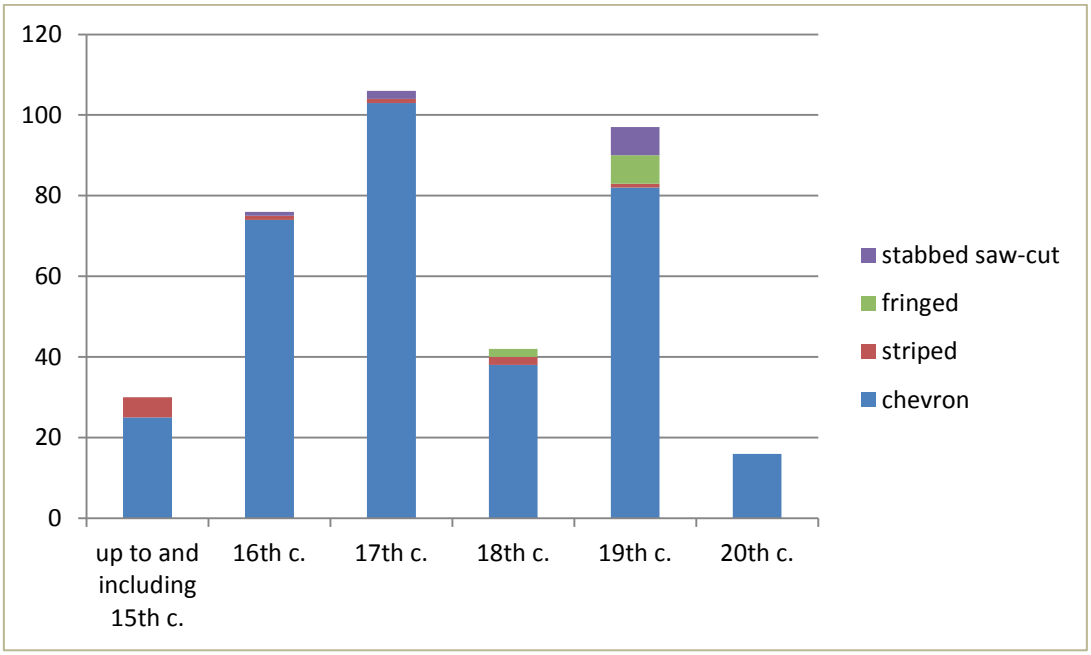

Chart 5. Occurrences of secondary endband types on dated manuscripts.

Apart from the chevron type, several other secondary endband patterns were distinguished, although they are closely linked to the predominant type. Technically there is little difference to be found, except for the direction of crossing the threads. The majority of these diverging endbands display the use of the same type of thread for the link-stitch sewing and primary endband sewing, indicating that these endbands are part of the original manuscript structure. There is a relative high occurrence of the diagonally and vertically striped pattern in Mamluk times, which corroborates the early literary sources in which different patterns are mentioned. The origin of only a few of the manuscripts on which they were found is known; the earliest original striped pattern is found on a manuscript dated 1369 and according to Weisweiler it originates from Iran, others were made in Egypt or Syria.[24] Two of the early specimens display flaws in the pattern: part of the rows consist of inverted sewing, resulting in a few chevron stitches amongst the striped design. [figs. 150, 151] It is feasible that similar errors originally led to the development of the variant patterns. Striped endbands were still made in the Middle East in the eighteenth and nineteenth centuries, and also as far away as Southeast Asia. Another variety was created by changing the colour of sewing thread with every pair of sewing tours, which caused the chevron pattern to alternate, or, in other words, a chequered pattern was created. [fig. 152] This may be the variant that was referred to in the historic treatise of Bakr al-Ishbili as the 'chessboard-like pattern'.

The eight specimens of the diverging 'basic wound endband type' display a strong resemblance. They were only found on Persian manuscripts, although two of those also

[23] See below, paragraph 9. Images can also be found in Part Two, figs. 112-115.
[24] M. Weisweiler, *Der islamische Bucheinband des Mittelalters* (1962), p. 181.

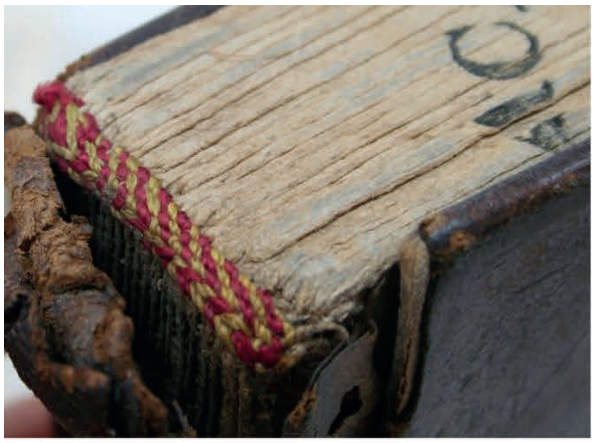

Fig. 150. Or. 2072 (1404). A diagonally striped endband with mistakes in the sewing tours adjacent to the spine.

Fig. 151. Or. 546 (1224, though resewn). A diagonally striped endband with mistakes in the sewing tours close to the spine leather and in the centre, where part of a chevron is formed.

Fig. 152. Or. 11.913 (1630, Syria). A chequered chevron pattern, the red and yellow chevron alternate every second sewing tour.

Fig. 153. Or. 546 (1224, though resewn). The endband core consists of what appears to be a tightly rolled-up piece of parchment.

Fig. 154. Or. 25.662 (1920, probably Yemen). An endband with extended core slips, fastened on the textblock with a stabbed sewing.

Fig. 155. Or. 2611 (1767). An endband sewn without a leather core. Instead, the textblock edge was saw-cut and a thread, passing in this incision, functioned as a core to prevent the endband from slipping towards the spine.

contained Arabic text (one of the volumes being a dictionary, the other a *Diwan*); one of them is localised in India. Regrettably, the three dated volumes have traces of former sewing, which renders the dates unusable for dating the endbands and bindings. The bindings certainly seem to be related; for two of them exactly the same centre stamp and flanking stamps were used (Or. 1654, Or. 1672) which seems to point to one and the same workshop. The eight bindings have a full leather covering in common though the technique of application differs: two specimens were made with the two-pieces technique, the others are covered in one piece of leather, including the ones decorated with the similar stamps. Does this indicate that a bookbinder used the one and two-pieces technique capriciously? Or did two different bookbinders, each with their personal preference for a specific method, work on a set of bindings using similar materials and technique of endbanding? This remains speculative, and unfortunately clues as to where or when the work was conducted are absent.

3.2 *Tiedowns*

The Islamic manuscript tradition is characterised by consistency, especially with regard to the function of the endbands. As explained above, bookbinders significantly enhanced the strength of a relatively simple but quick sewing structure in this way. The quality of the whole structure therefore depended on the number of tiedowns in relation to the number of gatherings; as long as the ratio was 1 : 1 the construction was sound. It is only in the second quarter of the nineteenth century that the application of the primary endband structure started to change. In thirteen volumes it was noted that they were not provided with as many tiedowns per endband as gatherings. The earliest occurrence of this 'careless' primary endband sewing is a manuscript dated 1844, purchased in Yemen; none of the manuscripts is localisable by information provided in the colophon. When these items were studied closely it appeared that the tiedowns were not only applied sparingly, they were also not always sewn in the inner bifolio of the gathering. On the contrary, they seem to have been applied by randomly inserting the needle in the textblock which could even result in a tiedown positioned between gatherings.

Why did binders disregard a step in the process that had proven itself over so many centuries? Did they no longer realise how crucial the primary endband was for the longevity and strength of the binding structure? It is tempting to account for this development by pointing to the influence of Western binders, who started economising on the number of endband anchoring threads from the end of the fifteenth century onwards. However, by this time (the second quarter of the nineteenth century) Western binders had economised further and often only applied stuck-on endbands made of cloth. The lack of information on the origin of these volumes prevents further conclusions. The three items purchased in Yemen suggest that the decline in technique may have developed in the peripheral parts of the Islamic world. Binders in these regions were perhaps trained less well than craftsmen in the larger cities. It is feasible that when one has not learned the underlying importance of certain steps in a process, those steps are more prone to erosion. Apart from that, the absence of tiedowns centred in the spine-fold is rather logical for the saw-cut endband type (which was found in Yemen, see paragraph 3.4 below). With these items, the thread in the kerf prevents the gatherings from opening well into the gutter, so the binder had no easy way to discern the centre of the gatherings. In these instances, the tiedowns mainly serve to provide an anchor for the secondary endband sewing.

3.3 *Endband cores*

As leather was the standard material for endband cores, it is especially interesting to look for trends in the few anomalous materials – parchment, thread and textile strips, and twig-like plant material. The twig cores as well as the textile strips were encountered only on Southeast Asian manuscripts. Though strips of leather were also used in this region, a significant number, more or less a third, contain the alternative materials. As for the two manuscripts

with parchment endband cores, they seem to share no other characteristics. Or. 241 is undated but probably fifteenth century and Or. 546 is dated 1224, but is resewn and therefore the endband must be of later date. Both volumes have a diverging endband pattern, though the endband of Or. 241 is a chequered chevron and Or. 546 has a diagonally striped endband. [fig. 153]

While the textile strips on Southeast Asian manuscripts often protrude beyond the secondary endband sewing, so as to form the fringes of these endbands, usually any extension of leather cores were cut once the endband was finished. There are a few inconsistencies, where the binder appeared to have forgotten to cut these cores. However, some of the later volumes on which extending cores were found suggest a regional variety rather than an unintentional omission. These manuscripts are provisionally related to Yemen, where they were purchased. The leather cores are rather broad and their extending parts were not only pasted onto the textblock, but also stabbed so as to attach them with a thread as well. [fig. 154] Eleven manuscripts were provided with an endband for which a core was never used. [fig. 155]

3.4 *The saw-cut endband*

At first glance the saw-cut endband appears to be just another chevron sewn endband, albeit a somewhat crude version. When examined closely, however, one can notice a saw-cut in the head and tail edge, a few millimetres away from and parallel to the spine. In this incision lays a thread which is in some way fastened on the textblock spine, with or without being pulled through stabbed holes. Of this saw-cut endband type sixteen specimens were included in the survey.[25] Although most of them are dated, only two are actually localised, both in Yemen. Seven others, however, were purchased in Yemen in 1932, which also suggests they were manufactured in Yemen. The oldest manuscripts in this set were transcribed in the seventeenth century but the current sewing structure is not their original one; the ones without traces of former sewing stations are dated late nineteenth or even early twentieth century. As for their appearance, there are some noteworthy similarities between the volumes, which seems to indicate that the older manuscripts were rebound around the same time as the much younger volumes. All endbands except for one are sewn with a self-coloured and a red thread. The one purplish specimen is faded to such an extent that it has become difficult to tell its original hue; it may well have been a scarlet red. All these volumes have in common a slipshod primary endband sewing: the tiedowns are not sewn regularly and through the midst of each gathering, they seem to function primarily as a vehicle for the secondary sewing. Another characteristic they have in common is a rather crude secondary endband sewing. Eleven items have no leather or other endband core, the recessed thread served as the base on which the tiedowns were anchored. In a few cases this recessed thread seems absent. When a leather core was used, its extending ends were attached to the textblock adjacent to the joint, as described above. The fastening of the secondary threads is messy and sometimes the threads seem to be affixed in the joint instead of being attached through the gatherings. The thread is fairly thick and could well be cotton instead of silk, and not one of the endbands displays more than four sewing tours.

3.5 *Absence of endbands*

Interesting varieties were found in the endband sewing systems and the use of materials, but examination of the manuscripts without endbands also sheds light on the considerations of the craftsmen. It appears that endbands were omitted in a limited group of manuscripts only. They are either very thin, consisting of one or two gatherings, in which case they were sewn

[25] It is noteworthy that this particular feature was encountered on a larger number of manuscripts, however, the structures of these manuscripts were damaged to such an extent that they were deselected for present study.

with a link-stitch on multiple stations, as explained above. The outer sewing stations were then positioned close to head and tail, eliminating the need for an endband sewing which would have been difficult to produce on these thin volumes. Repaired volumes, now stabbed and with considerable paper damage, form the second group. Their condition accounts for the absence of endbands; former endbands were lost and the paper damage did not allow for new endband sewing. Obviously, the unsewn manuscripts with connective strips and wrapper bindings were never provided with endbands, as endbands are inextricably bound up with the sewing structure. Thus, they form the third group without endbands.

4 Covering

4.1 *Full and partial leather*

The earliest bindings in the Arabic collection are, without exception, full leather bindings. Unfortunately though not unexpectedly, repairs to spine and joints have caused substantial damage to the material evidence of many of these early bindings. The damages themselves, or the repairs subsequently carried out, often impair the evidence that can otherwise be found on the spine of full leather bindings indicating the use of the one piece or two-pieces technique. As a result, in the centuries up to and including the fifteenth century, the category 'full leather, technique not detectable' is larger than either of the other two groups of full leather bindings. [chart 6] Over the next centuries, the numbers of items in this category decreases significantly, relative to the number of full leather bindings in the other groups.

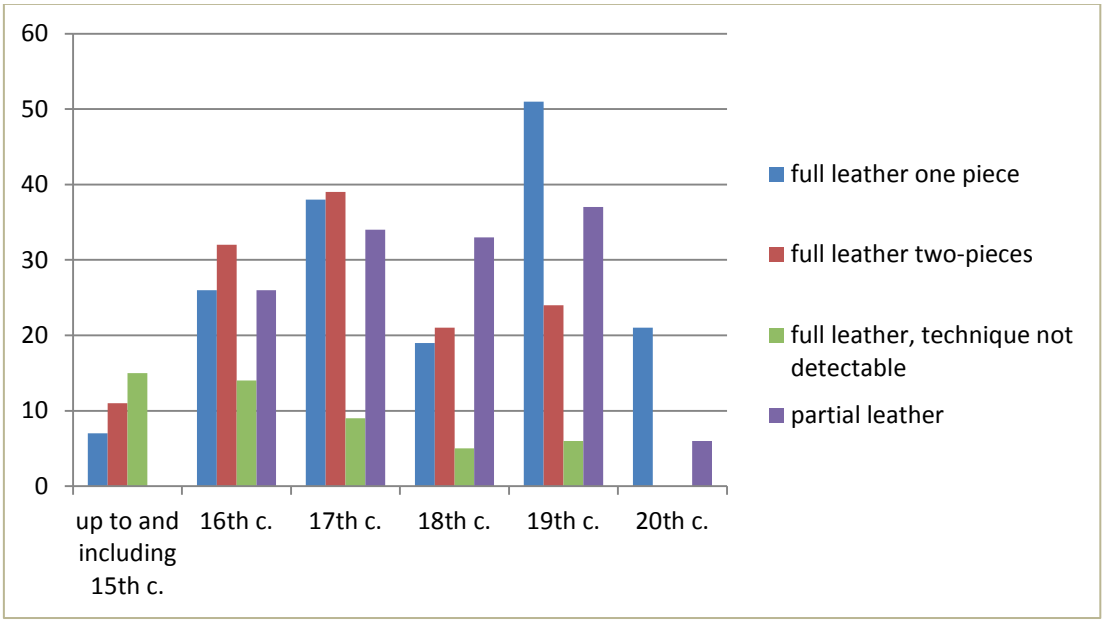

Chart 6. Comparison of basic covering types throughout the centuries, resewn and rebound manuscripts excluded.

The chart also illustrates the lasting importance of leather as a covering material; in none of the periods does the number of partial leather bindings exceed the total number of full leather bindings. The two-pieces technique, however, loses ground over the nineteenth century, and examples from the twentieth century were not found. The partial leather binding appears on the scene in the sixteenth century, but it never becomes the prevalent covering type. In the sixteenth and seventeenth centuries, the dominance of a full leather covering is found in almost similar percentages, respectively 73% and 72%. In the eighteenth

century the partial leather binding gained more popularity; the numbers of full leather bindings make up 58% of the volumes, in relation to 42% of partial leather bindings. From the nineteenth century onward, full leather bindings regain their dominance; 69% of the nineteenth-century bindings and 78% of the twentieth-century bindings in the UBL collections were bound in full leather. These figures contradict the idea that the partial leather bindings with paper covered boards increasingly replaced full leather bindings for economic reasons.[26] Instead, it seems that the availability of decorated papers present an alternative covering scheme and their use may represent a shift in fashion, while the over-representation of full leather bindings in peripheral areas may signify the unavailability of decorated papers in those regions, and suggests that leather may have been cheaper than decorated papers.

Although the present study did not include binding decoration and tooling, it is worthwhile to mention the frequent occurrence of leather overlays (often called 'onlays'), on bindings from different geographic origin (though not Southeast Asia) and from the sixteenth century onwards. It is evident that this technique was used far more often than suggested by Adam Gacek.[27] [fig. 156]

4.2 *Full leather bindings in one and two pieces*

The earliest dated occurrence of the two-pieces technique is a manuscript cautiously dated 1218 (Or. 122).[28] The earliest dated volume covered in one piece of leather is copied in 1321 (Or. 177). Up to the eighteenth century, the numbers in each group do not differ widely, though the two-pieces technique appears to have been somewhat favoured throughout the centuries. Over the course of the nineteenth century we can detect a change in this preference as the two-pieces technique went out of use and from the twentieth century no examples of the two-pieces technique could be identified. It has already been said that the two-pieces technique has been long overlooked, or, if it was noticed, scholars in Islamic manuscript studies failed to mention the observation. When it finally came up in publications, the authors were conservation specialists.[29] The dates now found for this particular method are of significance as it appears that the technique developed far earlier than first suggested.[30]

As both techniques are found on bindings from Mamluk times onwards, the question arises whether trends can be discerned that are regionally dependent. It appears that in Central Asia and Southeast Asia, the single piece of leather was the prevalent technique. This triggers the question why the two-pieces technique was preferred to the use of one piece in the other parts of the Islamic world? Reflecting on the rationale behind this technique in Part Two, I suggested that the method seems to be related to the embellishment of the boards. The tooling, and in particular the application of pressure to the boards logically requires a firm surface to work on, which is not provided by the manuscript itself. Therefore, it seems logical that binders developed a technique which allowed them to work on the boards apart from the textblock. The findings of the survey, however, press us to think about the technical differences between the earlier tooled bindings – made with small tools containing discrete

[26] This development was suggested by François Déroche, *Islamic codicology* (2006), pp. 266-267.
[27] Gacek states that only one example has thus far been recorded; *Arabic manuscripts. A vademecum for readers* (2009), p. 171.
[28] This date was given by Voorhoeve, but according to Witkam, this cannot be corroborated by the manuscript; see J.J. Witkam, *Inventory* vol. 1 (2007), p. 57.
[29] K. Rose, 'Conservation of the Turkish collection at the Chester Beatty Library' (2010), pp. 47-48; K. Scheper, 'Refining the classification of Islamic manuscript structures' (2011), pp. 366-368; J. Benson, 'Satisfying an appetite for books' (forthcoming).
[30] Benson places the first occurrence of the two-pieces technique at the end of the fifteenth century, p. 2 of his text; Rose found several examples of the technique on sixteenth-century bindings in the Chester Beatty library and suggested an Ottoman origin, K. Rose, 'Conservation of the Turkish collection at the Chester Beatty Library' (2010), p. 47.

Fig. 156. UBL Acad. 262. An example of a leather overlay in a corner stamp.

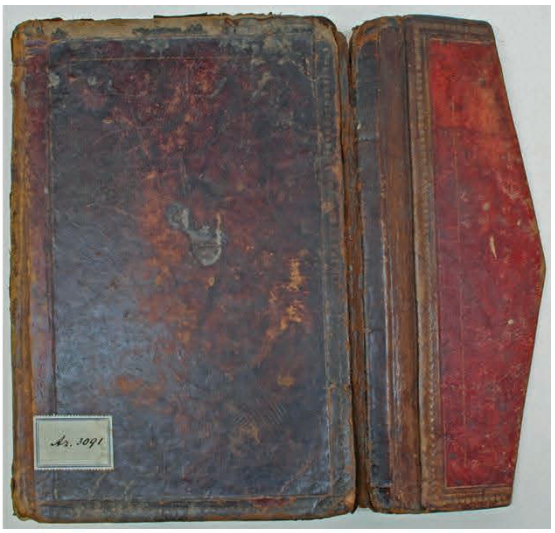

Fig. 157. Or. 8350. A binding with turned-out doublures. The back cover and flap display the discolouration of the leather: the edges and fore-edge flap covering were green, the panels red.

Fig. 158. Or. 8350. Detail of the fore-edge flap at the tail. The separate strip of leather covering the fore-edge flap overlaps the green edges of the boards (which are the turn-outs of the doublure).

Fig. 159. Or. 8350. Detail of the flap, showing the cut line between the red leather and the green leather edges.

Fig. 160. Or. 1570. A composite leather binding with turned-out doublures.

Fig. 161. Or. 1570. Detail of the fore-edge flap. The edges of the separate pieces of leather are visible on the board-panel side of the gold tooled and dotted line. The differences in the structure of the pieces of leather is also noteworthy.

patterns, applied to create a larger overall design – and the stamped bindings of later times, made with panel stamps much larger in surface. With these stamps, the complete centre piece could be pressed into the leather in one action. The technique using two-pieces of leather seems to have originated with the Mamluk binders.[31] Or. 122 is the earliest example present in the UBL. Its covers are indeed finely tooled. Even though the application of the small tools onto the leather surface would not have required heavy pressing, one can imagine that it would have been easier to execute the work when the board surface – onto which the tools needed to be applied – was directly placed on a flat surface rather than a raised level, that is, the book itself. The elaborate designs of these early bindings involved the use of multiple small tools, hours of work and high concentration. Every means to ease the work would have been welcomed, and thus it is plausible that this led to the development of the two-pieces technique, which allowed for individual tooling of the covers in the most practicable circumstances.

In early Ottoman times, a new type of tool was developed that contained the entire design of a centre piece or a corner piece. In terms of 'time management', the development must have been a major improvement; pressing only a few stamps to create a complete design would have saved considerable time compared to the traditional decoration method using multiple small tools that needed to be pressed individually and sequentially. However, although the application of the decorative elements could now be executed more quickly, it is quite plausible that binders stuck to their working routine when they were used to preparing the boards off the textblock. This is especially true since the larger stamps also needed considerably more pressure in order to leave a proper imprint in the covering leather. To achieve a good result, a firm working surface was required, so working with two separate pieces of leather was still advantageous. We may assume that craftsmen held on to a working system, as long as it was opportune to do so, and bookbinders had no reason to change the method of the two-pieces technique when their decoration techniques developed and tooling became stamping. Moreover, as the technique was practicable in general, it also continued to be used in times when an increasing number of modestly tooled or even plain bindings were produced. This explains the domination of the two-pieces technique over the covering method using only one piece of leather. The continuous use of the technique, throughout the manuscript period, therefore provides no clues to localise or date a binding.

It is important that so far, to my knowledge, this technique has not been reported to have been used on leather bindings from other traditions, either in the Orient or in the Western world. Some caution is needed, however, for even the two-pieces technique widely used in Islamic bindings has only recently been recognised and described in the literature, so it is conceivable that the method has been used in other traditions but is likewise overlooked or ignored. Presently, however, it seems that the technique is typical for Islamic bookbindings, and as such it is an important characteristic, rightfully deserving to be recorded when a binding is described in a catalogue entry or condition report.

4.3 *Composite leather bindings*

The exceptional full leather bindings, composed of several pieces of leather, sometimes executed with turn-out doublures, were already described technically in Part 4, paragraph 2.5. Their number may be small, but the remarkable techniques used to make these bindings are well worth examining further (Or. 1570, Or. 8261, Or. 11.050, Or. 11.052, and Or. 14.366).[32]

[31] Whether the earlier binding type, the box-binding, ever involved the use of separate pieces of leather to cover both boards, is presently unknown. We do know, however, that wooden boards were used, which by nature provide a firmer surface for leather decoration.

[32] Or. 1570 is dated 1560, the manuscript was resewn before 1840 when it was purchased by the library. Or. 8261 is not dated. Or. 11.050 probably dates from the late nineteenth century. Or. 11.052 is dated 1768, and Or. 14.366 is dated 1806. These manuscripts are all luxurious copies, with illuminated opening

One of them, Or. 1570, is a *Diwan* written in Persian and dated 1560. The spine-folds of the gatherings are repaired so the manuscript is resewn, and as a consequence, the binding is presumably not contemporary. [figs. 160-163] It has turn-out doublures: the leather doublures fully cover the inside of the boards and subsequently are folded over the board edges onto the exterior of the binding. Thus, the turn-outs cover the edges of the boards. The exterior surface of the boards are also covered with leather, and the fore-edge flap is covered with a separate piece of leather. In addition to these multiple pieces of leather, we can also recognise a two-pieces technique on the spine. The exceptionality and complexity of this composition makes one wonder if the doublures in question were not re-used reversed leather covers. After all, the doublures were not attached to the textblock with a stub but the leather appears to disappear behind the textblock spine. However, after closer inspection it seems safe to conclude that these leather doublures were never used as the exterior of a bookbinding. The black-greenish doublure leather has no tooling and is only sparsely decorated with two frame lines painted with silver close to the edge, a modest decoration quite typical for Ottoman leather doublures. Furthermore, there is no trace of abrasion or other sign of use, which would have been apparent had the boards formerly been used as the outer covers of a manuscript. Nevertheless, the leather is not the primary spine-lining; a layer of blue cloth through which the primary endbands are sewn is clearly visible. This cloth lining has no extended sides and therefore no function in the (present) board attachment. Whether the tiedowns were also sewn through the leather lining – continuing into the doublures – cannot be ascertained. The turn-outs do not overlap the leather panels on the outside of the boards, nor vice versa; the parts neatly adjoin each other. This is one of the most noteworthy aspects of this type of covering, since usually we find pieces of leather overlapping. In this case, the binder intentionally cut the different parts of leather exactly to size so that they abut, but do not overlap.

A comparable binding was encountered among the deselected manuscripts. This specimen, Or. 8350, is in poor condition and meddled with to such an extent that one doubts that the connection between textblock and binding is original; the spine is too wide, there is an older cloth lining, the textblock now has a stabbed sewing though it was formerly sewn in the spine-folds, and the inner joints are tattered and repaired.[33] Nevertheless, due to its poor condition, this binding offers some interesting clues. The leather doublure is olive green, although the turn-outs appear to be a dull brown, a discolouration caused by light. The spine and fore-edge flap covering consist of the same leather, whereas the panels on the outer surface of the boards are red leather. [figs. 157-159] On the front and back cover the original intensity of the colour is almost indiscernible since dirt and discolouration have turned the red into a colour not much different from the edges and the spine. The flap, however, which was protected from light and dirt, bears witness to the contrasting colours. Here, the tooling and gold painting along the borders are also better preserved and this part of the binding still offers a glimpse of the binding's former splendour. But why did the binder chose to make it with such a complicated and rare technique as turned-out doublures? Closer examination of the damaged edges of the covers sheds light on this question. Underneath the fragmentary brown turned-out edges we find, in a few places, a bright red leather. This is also cut, and adjoins the centre panel, and in it we see the same impression of the small dotted tool, but no gold paint. Does this indicate that the edges were formerly covered with separate strips of red leather, almost the same colour as the leather panels? No! It is the knife-cut between panel and edges that is causing the confusion, giving the impression that the red strips on the edges are separate from the red panels. But at the same time this knife-cut may provide the answer to this construction. It seems that at one time the boards of this binding were covered in the

pages and golden frame-lines throughout the textblock; thus, the richly decorated bindings accord with the textblocks.

[33] Or. 8350 is an undated manuscript formerly belonging to the collection of Paul Herzsohn (1842 - 1931).

splendid red leather. However, wear and tear caused damage to the edges of the covers and quite possibly also to the board attachment. When repair could no longer be postponed, some binder decided to reuse every bit of the original that could be salvaged. The cloth lining was kept, although the flanges were cut off (if they were not already torn off along the inner joint), and the covers with their old red leather covering were used in the new composition. For board attachment *and* covering of the tattered board edges, the binder applied a new – olive green – leather lining to the textblock spine, wide enough so that this leather covered not only the interior of the boards, but also the damaged edges. Then, after turning this green doublure leather around the board edges and over the red leather, a ruler and a sharp knife were used to cut the excess of green leather at a distance of more or less a centimetre from the board edge. Thus a straight line was created which allowed the binder to take away the excess of green leather on the panel side of the cut line, leaving a neat green leather frame around a red panel. There was no need to scrape away the excess of red leather now underneath the green edges, for it was not visible and did not show as it was not bulky. To further disguise the intervention, the binder tooled a border of small dots in the newly applied leather edge and painted it gold; the binding must have looked as though it was new.

Although Or. 1570 is in much better condition and offers no direct clues for the theory that the turn-out doublures might indicate an interventive repair, at least one similarity catches the eye: the cut flanges of the cloth lining. Also the resemblance between the contrasting shades of leather and the pattern of the tooled border is intriguing, even if it is not conclusive evidence of repair. But looking at these borders it is strange that the shade of gold used to paint the little dots is so different from the gold used for the almond shaped stamp in the centre. [fig. 162] As if to disguise the difference, the diverging gold paint was also applied in a thin line around the centre piece, an awkward use of decoration, in fact, and crudely executed. The gold paint could have been used to mask the time difference between the two separate binding processes. Further detective work revealed one other small detail that corroborates this theory. The small stamp in the point of the envelope flap is placed so close to the edge that the green leather borders needed to be adjusted in order not to intervene with this part of the decoration. [fig. 163] In the logical order of events this would not have been necessary, for had the turn-out borders been originally part of this binding, then they would have covered the edges before the binder took his tools to apply the decorative shapes. In that case he would either have positioned the stamp a little more to the left so that the stamp did not interfere with the coloured leather edge, or he would have mistakenly applied the stamp partly onto the green leather, with the result that part of the recessed stamp on the right side would have a different colour than the rest. The fact that neither is the case, and that conversely, the shape of the leather turn-outs is adjusted to the position of the stamp indicates that the stamp was there first and the edges applied later. This certainly supports the repair theory.

The only other binding in the selection with a similarly worked leather doublure is Or. 8261, an undated composite volume. [figs. 164, 165] However, the method to make this binding was quite different. After sewing, the textblock spine was covered with a caramel-coloured leather, extending on both sides so as to cover the textblock fully. Remarkably enough this leather was adhered on the flesh side, contrary to the usual way of lining the spine with leather. Subsequently red leather doublures were applied, flesh side to flesh side as a result of the reversed application of the leather lining. In addition, these sheets of red leather were larger than the textblock and their protruding parts were turned-out over the edges of the caramel-coloured leather which was cut flush with the textblock. Finally, a piece of leather of the same colour and structure as the doublures was used to cover the spine, which meant that this part was adhered with its flesh side onto the hair side of the underlying piece of caramel-coloured leather. The sides of this red leather on the spine were neatly cut just beyond the outer joint. Thus a border of red leather was formed to frame the brown

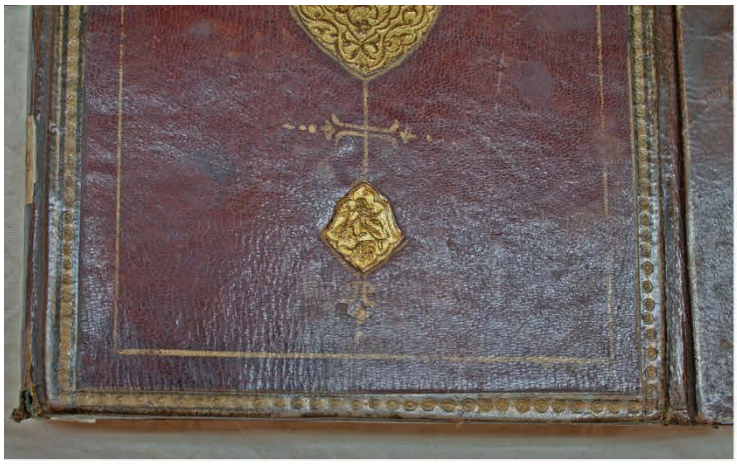

Fig. 162. Or. 1570. Detail of the back cover. The gold of the central stamp and flanking stamps is of a different colour than the gold that was used to decorate the dotted frame lines and the painted lines around and between the stamps.

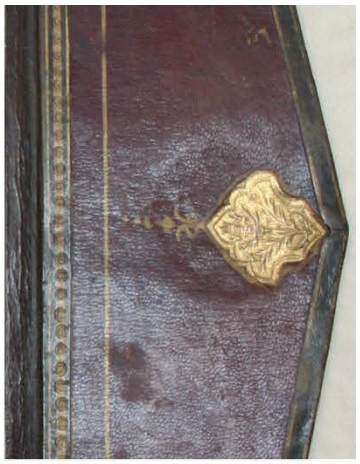

Fig. 163. Or. 1570. Detail of the envelope flap; the edge of the turned-out leather doublure is cut to fit the small stamp in the point.

Fig. 164. Or. 8261. A composite leather binding with turned-out doublures.

Fig. 165. Or. 8261. The doublure of the back cover; the edges of this leather are turned-out to cover the edges of the exterior.

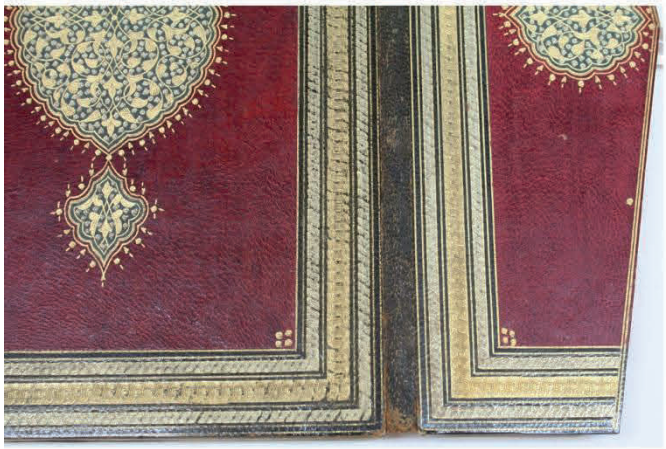

Fig. 166. Or. 14.366 (1806, probably Istanbul). A composite leather binding with yekşah technique.

Fig. 167. Or. 14.366 (1806). Detail of the yekşah technique.

board panels. The covers, in this specimen, contain no cores and consist of the caramel-coloured leather and the red doublures only.

The rationale behind the making of the turned-out doublures remains speculative. Working with extending doublures seems a revolutionary way of covering board edges, which in a way is a reversed approach to the binding process. Indeed, in the more typical binding the application of the doublure is one of the last steps in the process, when the textblock is already attached to the covers and the leather exterior covering is in place. With this novel approach, the doublures must be applied before the exterior board covering is finished. Apart from being contrary to the common procedure, it seems to have been more complicated, and as an innovation it appears not to have been successful, given the numbers of replication.
It is easier to comprehend the making of the composite leather bindings which have regular (that is not turned-out) doublures or paste-downs. The colour differences between the leather on the edges and the leather in the centre of the panels support the visual effect of the decorative scheme of frame lines and centre pieces, while the application method is only a variant on the well-known and much used covering scheme, the çaharkuşe method. All three examples in the selection originate from the eighteenth and nineteenth centuries. Of these, Or. 14.366 is most remarkable as it is a very elaborately tooled binding, dated 1806 and probably written and bound in Istanbul.[34] Different colours of leather were used to enhance the beauty of the decoration; one colour was used along the edges of the covers but also for the central medallion, which was tooled on a leather overlay. The burnishing and etching of gold tooled patterns is called *Yekşah* in Turkish. [figs. 166, 167] Other known yekşah bindings were made from the seventeenth to nineteenth century and it appears to be a practice typical of the Turkish bookbinding tradition.[35]

The relatively recent development of these composite leather bindings – given the much older but comparable çaharkuşe covering technique – and the occurrence of this composite technique on repaired bindings suggest that it may have been used as a repair technique first. Mending the damaged edges of full leather bindings with contrasting strips of leather was an economic and aesthetically pleasing method of reusing most of the older material. In later centuries this may have transitioned into an original binding technique in order to produce aesthetically pleasing, luxurious volumes.

4.4 *Limp leather bindings*

Although the soft, flexible, wrapper-like leather binding seems almost an anomaly in the group of full leather bindings, it occurred often enough to form a small subcategory. The limp leather bindings are made without boards, and often even without a doublure or any other strengthening on the inside. Most limp bindings in the corpus have no fore-edge and envelope flap, they often lack turn-ins and are decorated hardly at all. On the other hand, they have a proper construction, they are sewn, lined and provided with an endband as with any other Islamic manuscript. Despite the shared characteristics, several sets could be discerned.

The earliest true limp leather binding is dated 1620, for which no location was given in the colophon; in the latest example, a manuscript which is dated 1779, again no origin was given. The oldest dated one belongs to a set of six bindings with several striking similarities. The most important of these is the type of thick leather which was used, possibly camel hide,

[34] Legacy of C. van Arendonk (d. 1946); the volume consists of two texts in the hand of one copyist, see: J.J. Witkam, *Inventory,* vol. 15 (2007), pp. 166-167.
[35] This decorative technique has not widely been researched, but lately a small collection of endowment deeds bound in yekşah bindings was studied by Paul Hepworth, '*Yekşah* tooling: a technique not an identity' (forthcoming 2014). An example was also published by Z. Tanındı, 'The Ottoman palace workshop' (1990-1991), p. 97.

which has a pronounced grain pattern, and is soft and firm.[36] These leather covers were all cut flush with the textblocks on all sides, so that the bindings have no flaps. With the exception of the largest volume, none of the leathers were decorated; the largest one has a blind stamp in the centre of the covers, vertically flanked by blind tooled lines. The spines of the manuscripts were all lined with leather, the flanges of which were pasted onto the inside of the leather binding, but prior to this the endbands were sewn with thin coloured silk. Two volumes in this set are manuscripts from the fifteenth century, but they are resewn and the present limp cover is not the original binding. One other manuscript can be dated to the first half of the seventeenth century since the author of the text was a contemporary of Levinus Warner. As the other undated volumes were also in Warner's possession they can be roughly dated in the first half of the seventeenth century as well, or at least before 1665. The physical evidence thus points to a set of manuscripts bound on commission by a single bookbinder. The similarity of the hands used to write the title on the tail edge of four of these manuscripts confirms the suggestion that they derive from one owner. [figs. 168, 169]

One wonders who wanted such thick, almost wrapper-like leather covers for his manuscripts. Who ordered them, with what aim? The texts cover diverse topics, for example a treatise on horsemanship and cavalry, a linguistic work, a composite religious volume, a work on family names and a biography. It seems they belonged to someone who spent money to build his own personal library but who choose to have the texts put into simple, relatively cheap but functional and durable bindings. These are books intended for use, they are not meant to impress by their beauty. A few more sets of such bindings were encountered, which can be traced back to different periods and binders, according to their physical characteristics and provenance information.[37] [figs. 170-172] Apparently, bookbinders offered this low-budget option to their customers as an alternative for more costly bindings with boards, more elaborate tooling and doublures. How widespread this practice was we do not know; much of the physical evidence may have been lost over the ages, as the limp bindings may have been discarded in later times.

A closely related category of bindings concerns manuscripts that appear to have been written in already bound volumes: blank bookblocks that must have been sold as a kind of stationary bindings. Within this group, we find *safina*, or oblong shaped manuscripts.[38] [fig. 173] Often they are not regular textbooks, instead, these books were intended to be used for personal notes or to assemble a personal collection of poems and songs.[39] Several of the safina in the UBL collection contain gatherings without text, which is an extra indication that the book was bound before the text was written. In addition to these small oblong shaped manuscripts, it seems that blank volumes were also sold in a vertical format. Or. 945, a composite volume with medical and other texts, in Persian and Arabic (dated 1566), is an example of such a binding. The dark green covering leather is modestly but delicately gold

[36] Or. 465, Or. 685 (1620), Or. 752 (author d. 1644), Or. 835 (before 1634), Or. 968 (1451, but resewn so limp binding appears of later date) and Or. 1652. The latter was not in Warner's collection, but purchased in 1860, from the library of Dirk Cornelis van Voorst and his son Jan Jacob van Voorst.

[37] These are Or. 1506 (1664), an individual acquisition made in 1839, and Or. 1548 (1692-3), from the Testa collection. See J. Schmidt, *Catalogue of Turkish manuscripts,* Vol. 2 (2002), pp. 80-81; the manuscripts are bound in similar limp leather bindings made of sheep skin, with tabbed spines. Two other manuscripts, Or. 6866 and Or. 11.037, also display remarkable similarities. They are covered in black goat leather of which the edges were turned-in, directly onto the flesh side of the leather. The latter two were quite elaborately tooled, and the manuscripts have a similar owner's label. Though the manuscripts arrived at the UBL in different times from different antiquarian booksellers, they seem to have been bound in affordable user's bindings by the commission of the same owner, probably in India in the late eighteenth century.

[38] See also 8.3 below.

[39] The personal character of the contents of these books is evident from the descriptions in the catalogues, see for example J. Schmidt, *Catalogue of Turkish manuscripts,* Vol.1 (2000), pp. 393-396 (Or. 1088), 398-409 (Or. 1090), 410-412 (Or. 1096).

Fig. 168. Or. 465, Or. 685 (1620), Or. 752, Or. 835 (before 1634), Or. 968 (1451, but resewn) and Or. 1652. A selection of similar limp leather bindings.

Fig. 169. The tail edges of the same selection.

Fig. 170. Or. 1506 (1664) and Or. 1548 (1692-3). Limp leather bindings made with tabbed spines.

Fig. 171. Or. 6866 and Or. 11.037. Decorated limp leather bindings with turn-ins.

Fig. 172. Or. 11.037 (1779). The inside of the limp leather binding, the turn-ins were adhered directly onto the flesh side of the leather, but doubluresw were never applied.

Fig. 173. Or. 1097. A safina manuscript; the binding is a limp leather binding (there are no boards) but the interior is covered with coloured paper doublures.

tooled and the doublures consist of thin, red leather; the binding has no envelope flap. The textblock, consisting of quinions, contains several empty pages. It is especially remarkable that the first eight folia are blank, and that between the foliated pages f. 39 and f. 51 a complete blank gathering is found. This surely indicates that this manuscript was written after binding, since it is not likely that a bookbinder included an empty gathering and surplus bifolios at the beginning of a text. In other words, the volume was traded as a blank miscellany.[40]

The degree of tooling and finishing and the overall aesthetic quality of these flexible leather bindings varies. Technically, these notebooks were sewn, lined and provided with endbands that conform to the usual methods. Yet, their modest leather bindings perhaps made them economically attractive in a middle class milieu.

4.5 *Partial leather bindings: the çaharkuşe binding*

It remains uncertain when the partial leather binding was introduced. In this study, all the early manuscripts, dating from the fourteenth and fifteenth centuries, which have a partial leather binding appear to have been rebound. As a consequence, original çaharkuşe bindings originate only from the sixteenth century onward; the earliest is dated 1513 (Or. 781), which is an exemplar without leather strips on its horizontal edges, and its boards covered in plain dyed paper. Partial leather bindings occur regularly well into the nineteenth century, and three specimens even date from the twentieth century. Relatively few volumes have colophons mentioning the place of origin, but those that do come from Istanbul and other places in Turkey, Jerusalem, Damascus, Turkmenistan and Bukhara (in present day Uzbekistan). The three most recent partial leather bindings were purchased in Yemen. It is noteworthy that this binding type is not found in Southeast Asia.

The appearance of the items within this category varies hugely, though it appears that the paper used to cover the boards was always dyed or decorated with a marbling or block-printing or other decorative techniques; plain, uncoloured papers were not encountered.[41] The first çaharkuşe bindings belong to the Ottoman realm. These sixteenth- and seventeenth-century partial leather bindings were frequently covered in beautiful marbled papers. In Central Asia, the partial leather bindings are commonly covered in monochrome dyed paper, such as olive greens and mustard colours. These paper coverings are usually highly polished and possibly treated with a protective layer of shellac or similar material. Often, the almond shaped centre-pieces and flanking stamps are combined with thin leather or paper overlays in contrasting colours; the bindings are made with care and precision. Quite different in appearance are the çaharkuşe bindings from the Arabian peninsula or Yemen. Although comparable in type – leather spine and edges, paper covering, decorated with a central motive – the manner in which these bindings were crafted and the materials used are rather different. The leather is much coarser in structure and also thicker, neither the leather spine nor the leather on the fore-edge flap or board edges seems to be pared. The paper covering the boards is not polished, and has an open, fibrous structure. Furthermore, the decorative paper elements are crudely cut and pasted on the boards. All dated examples were made in the late eighteenth or nineteenth century.

In regard to these bindings, first of all there is the question of economising: was this type of binding initially developed to cut the costs of material or labour? If that were true, one would expect to find plain bindings without tooling, and a minimal use of leather combined

[40] The term "blank miscellany" is used by Meredith Quinn, who conducts a PhD on Ottoman books and their readers. The development of a trade in blank books is corroborated by references to "beyaz mecmua" (blank miscellanies) Quinn found in four individual, probate court inventories from Istanbul. The blank miscellanies were listed among the possessions of the deceased; the inventories date from 1661 and 1668. (Personal communication and e-mail dated 25-08-2014)

[41] The codicological value of the different types of decorated paper is elaborated on in paragraph 8.1, below.

with the cheapest sorts of paper. Although such bindings do exist, a large number of bindings do not indicate scarceness of expensive materials or cost-cutting on labour. The large majority of çaharkuşe bindings are covered with decorated paper instead of 'plain' paper. And even those are not ordinary papers; they are always tinted or dyed, and often polished.

Although it is impossible to date many çaharkuşe bindings because they are not contemporary with the manuscript, there are some from the sixteenth century in which marbled paper is used sometimes in combination with additional decoration techniques such as tooling and leather overlays, that are contemporary. This indicates that the partial leather covering scheme had not been developed just for economic purposes. However, it is not unlikely that the type gradually did develop towards a cheaper alternative to full leather bindings. It is therefore interesting to look at the partial leather bindings without leather on the fore-edge of their envelope flaps, as these bindings represent the cheaper variant of the partial leather bindings. It appears that even in this sub-category substantially more marbled than plain papers are found; 62% versus 36% plain paper coverings.[42] This at least points out that although cost-efficiency may have been important, the aesthetical appearance of the books dictated some kind of elaboration. However, it is noteworthy that hardly any tooling is found with these partial leather bindings; this extra bit of elaboration seems to be reserved for the çaharkuşe bindings in which all edges are covered in leather. Or. 197 is an example of a çaharkuşe binding that can be assumed not to have been made merely for economical reasons. The leather around the edges is too broad and nicely tooled, and the inner joints have decorated cut edges. [fig. 174] There may have been some economising on materials, such as the omission of a leather strip on the front edge of the envelope flap, and the use of plain papers for the doublures; still, the making of this binding was relatively labour intensive.

On a different plane, the occurrence of 25 çaharkuşe bindings with a two-pieces technique on the spine is intriguing, as there seems to be no need to prepare these often undecorated boards individually and separately from the textblock, and the application of such small strips of leather on the board edges seems impractical. [fig. 175] Initially, one might hypothesise that this technique was used rather routinely, after the fashion of the full leather bindings, and only shortly after the introduction of the partial leather technique, when the two-pieces technique was still embedded in the daily working practice. However, the physical evidence proves otherwise. Partial leather bindings made with two-pieces of leather on the spine were found throughout the centuries; in the group of unrepaired volumes, five manuscripts from the seventeenth century, two from the eighteenth, and three from the nineteenth century were found. From my model-making practice I learned that the use of the two strips is in fact not impractical at all, since the boards are postioned on the textblock before these separate strips are applied, one by one.

4.6 *Partial leather bindings: lacquer bindings*

Lacquer bindings are known to have been made from the end of the fifteenth century onwards.[43] In *Lacquer of the Islamic lands* (1996), the term "Bookbinder's lacquer" is introduced. The term is used for both lacquered bindings as well as other items such as pen cases, mirror and spectacle cases and other caskets, as these boxes shared the same material basis as the bindings: sheets of paper pasted one on the other. The outer layer of these sheets was decorated with paintings and then lavishly varnished. Throughout the said publication this paste-paper basis is referred to as "papier-mâché". Although the term indicates a material consisting of either sheets of paper or paper pulp, bound with an adhesive, it is strongly

[42] Compared with the full çaharkuşe bindings, which have a ratio of marbled to plain paper of 55 : 35, the usage of marbled paper is higher rather than lower.
[43] See N.D. Khalili, B.W. Robinson and T. Stanley, *Lacquer of the Islamic lands* (1996), p. 12.

associated with mashed paper, pressed into a certain shape. Therefore, in those instances that the boards are evidently made of paste-paper, the term papier-mâché is best avoided.

In the publications on lacquer bindings the technique of board attachment is never a point of discussion. This is remarkable since these bindings consist of paper-painted boards and a leather spine, as well as a leather fore-edge flap – provided a flap was made –, while the envelope flap, when present, is again made of pasteboard decorated with paints and lacquer. Considering this compilation of materials the bindings could have been denoted as "quarter leather bindings", in line with the unfortunate use of the term for çaharkuşe bindings that lack strips of leather on the horizontal board edges. Instead, the structural composition of these manuscripts is ignored altogether. Apparently, the artistic and decorative quality of lacquer bindings completely overshadows the material and technical characteristics of these bindings. The seven specimens in the corpus attest that, in order to attach the lacquer boards to the textblock spine, individual pieces of leather were used, each applied to a board edge along the joint, the pared extensions overlapping on the spine, as with the common two-pieces technique. How precisely these strips of leather are connected to the boards is difficult to discern; at least the strips were not adhered *onto* the lacquer layer.[44] The leather rather seems to blend into the lacquer or paint layers from which I deduce that one long edge of the leather was adhered onto the board, possibly after the application of the first layer of gesso ground. Whether the edge of the thinned leather adhered onto the board was also covered with a thin layer of gesso, or if it was merely painted together with the base layer of paint, is not discernible without microscopic research of the layered materials. Nevertheless, from close visual inspection it can be determined that the pieces of leather were fixed to the pasteboards prior to applying the paint and lacquer layers or perhaps applied onto a first gesso layer.[45] Thus, the individual boards were already prepared for textblock attachment while they were being constructed. It is reasonable to assume that the two-pieces technique was used to enable the artist, responsible for the painting, to work on the covers separately. And unlike working with a single piece of leather, potential difficulties with regard to the thickness of the textblock and width of the spine leather could be avoided this way. The rationale behind the use of the method is consistent with the regular two-pieces technique.

Instead of being covered with doublures, the inner covers of lacquer bindings were often painted as well, though this painted surface was not covered with as many layers of varnish as the exterior. This method of decoration influenced the structure of the inner joints. Indeed, if the flanges of the lining would have been adhered onto the insides of the boards, they would have covered part of the painted surface. The examined specimens attest the use of cloth spine-linings, however, any fabric exceeding the width of the spine was cut along the joint. As a result, the attachment of the boards was not strengthened with the flanges. Instead, the inner joints are not covered at all, or a separate, small strip of either paper or leather was pasted over the joint. It seems likely that these strips were later additions; the board attachment, consisting only of the leather outer joint, was relatively fragile and these inner hinges were added to support the board attachment and prevent the joints from tearing.

4.7 *Partial leather bindings: the paper binding*

While the lacquered boards were attached to the textblock with separate pieces of leather, the last group of nine partial leather bindings have a leather spine made with only one piece of leather. These are simple and certainly cheap bindings with paper covers. But even here, the paper is not of the plainest type; eight of them are marbled and on one volume block-stamped

[44] Some examples of leather spines with edges that do lay on top of the lacquer boards were found, but these were repair spines and they are not included in the corpus.

[45] No indication was found that the leather was inserted in the boards, between layers of the paste-paper.

Fig. 174. Or. 197. A partial leather binding, made with labour-intensive techniques such as tooling around the edges and a decorated cut edge of the paper covering. The leather inner joints also have nicely decorated cut edges.

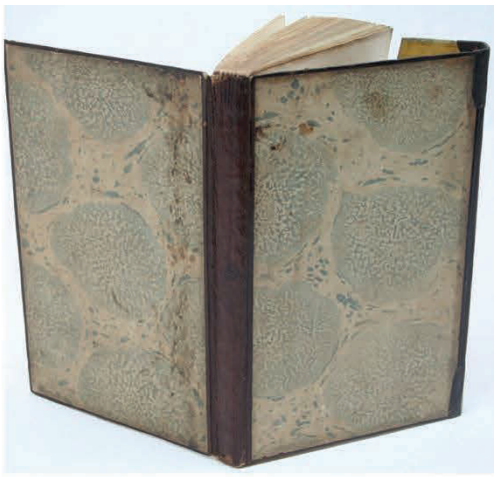

Fig. 175. Or. 25.723 (1788). A partial leather binding, made with two pieces of leather on the spine.

Fig. 176. Or. 873 - without flap - and Or. 827 (1639) - with a flap. Examples of bindings with hardly any boards.

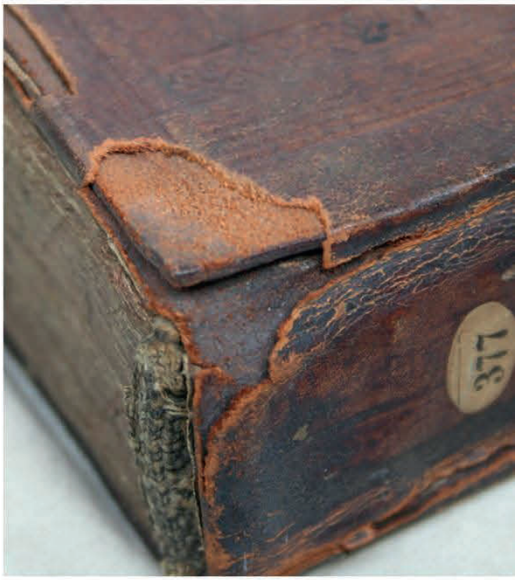

Fig. 177. Or. 2149 (before 1874, Southeast Asia). Because of the damaged leather covering, the leather board is displayed.

Fig. 178. Or. 26.660 (before 1800, Turkmenistan). A binding from Central Asia with relative long tabs.

Fig. 179. Or. 22.322 (1919) (r) and Or. 22.321 (l). The spines are tabbed and pierced with a thread that is vertically wrapped around the spine.

paper is used. Technically, the difference in structure, as opposed to the partial leather bindings with lacquer boards which were made with two pieces of leather, makes perfect sense. These bindings were made in the quickest possible manner, with a strip of leather over the spine-lining and onto the edges of the thin boards, then the decorated paper was pasted on top of the leather edges and boards.

4.8 *Relation to content*

There appears to be one text that has a consistent type of covering, and that is the Qur'an. The corpus contains 28 Qur'anic manuscripts. Many of those are complete volumes, some of them are a set of two volumes and included are also a few selections of Qur'anic suras and *Juz'*. In 26 instances the manuscripts are bound in full leather and two complete volumes were bound with lacquer boards and leather spines. From these findings it seems that the partial leather binding type with paper covering the boards was considered to be inappropriate for Qur'anic manuscripts. Manuscripts containing Qur'anic texts combined with prayers, instructions of use, didactic stories based on the Qur'an or treatises on the art of Qur'anic recitation display a wider variety of binding types. Although full leather bindings appear to be preferential, several of these manuscripts have a partial leather binding with leather edges and paper panels covering the boards.

4.9 *Boards*

Usually, the boards were made of paste-paper and when the core material is accessible, it appears that often wastepaper was used. Quite a large group of about 50 manuscripts have bindings with extremely thin boards, a practice that started at least in the early sixteenth century and was common in the seventeenth century. These bindings were modestly decorated, mostly covered in red or black leather, blind stamped, and often with doublures of fine marbled papers. The textblocks and endbands were neatly sewn, often with remarkably thin silk thread, and though many of these bindings were made without a flap, their appearance is utterly Ottoman. [fig. 176] The few bindings in this set with leather doublures instead of paper – giving a soft, tactile quality to these items – appear to be personal notebooks, and the occurrence of blank pages within the textblock suggests that these bound volumes were sold as blanks; see paragraph 4.4 above on limp leather bindings. The early bindings with very thin boards often cannot be localised; some of the colophons mention the Crimea or Dagestan, Macedonia and Palestine.

The use of thick boards seems easier to pinpoint. Most occurrences are related to Central Asia. Alternative materials are found in Southeast Asia. Instead of paste-paper, thick leather boards were used rather frequently, from at least the eighteenth century onwards, and a remarkable variant material consists of boards made of rattan or bamboo. [fig. 177] These long strips of plant material were woven into a sheet which was then used as boards (see fig. 78 in Part Two). When not visible because of damage, the woven structure is recognisable underneath the endleaf material. The direction of the woven strips appeared to be at a 45 degree angle in relation to the width and height of the boards in all instances.

Boards were flush with the textblocks until well into the eighteenth century. The introduction of square boards appears to be a Western influence, though the motivation to start using these extending boards is unknown. Square boards are found in Southeast Asia, sometimes combined with supported sewing which can also be related to European influence. They were also found on a late lacquered binding from the Indian subcontinent, and further west, in Turkey and the Maghreb. More than half of the manuscripts with boards extending beyond the textblock edges never had a flap.

5 Spine-endings

5.1 *Tabbed spines*

The technique of cutting the covering leather at the joint position in order to make the turn-ins over the board edges, which resulted in tabbed spine-ends, was used in all parts of the Islamic world and throughout the manuscript period. The earliest preserved examples date from the fourteenth, perhaps late thirteenth century and were made in Egypt or Syria. The most recent specimens are found on manuscripts from the first quarter of the twentieth century from Yemen and North Africa (the latter being Berber manuscripts). They were made on bindings of all covering types: 46% of the partial leather bindings have them still, 47% of the full leather bindings made in one piece, and even 53% of the full leather bindings made with the two-pieces technique. The occurrence of remarkable long tabs on manuscripts from Central Asia points to a possible regional interpretation of this feature. [fig. 178] The already mentioned fringed tabs from Xinjiang are an example of the same development. It seems that these region-specific characteristics developed quite freely in the peripheral areas. Tabbed bindings are rare in Southeast Asia; only five specimens were found. Three are believed to originate from Java, two of them are more precisely described to originate from Banten, Northwest Java, and one was copied in Palembang, South Sumatra, which hints at the use of tabs in a rather limited area within the Southeast Asian region. Three of these manuscripts were written, and presumably bound, in the second half of the eighteenth century, the other two are undated.

A few full leather, tabbed bindings have a thread tied lengthwise around the spine. A few others display traces of the former presence of such a thread. Together, they form a small cluster of connected bindings. Not all of the examples were included in the database and as some of these bindings are not contemporary with their content, the group can only be presented with a lot of caution. They seem to reflect a nineteenth-century development occurring in a peripheral region, attempting to secure endbands or bindings on manuscripts that were not in a sound condition, and which already lacked, for example, a link-stitch sewing and lining, and were resewn with a stabbed sewing structure. In two cases the leather tabs are secured in place with the vertically warped thread (when the book is in standing position) which also pierced the centre of the tab and was then inserted in textblock. [fig. 179] This procedure denies access to the endband underneath the tab, but it seems quite likely that a proper endband is missing in the case of these stabbed volumes.

5.2 *Cut flush with the textblock*

It is difficult to draw firm conclusions from the group of spine-endings cut flush with the textblock, except that they were not made with a turn-in of the covering leather over the spine. This detail is important though, because it points at a built-on binding technique – just like the tabbed bindings, as opposed to a case-binding. Yet, it remains uncertain whether these bindings were intentionally made with spine-endings cut flush with the boards, or if the tabs were trimmed over time, due to damage and in order to prevent further tearing; they may even look flush now because the extending leather completely abraded. [figs. 180, 181] Importantly, relative to the group of tabbed bindings this set is significantly smaller, not even a third of the first; the numbers indicate that the binding process which resulted in tabbed spines dominated the tradition. The frequent occurrence of tabbed repair spines supports also this theory.

With the spine-ends described as semi-tabbed, the extending leather at head and tail was cut horizontally though not exactly flush with the boards. This resulted in a tab significantly shorter in length than the average tab, which may be as long as the turn-ins on the inside of the boards. Nearly 40 examples of semi-tabbed structures were found on first bindings. Only three of these originated in the sixteenth century, the others are of more recent date. This is noteworthy, since the development of this particular feature may indicate

that binders anticipated the fragile state of the traditional tab, by cutting these parts of leather closer to the endband sewing, leaving enough to support the endbands and protect them a little, but short enough for the leather spine-ends to be more durable.

5.3 *Turned-in spine-ends*

Manuscripts on which the leather spine coverings are turned-in at head and tail form the smallest group by far. Nevertheless, the group can be further divided. Within the Arabic collection, the most distinctive set and largest in numbers are the wrapper bindings made for unsewn manuscripts. Although it seems very obvious that these wrapper bindings are made this way, it is also important, as it signifies – and quite convincingly proves – that binders used techniques most suitable for a particular purpose. Indeed, the method is a breach with the traditional method, however, since wrapper bindings are made off the book, as a case, turning in the leather continuously over the spine demonstrates common sense. It is not only the most economical but also the strongest option for this type of binding.

A second set originates from Southeast Asia. With the assessment of Southeast Asian manuscripts from the Arabic and Malay sections combined, this group consists of 42 specimens which is a significant part – more than half – of the total of Southeast Asian bindings. The feature is sometimes combined with square boards. Also, the turned in spines can be found with the two-pieces technique, which is remarkable. Indeed, it suggests these bindings were made as built-on bindings as well, for it would be difficult and impractical to produce a separate case-binding with two pieces of leather joined on the spine. Can we conclude from this that the bindings with the turned-in spine-ends were then made on the textblock as well? Technically it would be possible, as the absence of spine-lining flanges (which is another characteristic of most Southeast Asian binding structures) allows for turning in the leather at head and tail, without the need to cut such strengthening material in the joint. The evidence, however, remains inconclusive.

Of the remaining examples with turned-in leather at the spine, thirteen manuscripts are from the nineteenth century. Some of these volumes have turned-in spine-ends in combination with square boards, pointing to an increased influence of Western methods, although otherwise the bindings still display typical Islamic characteristics. Turned-in spine-ends were also found on three stabbed manuscripts, and on two very thin volumes that were made without endbands. In these cases it is feasible that the covers were made as a cassette-like entity.

6 Interior covering of the boards

6.1 *Doublures*

The doublure is defined as a material covering the inner surface of the boards, without it being part of the textblock's structure. As a consequence, the binder could freely choose what material to use: leather, cloth, or paper. [chart 7] Leather doublures were very common up to the seventeenth century. Of the 102 original occurrences, only fourteen were found on seventeenth-century volumes, three on manuscripts from the eighteenth century and four on nineteenth-century manuscripts. When the origin of the manuscripts was indicated, the leather doublures on volumes dated before 1700 were made in Egypt, Syria, Iran or Turkey. Only two of the seventeenth-century volumes with leather doublures were localised: Tunis and India; one of the eighteenth-century and two of the nineteenth-century volumes with leather doublures originate from India as well, and one nineteenth-century manuscript in this group was copied in upper-Egypt. Noteworthy, leather doublures were only found in combination with a full leather covering, though unrelated to the one- or two-pieces technique. None of the partial leather bindings had full leather doublures.

Cloth doublures were encountered only sporadically and form a heterogeneous group from which nothing can be concluded; some of the volumes are early, Mamluk bindings, but textile doublures were also used on a Berber manuscript (Or. 23.988) and on a volume written in Sino-Arabic script (Or. 26.685). The group of paper doublures is the largest by far. Repaired and resewn manuscripts excluded, the largest sub-group is formed by monochrome coloured papers, with 215 occurrences. Plain, undyed and undecorated papers were used 203 times, decorated papers such as marbled and block-printed papers were applied in 100 manuscripts. The majority of decorated papers are marbled, and they were made in a wide variety of patterns and colours. The earliest occurrence of marbled paper on an original, dated binding, is 1510, its provenance unspecified (Or. 1041). Before the development of the marbling technique, dyed papers were applied as doublures, the first occurrence in a dated manuscript is fifteenth-century. Some of the monochrome dyed papers were sprinkled with flecks of silver or gold. Block-printed and brocade papers were found in much smaller numbers [figs. 182, 183]; ten doublures were block-printed, for two volumes a brocade paper was used, and for one a coloured paper further decorated with a sponge pressing technique. The manufacturing techniques and possible origin of block-printing and brocade papers is elaborated on in paragraph 8 below.

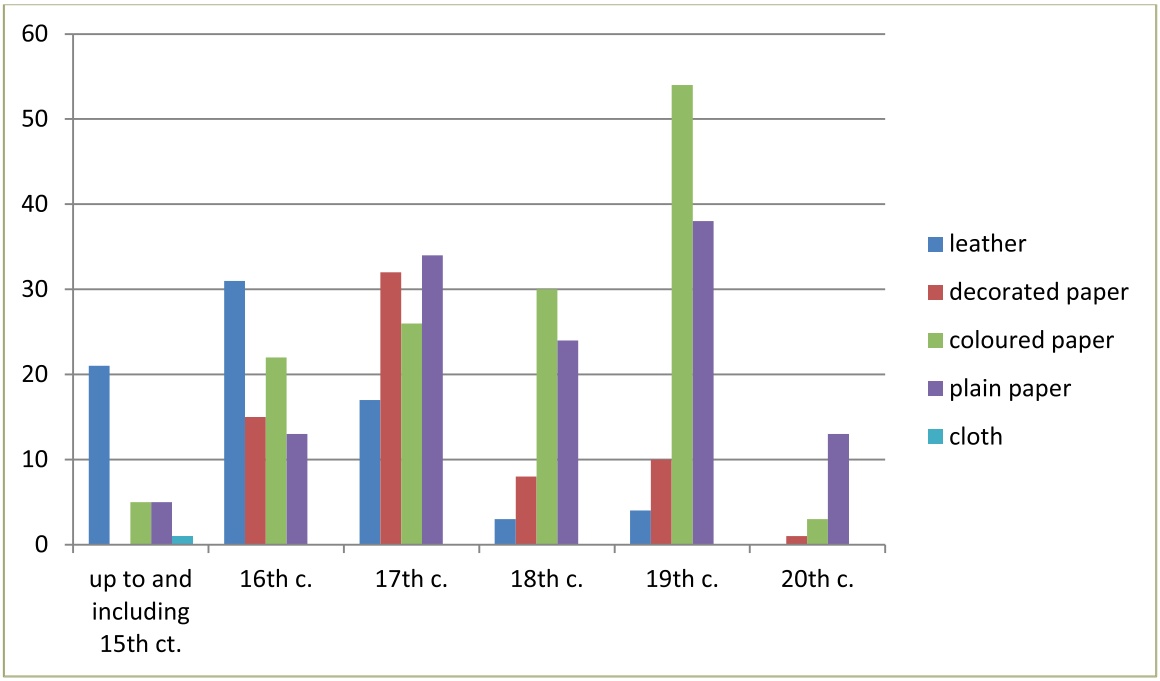

Chart 7. Comparison of doublure materials throughout the centuries, resewn and rebound manuscripts excluded.

6.2 *Endleaf structures*

When the paper on the inside of the board is part of the outer gathering, it is not a doublure but a paste-down. It often consists of the outer leaf of the first and last gathering. [fig. 184] Another form of endleaves is a tipped-on bifolio, pasted with a bit of adhesive along the spine-fold onto the gutter of the outer textblock page, and then the outer half is pasted onto the board. These endleaves may have been applied early in the production process, right after sewing, and before lining and endbanding, a practice some specimens attest as the tiedowns pass through the tipped-on endpaper bifolio. Either way, the paste-downs always cover the inner joint. When they are part of the outer gathering, the paper is usually plain, undyed paper, and the same goes for guarded leaves sewn with the first and last gatherings and used

Fig. 180. Or. 309. The small remnant of the tab and its horizontal tear demonstrate how prone the tab is to become 'flush'.

Fig. 181. Or. 2956c (nineteenth century). The cut shape of the leather follows the curved shape of the textblock and endband, which demonstrates its execution after the leather was applied onto the textblock spine.

Fig. 182. Or. 11.074. Brocade paper doublure on the front cover.

Fig.183. Or. 1442. Brocade paper doublure on the back cover and the envelope flap.

Fig. 184. Or. 1196. The paste-down is part of the outer bifolio of the last gathering.

Fig. 185. Or. 11.898. A tipped-on coloured leaf with a stub. The stub is adhered over the joint and onto the board, and then covered with a doublure; in this case, a paper of the same colour was used.

as paste-downs. But when a tipped-on folio or bifolio was applied the binder often selected a dyed paper. [figs. 185-187]

Paste-downs were used at least since the early sixteenth century; six sixteenth-century manuscripts have tipped-on bifolios of which the outer half is pasted onto the boards, with eight others the outer textblock leaves were used as paste-downs. Nearly 30 manuscripts up to and including the seventeenth century were noted to have a structure different in the front from that in the back, and they all displayed the same kind of combination. At the front, a tipped-on bifolio or sometimes a stubbed folio was applied, while at the back of these manuscripts the outer leaf of the last gathering was used as a paste-down. This combination is not found the other way around, which gives us an indication of the working routine of the scribe and binder. The scribe started his work on the verso of the first folio of his stack of gatherings, which left him – or the bookbinder – no extra or preceding paper to use as an endleaf. Whereas once he finished the work and he ended up with some surplus leaves, they could be used as endleaves, after the lining flanges were adhered onto the inside of the board for strengthening the joints. It is noteworthy that in all these instances the lining consisted of cloth. It indicates that the binder chose his material intentionally, because with leather linings, tradition would have it that the flanges remained visible as inner joints. In these constructions, that would have been possible at the front of the binding but not at the back. Such examples, however, were not found.

Finally, it should be noted that the manuscripts from Southeast Asia often have dluwang endleaves or paste-downs instead of paper (in 31 instances in total), but the structures are comparable in technique.

6.3 *Inner joints*

The function and visibility of the spine-lining extensions in the inner joints has already been discussed; both leather and cloth linings were used to strengthen the board attachment, and leather extensions were left visible in the joint while cloth flanges were subsequently covered with some other material. Only when cloth extensions were not adhered onto the inside of the boards but were pasted onto the textblock instead, then the structure lacked an inner board attachment, and some additional material was added. Manuscripts constructed according to this last scenario are a minority in the whole corpus. Binders amended the inner joint structure in these cases with separate leather strips, with a stubbed leather doublure, or with a stubbed paper doublure. When a separate paper or leather strip was used as an inner joint, pasted on top of the doublure, it appeared to be a later addition in most cases.

The inner joints of lacquered bindings form a specific group, since the interior of lacquered boards are often painted; only once the surface is covered with a coloured paper doublure. As explained above, this composition affects the possibilities of construction. In general, the extending sides of the spine-linings of these textblocks appear to have been cut, and the board attachment consisted of the leather spine-covering only. For small bindings, of which the boards are relatively light, this construction seems to have been sufficient. With the larger textblocks and heavier boards we find repair materials in the inner joint.

6.4 *The lining of the fore-edge flap*

The strength and flexibility of the joints of the flap are crucial for its functioning and longevity. The large majority of the fore-edge flaps are lined with leather, throughout the centuries and in all regions of the Islamic world. The use of cloth clearly is a later development; only six seventeenth-century volumes were found that have a fore-edge flap lined with cloth, but from the eighteenth century onward its use increases. Ten eighteenth-century volumes, 30 bindings from the nineteenth and ten from the twentieth century have a cloth lining of their fore-edge flap. Not many of them are localisable but ten of these manuscripts appear to have been made in Yemen.

The use of paper as a lining-material for the fore-edge flap shows a similar trend. Furthermore, of the 77 occurrences, fifteen times the volume is an unsewn textblock and the binding a wrapper binding. Nine bindings from Southeast Asia have a paper lining of the fore-edge flap and three of the bindings appear to have been made in Yemen. Of nine of these bindings with a paper lining, the paper covers only the actual fore-edge flap core; the joints adjacent to this flap were lined with leather prior to the application of the paper lining, which can be explained because it is a more durable material for this flexing part of the binding.

7 The envelope and fore-edge flap

Although bindings without fore-edge and envelope flap only start to become fairly common in the seventeenth century, they appear on the scene in the sixteenth century. The earliest specimen is found on a volume dated 1510 (Or. 1041), a few bindings without a flap are dated in the middle of the sixteenth century. Up to now, the flapless binding type was often related to the Persian realm, which is probably due in part to the fact that many lacquer bindings were made without a flap and they initially developed in Persia. Otherwise, they are thought to have emerged under Western influence in the 'later' centuries.[46] However, the oldest flapless bindings in the UBL collections are early Ottoman, and Islamic in every characteristic. They are relatively often made with very thin boards; occasionally, boards are even completely absent. The manuscripts of oblong format, which often lack a flap as well, are another specific category. Many of the dated manuscripts without a flap originate in Central Asia, where a strong influence of the Persian tradition is found. Their dates are mainly eighteenth- and nineteenth-century. It should be noticed that the boards of these particular bindings are often remarkably thick, which distinguishes them from the Ottoman variant. In Southeast Asia, only three bindings without a fore-edge flap and envelope flap were recorded, which is 4,5% of the Southeast Asian bindings, while the percentage of flapless bindings in the whole corpus is 17.5%.

At first glance, the general belief that the flapless binding occurs most often in the undefined 'later' centuries seems to be attested by the findings: 31 nineteenth-century manuscripts have bindings without a flap, which is 24% of the total number of dated volumes from this period. In the eighteenth century, 22% of the dated volumes were made without a flap. However, looking at the seventeenth century we find 26 volumes in original bindings which represents 21% of the total, and even from the sixteenth century six bindings have no trace of a flap. Though this is only 1% of the dated sixteenth-century manuscripts, these items attest the normality of manuscripts without a flap in relative early centuries. These figures also indicate that from the seventeenth century onwards, more or less one of every five manuscripts was put into a binding without a flap. Nevertheless, some of the flapless bindings from the nineteenth century indeed share a few other characteristics with Western books, such as the boards projecting beyond the textblock edges, the spine leather being turned-in, or a supported sewing. At the same time, these bindings convincingly display Islamic features; most of them have a link-stitch sewing, the endbands often remain traditional, and many boards are still flush with the textblock.

The wrapper bindings were made, without exception, with a flap, and for good reason. As a wrapper binding protects unsewn manuscripts, it functions as a protective container; since the gatherings are not attached to the wrapper's spine they could easily become dislocated. A closing system at the fore-edge of the stack of loose gatherings, afforded by the

[46] "[The flap] remained an intrinsic feature of Islamic binding until the fore-edge and associated envelope flap started slowly to be omitted under the influence of European bookbinding forms in the eighteenth century A.D."; G. Bosch et al., *Islamic bindings and bookmaking* (1981), p. 56. See also F. Déroche, *Islamic codicology* (2006), p. 310; A. Gacek, *Vademecum* (2009), pp. 27-28.

envelope flap, was needed for stabilising the textblock during consultation and storage, to minimise the risks of mechanical damage.

In the literature it is often suggested that the flap, apart from its protective function, can be used as a bookmarker.[47] It is unclear where this idea originated and if envelope flaps were really used in that capacity; the historic sources do not contain any remarks on this use of the flaps. When the fore-edge flap fits the fore-edge of the textblock nicely and both flap parts have rigid boards – as most flaps do – then the joints are small and do not provide the flexibility for the envelope flap to be inserted everywhere in the textblock. Only when the joints are exceptionally wide or the core in the fore-edge flap is very small can the flap be inserted in the textblock more or less randomly. Although such features are occasionally encountered they are not common, which seems to indicate that binders did not attempt to make flaps with this functionality.

A second argument is the occurrence of bindings with fore-edge flaps that have a smaller width than the thickness of the textblock and no space in the adjacent joints to compensate for this narrowness. These flaps are too small to cover the fore-edge of the textblock completely. In these instances, the envelope-shaped flap cannot even be closed underneath the front cover, but has to be inserted somewhere partway through the textblock. With these objects it is clear that the bookbinder did not intend for these flaps to serve as bookmarker.[48]

8 Miscellaneous features

8.1 *Decorated paper*

A variety of decorated papers are found in Islamic manuscripts. They first occur in textblocks; the use of tinted or dyed papers is very old and seems a logical continuation of the practice to write texts on coloured parchment. From the fifteenth century onwards papers were decorated with more elaborate techniques such as silhouetting, stencilling and gold-sprinkling, and possibly also marbling.[49] Apart from the ones used in the textblocks, coloured and embellished papers were applied to cover the binding and finish the inside of the covers. It is difficult to find conclusive evidence for their origin and dating, as many of the manuscripts from these early centuries are repaired or resewn. Moreover, when applied as doublure or board covering on partial leather bindings, the papers were adhered as a final action, which means that it is sometimes hard to detect whether the paper originally belongs to the bindings or was added later. Monochrome dyed and marbled papers are found on the inside and outside of covers alike, gold-sprinkled papers appear to have been preferred for the inside of bindings and in the UBL collection no examples of silhouette papers were found on bindings, though they do occur in textblocks. When block-printed papers start to be used, they are more often found as doublures, but occasionally they were applied as a covering material as well. [fig. 188]

The Islamic artists who produced marbled papers used wonderful colour combinations and wild patterns. The earliest marbles, however, were probably more subdued.

[47] Gacek states that "its principle function was to protect the fore-edge of the codex; nevertheless, it was also often used as a bookmark", *Vademecum* (2009), p. 104; See also Chr. Gruber, *The Islamic manuscript tradition* (2010), p. 15, who suggests that the flap can be either used as a bookmark or it can be tucked underneath the textblock so that it is slightly elevated which might improve reading.
[48] At the COMSt-meeting (Comparative Oriental Manuscript Studies) in Zakynthos, October 2013, Paul Hepworth in his lecture 'Manuscript variety and conservation' presented several examples of original bindings with remarkably small and rigid fore-edge flaps which cannot have functioned as a bookmarker or reading aid. His most important argument was for conservators to respect these shapes and not to be inclined to change such flaps by assuming that they ought to fit.
[49] F. Déroche, *Islamic codicology* (2006), pp. 60-61 and 248-249.

Fig. 186. Or. 155. A guard - a small strip of paper folded around and sewn with the last gathering - is pasted over the inner joint. The paper doublure is pasted over the edge of the guard.

Fig. 187. Or. 829 (1638). A plain, stubbed leaf was tipped-on along the spine edge of the outer gathering, the stub pasted over the joint and onto the board. A marbled doublure is pasted over the stub.

Fig. 188. Or. 1341. A partial leather binding with block-printed paper.

Fig. 189. Or. 11.074. A brocade paper doublure, using up smaller pieces, one of which contains provenance information on the decorated paper.

Fig. 190. Or. 2149 (before 1874, Southeast Asia, probably Java). A manuscript with a dluwang textblock and dluwang endpapers; an impregnating agent was applied to the paste-down, causing its dark brown colour.

Fig. 191. Or. 2118 (Southeast Asia). The endband displays various characteristics: a twig core and decorated cloth strips which are used as tufts, it is sewn in three colours and one of the threads is wrapped around the finished endband.

Some twenty specimens were found of a modest type of marbled paper, using only blue pigments on a cream-coloured paper. Their patterns resemble the veins found in stone, and in that sense these patterns appear less controlled or designed than the multiple coloured marbled papers. It seems that these papers are the products of the art when it was first developed. However, none of these monochrome blue marbled papers were found on original bindings, they were used as doublures or outer board coverings on second bindings of much older manuscripts. As a consequence, the hypothesis that these are the earliest products cannot be proven. The earliest evidence for marbling known are two sheets of paper, in the Kronos Collection in New York City, of which one is dated 1496; they were made in Persia.[50] The first marbled paper on a dated contemporary binding in the UBL dates 1510 (Or. 1041), and this paper is an example of a multi-coloured, finely executed and controlled marbling pattern.

Other types of decorated papers are block-printed papers (also called 'chintz' or 'calico', after the block-printed cotton from India), brocade papers (sometimes referred to as 'embossed' or 'gold-embossed' papers), and paste papers. We know as yet very little of the origin of these papers. There are several extensive inventories and studies on decorated papers, but most of them focus on papers produced in Europe, and when the Islamic world is mentioned the information is brief and without much concrete substance.[51] In general, Persia or Turkey are acknowledged as being important for the development of marbling techniques; several references in travel accounts attest the occurrence of the art of marbling in the Middle East in the sixteenth century.[52] However, with the exception of a few methods for "beautifying paper" with a single colour, mentioned by Ibn Badis,[53] and a mid-nineteenth-century copy of a medieval manuscript containing some paper dyeing recipes,[54] little historic documentation is known on the origin and making of the decorated papers in the Islamic world.[55]

In Europe, the block-printed papers, made with wooden or metal blocks in which patterns had been cut and inked with one or more colours, were made at least from the seventeenth century onwards. Italy was a major production centre for this type of decorated papers and it seems likely that papers of Italian origin were exported across the Mediterranean Sea. According to the seventeenth-century traveller and author Evliya Çelebi (1611-c. 1684), who described the professions and trades in Istanbul, there existed 205 paper dealers, who used papers from Persia and Venice to adorn their shops.[56] Assuming that decorated papers were used for this purpose, this would be a contemporary source reporting

[50] Jake Benson, currently undertaking studies in the early development of the art of marbling, kindly answered my query about the earliest evidence for marbling in detail. He translated the inscription on one of these marbled sheets, part of which states: "Note that these *abris* (the plural form of *abrī* was used) are rare" and he elaborated that accordingly, not only are these papers the earliest dated marbled papers known but they also carry what is thought to be the earliest mention of the Persian term *abrī* (meaning 'clouded' or 'cloudy'); e-mail exchange 14-04-2014. Benson presented part of his research at the Historians of Islamic Art Association biannual symposium, October 2012. http://www.metmuseum.org/metmedia/video/collections/isl/looking-widely-looking-closely-symposium-part-9 (accessed 15-04-2014).

[51] On marbled paper, see: R.J. Wolfe, *Marbled paper, its history, techniques, and patterns* (1990), pp. 6-12. Wolfe mentions reports on the art of marbling practiced in Turkestan in the late thirteenth century and in Samarkand, Herat and other regions east of Persia in the early fourteenth century, p. 8.

[52] J.F. Heijbroek and T.C. Greven, *Sierpapier. Marmer-, brocaat- en sitspapier in Nederland* (1994), p. 14.

[53] M. Levey, *Mediaeval Arab bookmaking* (1962), p. 40.

[54] H. Ebeid et al., 'A study of dyed endpapers during Islamic mediaeval times in Egypt: purpose, materials and techniques' (2013), p. 62. The historic source is as yet unpublished; the nineteenth-century copy is kept in the Dar al-Kutub in Cairo.

[55] See the chapter on decorated paper by Yves Porter, *Peinture et arts du livre* (1992), pp. 41-60.

[56] Evliya Çelebi, *Narrative of travels in Europe, Asia, and Africa, in the seventeenth century* (1834), p. 206.

on the import of either marbled or block-printed papers from Venice.[57] The production of block-printed papers continued until the end of the nineteenth century, but whether they were ever made in the Islamic world as well is as yet unknown.

Starting early in the eighteenth century, the chief production centre for brocade papers was Augsburg, Germany, where several manufacturers were active, though brocade papers were made in various other German towns as well. Farther south, in Bassano and Venice, the family firm Remondini was the major manufacturer of brocade papers.[58] It seems likely that the Italian papers were exported in larger quantities than the German ones, though within Europe there was a lively trade in decorated papers, and examples of German brocade papers on original Islamic bindings were found in Islamic manuscripts. [fig. 189] On the other hand, would it not be possible that the technique to make brocade papers – involving the use of a copper or messing plate and a press to print the image with metal leaf on a dyed paper – was used in the Middle East as well? The original inspiration for the usage of contrasting metal in the design appears to be found in Byzantine textiles, using metal threads. In Islamic textiles, we can find complex woven textiles with metal threads throughout their medieval history. With many other decorative techniques found in Western books we have seen that the Near East played an important role in their development and transmission. However, until proof of possible Islamic production is found, we must assume that these specific papers originated in Italy or Germany, which provides a production date between the early eighteenth century and the middle of the nineteenth, when the making of brocade papers ceased.

The comparison of decorated papers, used for doublures or the outer covering of the bindings, with samples in reference books may offer more precise information for the dating of specific volumes. For example, the undated manuscript Or. 11.074 has a particular decorated paper, with a gold printed chessboard-like pattern over a green ground. [fig. 189] The bottom margin of the original papers often contained information on the manufacturer, which in this case can be found on a piece of the paper pasted adjacent to the joint: "Augspurg bey Johannes Wu[...]". This paper is closely related to an example which is dated 1790, made in Fürth by Johann Lechner, and to papers made by Johann Hoffmann and Paul Reymund in Neuremberg.[59] Assuming the manuscript was bound shortly after copying, this indicates its production in the early nineteenth century.

8.2 *Page-markers*

Although this particular element is small, it is an interesting codicological aspect because it indicates which pages were singled out for quick access. Many of the UBL manuscripts with page-markers do not contain illuminated or illustrated pages; the page-markers are mainly secured to pages of text. Often these manuscripts are composite volumes, on a variety of topics, such as religious doctrine, dream interpretation, food and medicine, and lexicographical works; dictionaries, collections of poetry and encyclopaedias were also found.

The many occurrences of the silk thread knotted type, skilfully applied in manuscripts originating from throughout the Islamic world and a certain consistency in the manner of their attachment, do suggest that this element was applied by binders rather than their owners. The textile page-markers, consisting of a silk or linen thread looped around the margin and edge of the text page, occur in other binding-traditions as well.[60] Of the 29 volumes with page-markers, only one is of fairly recent date, 1803, probably originating from

[57] I have referred to Evliya Çelebi's full report on the bookmaking industry in: A. Vrolijk, J. Schmidt and K. Scheper, *Turcksche boucken* (2012), p. 163.
[58] Heijbroek and Greven, *Sierpapier* (1994), pp. 153-154; M. Cloonan, *Early bindings in paper* (1991), p. 83.
[59] Heijbroek and Greven, *Sierpapier* (1994), pp. 58, 106 and 124.
[60] J. Miller, *Books will speak plain* (2010), p. 207. In the UBL special collections, an example was also encountered on a Greek text written on parchment, containing multiple (linen?) knotted threads in the fore-edge margins; UBL BPG 78.

Kashmir. It concerns an illustrated romantic poem, Yusuf and Zulaikha, and the page-markers are connected to the illuminated pages. All other manuscripts with fixed page-markers have much earlier dates, with 1619 as the latest.

8.3 *Size and format*

Only ten manuscripts are oblong shaped; usually, the shape of the codices is a vertical format. With some volumes the vertical shape is more pronounced or downright elongated, while others approach a square format. In order to compare differences in format, the ratio of height and width can be expressed in a single number, obtained by dividing width by height.[61] When the oblong volumes are excluded, the average ratio is 0.71; the average ratio of the oblong bindings is 1.83. When the resewn manuscripts are left out from this calculation the average ratio of the regular book format becomes 0.70, while the average ratio of all repaired and resewn manuscripts remains 0.71. This difference is fractional, which is noteworthy, as it indicates that repaired and resewn manuscripts did not often, or at least not substantially have their edges cut after sewing. Had that been the case, then the cutting of head and tail edge would have caused a larger difference in the height than the effect of cutting of the fore-edge would have had on the width of the book, assuming that a binder cut more or less the same amount of paper from each edge. Thus, one would expect a slight shrinkage of the height in relation to the width, in comparison with the original format, resulting in an opposite effect on the ratio number: the small loss in height would lead to a slightly higher number than 0.71, the average for all manuscripts.[62] Since this is not the case, it seems that binders often refrained from cutting the textblock after resewing, or they did it in such a way that the width of paper they cut from the fore-edge was in balance with the total they cut from head and tail, motivated perhaps by the fact that most annotations and glosses were written in that particular margin which made them more prone to being partly chipped off when the edge was trimmed.

For the earliest centuries no trend can be discerned. When we consider ratios below 0.61 to be elongated, and over 0.81 compressed, we find only a few outsized manuscripts from the centuries up to and including the fourteenth. Three are elongated and two are relatively short, while 75 have a more or less average format. In later centuries, it seems that Central Asian manuscripts and those from the eastern Middle East are more elongated – with an average ratio of 0.64 – and Maghribi manuscripts tend towards a more squarish format, though elongated volumes from Tunis and the Levant were found as well. The number of dated and localised manuscripts from North Africa is too small, however, to interpret these findings further.

The horizontal, or oblong format was first used for eighth- and ninth-century Qur'ans, which were written on parchment; by the end of the ninth century the shape gradually changed and the vertical shape became the dominant format.[63] The oblong manuscripts in the corpus are all of the later type, often referred to as a *safīna* format. Safina is Arabic for 'ship', which probably refers to the horizontal shape. The script in these items is usually parallel to the direction of the spine, that is, the short side of the textblock. Hence, to read the volume, it has to be turned 90 degrees clockwise from a usual orientation. The safina format seems to be

[61] I would have preferred to use the formula the other way around, because the general format of books is vertical, or portrait format, which means that when comparing the ratios, diverging values stand out a bit more when length is divided by width. However, in Western book-historical and codicological studies, the standard appears to be to divide width by length, even though the common Western book format is vertical as well. Presumably it is held as an advantage that the calculation results in a value between zero and one (provided that the book format is vertical and not horizontal), which allows for a relative easy rating of objects.

[62] This average appears to be in accordance with the Western manuscript's average ratio after the tenth century, see: E. Kwakkel, 'Dit boek heeft niet de vereiste breedte' (2012), p. 35.

[63] A. Gacek, *Vademecum* (2009), p. 34.

small enough to carry around as it has thin or no boards, resulting in a flexible and lightweight book.

Five manuscripts had such a strongly rounded spine that the condition was explicitly remarked on. In two of the historic treatises the making of rounded spines is advised; al-Ishbili and al-Muzaffar suggested it will prevent deformation of the textblocks. In that light, five examples do not make a strong case for frequent rounding of the spine, but it appears extremely difficult to tell the original shape of the textblock spine from its current physical condition. Many volumes have changed shape, become distorted, warped or concave, and a rounded spine presumably best kept its original shape if a robust sewing thread was used to support that form. This seems to be the case most frequently in parts of Central Asia and Yemen and for Berber manuscripts.

9 Southeast Asia as a sub-category in the Islamic tradition

Above, we have looked at the varieties and differences in Islamic bindings from the technical, manufacturing point of view and in relation to date of occurrence and provenance. From this diachronic approach, trends emerged: certain variations belong to specific periods or regions. Southeast Asia stands out as the region with the most distinctive variant of the Islamic binding tradition. This warranted the additional survey undertaken in the collection of Malay manuscripts in the UBL. To fit into the Islamic tradition, the following selection criteria were identified: the script should be Arabic, the binding a 'native', non-Western binding, and its condition reasonably sound or at least accessible with regard to composition. Thus, 29 items were selected from the "Malay" section. Below, the results from their examination are combined with the observations made of the 39 manuscripts from the "Arabic" section which could be retraced to Southeast Asia.[64] Recapitulating some of the findings in this manner, some reiteration is unavoidable; however, together they represent the Islamic binding tradition in the east, from the seventeenth century onwards.

Although unmistakeably rooted in the Middle Eastern binding tradition, this group as a whole displays distinctive characteristics. Furthermore, within the group, different sets can be distinguished based on further variations. Unfortunately, not many of the manuscripts can be localised precisely; as a consequence, any attribution of specific features to certain regions is cautiously based on a limited amount of data.[65]

With regard to the structure of Southeast-Asian manuscripts, however, it is safe to conclude that the sewing scheme distinctly differs from those made in other parts of the Islamic world. None of the almost 70 items was sewn with the traditional link-stitch sewing on two stations. Based on these results it seems that a presence of the predominant sewing scheme would rule out a place of manufacture in this region. The largest part of the group consists of a link-stitch sewing on multiple stations, often five, with the thread passing continuously inside the spine-fold, so it can be easily distinguished from the link-stitch on

[64] In the UBL collections, Arabic manuscripts from Southeast Asia are shelved with the Middle Eastern manuscripts (the "Ar."category). Southeast Asian manuscripts in all other languages are shelved in the "Mal."category. See also Part Four, paragraph 1.3.

[65] It is rare for manuscripts from Southeast Asia to contain a colophon in which a date or place of completing the manuscript is included. Therefore, other clues are needed to localise these volumes. Marije Plomp studied almost 30 traditional bookbindings from Indonesia and distinguished several categories, related to regions. M. Plomp, 'Traditional bookbindings from Indonesia. Materials and decorations' (1993). In addition, decorative aspects of illuminated religious manuscripts may help to pinpoint the place of origin, see A. Teh Gallop, 'An Acehnese style of manuscript illumination' (2004) and 'The spirit of Langkasuka? Illuminated manuscripts from the East coast of the Malay Peninsula' (2005). Another material aspect is the use of dluwang, which is thought to be used in Java and Madura only.

four stations. Six volumes were sewn on leather supports, four of these are dated, all of them nineteenth-century, and two are localised, both in East-Java. Two textblocks were stabbed. Unsewn structures with connective strips and wrapper bindings were not encountered.

Furthermore, with regard to sewing it seems that full dluwang textblocks were sewn more often with the knotted link stitch than the paper textblocks. Dluwang textblocks have dluwang endleaves or doublures, while paper textblocks have the inside of their boards covered with either paper or dluwang, and sometimes leather. More or less half of the items have a dluwang inner board covering. Whenever the impregnating agent (persimmon fruit juice or a similar fluid) was used, it was with dluwang endleaves. [fig. 190]

The large majority is bound in full leather, and the ratio of one piece to two pieces of leather is more or less 3 to 1. The absence of information on origin hampers identification of the different techniques, however, the four bindings with Bantenese provenance (Northwest Java) were all made with the two-pieces technique. These bindings stand out because of their decoration pattern as well; Marije Plomp described the tooling to be similar to Turkish/Persian style bindings from the seventeenth century onwards.[66] One of these bindings is even more particular as it is bound in a bright red leather, resembling cochenille-dyed alum-tawed leather. With regard to the application of the leather cover, it is interesting to note that the seven or eight other manuscripts from Java – a few of them said to originate from the eastern part of the island – all have one-piece full leather bindings except one.

No partial leather bindings occur among the Southeast Asian manuscripts. Only a few bindings are not covered in leather but in cloth (Or. 4710), dluwang (Or. 8566) or paper (Or. 1895 and Or. 7325); what distinguishes them from bindings made in other parts of the Islamic world is that these covering materials are not combined with a leather spine: they are fully made of the cloth or dluwang or paper. Furthermore, the two paper covered bindings (one in blue, the other in crème coloured paper) are decorated with stamps as if they were leather bindings. Noteworthy, the blue paper binding, from Palembang, was even made with the two-pieces technique (Or. 1895). The dluwang and cloth bindings were impregnated with an agent – possibly persimmon juice – which made it resemble leather.

Tabbed spines are found with a minority of volumes, and only on the items made with the two-pieces technique, which is technically logical and confirms the theory of mounting these separate boards on the textblock one by one. Most bindings, however, have turned in leather spines. The covers with the spine-ends turned-in may have been made as case-bindings, there is no evidence that these bindings were built on the textblock. However, there is also no proof that they were made as case-bindings.

Southeast Asian manuscripts have paste-downs far more often than other Islamic books. The use of marbled paper was not encountered, and if monochrome dyed paper was used for doublures, it seems that blue was the only available variant; in one volume brocade paper was used (Or. 18.959). Plain paper and dluwang endleaves are frequently found, leather doublures only seem to have been used on the bindings in which the decoration resembles the traditional tooling schemes, with a centre stamp and corner pieces. These are the Bantenese bindings and they are dated late seventeenth or early eighteenth century.

The endbands on the Southeast Asian manuscripts display the most distinctive divergences. They can be sewn with three colours, they are more often fringed than not, they can have twigs or cloth strips as cores, and they are sometimes 'tied around'. One example was found to have all those characteristics, even a combination of twig and textile core, with the strips of decorated cloth extending as a coloured flag among the fringes of the secondary endband sewing thread. [fig. 191] Moreover, only one example of an endband was found that had none of these features, but was made exactly like a traditional endband. Again, due to missing provenance data it is difficult to pinpoint the characteristics to precise regions. However, Bantenese manuscripts (Northwest-Java) were consistently provided with endbands

[66] M. Plomp, 'Traditional bookbindings from Indonesia' (1993), p. 581.

without fringes or a tied around thread; instead, three of them display a remarkably firm chevron sewing with rather thick thread and four sewing tours only on a distinct round core (not a flat core as is typical for Islamic endbands), and one has a distinctive endband that appears to be sewn with one thread only. The twig endband cores were often found on manuscripts from Java (four times) and once on an Aceh binding. The secondary endbands in three colours also appear to be typical for Javanese bindings, with six specimens; only once was an endband sewn in three colours found on a manuscript with a different localisation (Aceh).

Some of the Southeast Asian bindings have boards extending beyond the textblock edges, but the bindings of the majority are flush with the textblock. The occurrence of leather boards appears to be an exclusive feature of this region, and the same seems to be true for the matted or woven rattan or bamboo boards. Perhaps these materials were chosen because their capacity to resist insect and mould infestation was higher than that of pasteboards, the latter being vulnerable to the influences of the humid and warm climate. In addition, paper may have been scarcer in Southeast Asia than in other parts of the Islamic world. There was no local paper industry, though dluwang was the indigenous substitute; all the required paper was imported from elsewhere. This would certainly have ruled out the option to make pasteboard out of new paper, but even waste-paper may not have been available in such quantities as in other regions within the Islamic world to allow for pasteboard making on a sufficient scale.

The precise attachment of the boards remains uncertain. Though most textblock spines were lined with multiple layers of diverse materials, resulting in thick and rigid spines, there is little evidence that these linings were used to strengthen the board attachment. Primarily, they serve to support the textblock spine and prevent the tiedowns from tearing through the paper or dluwang. Given the high occurrence of leather turn-ins at head and tail of the spine, it is possible that the bindings were made as case-bindings, though that evidence is not conclusive, as we know that Western leather bindings were made on the textblock with turned in spine-ends (the so-called caps) for centuries. Moreover, tabbed spines and the two-pieces technique were also found. Regardless of the method, and in the possible absence of lining flanges, the endleaves at least perform a strengthening function on the inside of the boards.

One manuscript raises another intriguing question, concerning the order of writing and binding. In this case, Or. 2118 – Mal. 408, a history of the Prophets in verse, the text is not finished. To quote from the *Inventory*: "The end is abrupt. The latter (and greater) part of the codex is left blank because the treebark paper was crumbling".[67] This suggests that the gatherings were bound prior to copying the text, otherwise, the binder would not have troubled with sewing the crumbled gatherings. It is intriguing, because that would be contrary to the generally accepted idea that gatherings were only sewn and bound after the text was written.

10 Summary

The history of the Islamic bookbinding tradition starts in the early centuries of Islam, when Qur'anic texts were written on oblong shaped pieces of parchment which were bound and covered in order to enable usage and protect the text at the same time. The covers themselves became vehicles of artistic expression; the structure remained the backbone of the artefact, the indispensable, not very visible but crucial mechanism allowing the manuscript to be used for decades, if not centuries. From the survey results it has become clear that there is an archetypical structural make-up for the Islamic codex. It consists of a link-stitch sewing

[67] J.J. Witkam, *Inventory,* vol. 3 (2008), p. 43.

structure, a spine-lining and a primary endband sewing. This basic principle, however, left room for several technical variations; the differences are hard to detect from the outside and the binder may have had his own particular reasons to apply certain variations, though some structural divergences can be related to specific regions or periods. Over time, and moving away from the heartland of Islam, the variability increased and more distinctive binding characteristics emerged, such as the link-stitch sewing on multiple stations in Southeast Asia and the saw-cut primary endband in the south Arabian peninsula.

The earliest manuscripts were bound in full leather, and full leather has remained the most important covering material throughout the ages. The two-pieces technique appears to have been used from very early on, and until the nineteenth century this covering method was at least as common as the one using a single piece of leather. On a more detailed level, interesting variations were found within the group of full leather bindings. There are limp leather bindings, possibly used as temporary coverings, and composite full leather bindings, made with turned-out doublures or as a kind of çaharkuşe technique. Further seemingly regional particularities were noticed in the physical appearance of many full leather bindings. These decorative elements or aesthetical aspects were not included in this study, so no coherent conclusions can be drawn in this respect, but the types and quality of leather, stamping patterns, other decorative techniques such as painting or dying the covering leather and the application of paper cuttings may be potential additional sources of information.

Significant differences in covering methods can be found across the regions. In Ottoman times, the partial leather binding became very popular and this covering scheme could be used both as an economising option, as well as for binding luxurious items. In Central Asia too it seems that the partial leather binding rivalled the full leather binding. Here we find especially glossy papers on the cover panels, and many of the partial leather bindings have leather overlays in contrasting colours. Further east, full leather bindings were favoured. In Southeast Asia the partial leather binding does not occur, although a few specimens were encountered that were covered with *only* paper or dluwang and decorated with stamps in such a manner that they resembled full leather bindings. It appears that full leather bindings remained important in all peripheral regions, nor were examples of lacquer bindings found in these regions.

Material characteristics can be further used to localise bindings. Apart from regional specific materials such as dluwang, it appeared that the use of leather as a board material only occurred in Southeast Asia. The same seems to be true for the boards of plaited plant fibre. Twigs, or strips of coloured textile used as endband cores, point strongly to Southeast Asia as well, as does the use of three colours in the secondary endband sewing and the occurrence of fringed endbands. Very long tabs were mainly found in Central Asia, as well as thick boards and rounded spines. Bindings without flaps cannot be confined to a certain region or period; they appear to be an integral part of the traditional binding vocabulary, at least from the early sixteenth century onwards, though they occur far less often than bindings with fore-edge and envelope flaps. Unsewn textblocks with connective strips and wrapper bindings were only found on manuscripts dating from the second half of the eighteenth and the nineteenth centuries. With regard to format, when manuscripts are elongated they appear to originate from Iran or Central Asia, while square-ish manuscripts are likely to be produced in the Maghreb.

This overview confirms that the physical characteristics contain much information and provide clues as to the provenance of manuscripts, the potential of which is not exhausted yet. It also attests to multiplicity within the Islamic tradition. The importance of this multiplicity for an understanding of the Islamic book culture – which, in fact, it fundamentally changes – is elaborated on in the next, conclusive Part.

1 Recapitulation

This study set out to challenge the idea that bookbinding structures in the Islamic world were unchangingly made as weak, faulty constructions, based on the simplest link-stitch sewing system and a case-binding design with only limited connection between textblock and binding. In my conservation practice I found convincing evidence for a very different premise: the Islamic book tradition consists of and displays several different local traditions, a variety of structures, and there is a development over the centuries in the use of materials and techniques. Moreover, these structures are, in general, adequate and strong. To substantiate that new idea, all volumes from the Middle Eastern manuscript section and the manuscripts in Arabic script from the Southeast Asian section of the Oriental collections in the Leiden University Library containing original bindings and sewing structures, were assessed and relevant data was organised in a searchable database built for the occasion.

What this study also wanted to investigate was the possibility of classifying the Islamic bookbinding tradition with a more refined system than the 'Three Types' introduced by François Déroche. The box-binding (Type One) may irrefutably be an easily identifiable phenomenon, it is also a binding type that was only made in the very first centuries of Islam of which few specimens have survived. The other two categories (Type Two and Three) are distinguished solely by the presence or absence of the fore-edge and envelope flaps. It was felt that this subdivision was not so useful. First of all, the manifestation of a flap on a typical Islamic binding does not make that binding *more* Islamic than a typical Islamic binding without a flap. Additionally, the assumption that Islamic bindings without a flap are products of the last few centuries, made under the influence of Western books, was refuted by the UBL collection, since a substantial number of flapless bindings were found in the Warner collection, which came to Leiden shortly after 1665. Moreover, other distinctive characteristics were noticed, leading to the idea that such physical particularities might represent distinctive local and/or datable traditions. From conservation experience and preliminary investigations in the collection prior to the present study, it seemed at least possible to single out the Southeast Asian insular tradition as a specific and identifiable bookmaking culture. With regard to that particular region, further questions arose: What binding elements were due to the 'foreign' influences, and what features were of local origin and unique? And in addition to these questions, it seemed logical to ask: What other regional specific traditions – even if they were used for only a limited time – can be identified in the rest of the vast Islamic world? The assessment of the Leiden Oriental collections was designed to address these questions, and to examine the idea of a refined classification system.

It was felt that the point of departure, due to my technical interest and experience as a conservator, would guarantee a novel, craft-based approach and an insight into material aspects which have not been used to examine Islamic bookbindings, or the historic treatises on the Islamic bookbinding practice, so far. Additionally, I widened the scope of the research by verifying or testing findings from the physical assessment and the literature analysis through the making of models. This practical component in the study provided a unique opportunity to scrutinise actually used techniques and technical details or unexpected divergences. It also formed a basis to analyse the few existing historical treatises on Islamic bookbinding from a different perspective, and thus, already known sources proved to offer new insights into the bookbinding tradition. It is important to note that this method of analysis is not yet exhausted; the historic sources are not completely available in translation and as a consequence, the present study was based on only those parts or summaries accessible in English.

2 Development of the tradition

2.1 *The archetypal Islamic manuscript structure and binding*

The results from the survey testified that an archetype of the Islamic bound manuscript can be defined, but the multiplicity of techniques and materials used was also demonstrated. The Islamic manuscript is predominantly sewn with an unsupported link-stitch sewing, the textblock spine is lined and the lining material supports a traditional endband, consisting of a primary sewing and secondary, decorative sewing. The sides of the lining, projecting beyond the width of the textblock spine, are also used to strengthen board attachment. Furthermore, we have seen that most bindings were built on the textblock in stages, which could involve the partial preparation of the individual boards, separate from the textblock. By using this common language, bookbinders produced artefacts with a clear cultural identity, and as the structures of these manuscripts were functional, fairly durable and not complicated as a binding procedure, there was little further need to develop or alter the construction. Nevertheless, within the basic and archetypal binding structure the craftsmen found opportunities for personal interpretation. For example, the more or less equal occurrence of leather and cloth spine-linings over a long period of time and a large area, indicates that there was no shortage of one of these materials. Therefore, the choice of either leather or textile was probably transferred from master to apprentice without a particular technical implication, or it can be attributed to personal preference.

With most archetypal Islamic bookbindings an envelope flap is attached to the back board. Flaps are found with the oldest surviving examples from Mamluk times and they were applied throughout the Ottoman era. Thus, this distinctive Islamic feature spread from the Arabian peninsula to Spain and West-Africa, the Balkans, Central Asia and the Indonesian archipelago. However, the flap could be omitted while other archetypal characteristics of the binding were preserved; such bindings were first made in Turkey, in the early sixteenth century. It appeared that in total, nearly 20% of the bindings were made without a flap. Nevertheless, the envelope and fore-edge flap became the typical feature par excellence, directly associated with Islamic culture. Eventually, these flaps were also frequently attached to Islamic bindings not made in the archetypical way, for example, with a stabbed textblock or sewn on sewing supports. This illustrates the need to distinguish between archetypal appearance and archetypal construction; the two can overlap, of course, but each of them can exist in combination with various traditional or borrowed techniques and materials.

From close observation of the covering techniques, important new insights were obtained. Even though the existence of the two-pieces technique was not entirely disregarded before the present study, its frequent and early use – the earliest occurrence dates from the thirteenth century – was unknown. Moreover, up to the eighteenth century, bookbinders appeared to prefer the two-pieces technique over the use of one piece of leather for making full leather bindings. Furthermore, the two-pieces technique was occasionally used for partial leather bindings. Within this group, the overlapping parts of leather were found on a number of partial leather bindings with a paper covering on the boards, and on all the lacquer bindings. In the light of the popularity of this technique, it is also noteworthy that the survey outcomes display such a significant decline in its usage over the nineteenth century, resulting in its possible disappearance in the twentieth century. The rationale behind this development, the shift of preference from the two-pieces technique to the method of using one piece of leather, is as yet not known.

Of the partial leather bindings, no dated examples were found from before the sixteenth century. Comparing the full leather bindings with the partial leather bindings, it is worthwhile to mention the dominant and continuous use of leather. Even though the covering scheme of the partial leather binding became a common technique, it never was the prevalent method, and the use of decorated papers appears to be closely related to larger centres of bookmaking in which decorated papers could easily be obtained; in peripheral

areas the consistent use of full leather bindings may signify the unavailability of decorated papers in those regions. At the same time it is important to note that the partial leather binding is consistently manufactured with papers that were in some way decorated. When the papers are not marbled or block-printed, they at least are dyed in one colour such as olive green or pale red. This seems to suggest that this covering technique was never meant to be the cheapest possible product.

Another significant, and so far disregarded technical aspect is the application of the leather covering on the textblock spine, which offers essential information about the construction of the bindings. The large number of tabbed spines that were found convincingly point at a technique in which the binding is assembled on the textblock; moreover, the even more prominent absence of turned-in spine endings clearly signifies that the Islamic binding is not made as a case structure apart from the textblock. Only a few exceptions were found, and most of these manuscripts belonged to the group of unsewn textblocks with connective strips and wrapper bindings. For that particular group of bindings, the use of the turn-in technique at head and tail of the spine of the binding – continuous with the turn-ins over the board edges – is completely logical. Indeed, this technical characteristic actually supports the idea that Islamic bookbinders used techniques that were best suited, from a practical and economic viewpoint, for a certain binding type.

2.2 *A varied repertoire*

Apart from the archetype, and the different materials that could be used to manufacture that type, we have seen the development of different structures and binding types. It is likely that this development was promoted by a growing market and a wider reading public. Binders must have felt the need to develop bindings for a less prosperous clientele and the limp leather binding that emerged in the seventeenth century is an example of such a new binding type. The bookbinding practitioners probably anticipated and responded to the changing market, for example by offering note-books for personal use in a portable format, in varying degrees of luxuriousness.

Other changes were made in the sewing structure; we have seen the appearance of the link-stitch on four stations, which was possibly developed as a repair sewing technique. From the manuscripts studied it can be concluded that Islamic bookbinders adjusted their traditional techniques pragmatically and sensibly. For example, when thin texts comprising only two or three gatherings needed to be sewn, the archetypal construction was often adapted. Clearly, binders understood the structure well enough to be able to do so: refraining from the primary endband sewing, as in the case of the thin textblocks, required an extended link-stitch sewing. Similarly, in the nineteenth century we see variations of the predominant structure that appear to be a response to the altered materials the binder needed to work with, as in the case of the gatherings of thin and fragile machine-made paper, which were sewn with a link-stitch on four stations to divide the possible strain on the paper, caused by the sewing thread, over more sewing stations.

2.3 *Transmission of techniques and methods*

As the geographic boundaries of the Islamic world changed over the centuries, they included many cultures and ethnic groups in its different regions. With the spreading of Islam and the Arabic script we see that the manuscript tradition as a whole was disseminated. How this process came about is unknown. Did bookbinders from the established centres travel, and did they set up workshops and teach their art in the new regions? Or did indigenous craftsmen learn the new binding language by examining and imitating the manuscripts which were brought by their new rulers? It is likely that the portability of manuscripts eased the distribution of the craft. Thus, the bookbinders may have adopted Islamic features, or even complete structures, dependent perhaps on the adaptability of the techniques to their native methods. When we consider the fairly strong individual tradition in Southeast Asia, the

course of events probably evolved according to the latter scenario. Indeed, if traditional bookbinders had been brought from the established centres in the Middle East, it is not likely that they would suddenly have developed such a diverging form of their craft, including more complicated sewing structures and frivolous endbands. If, on the other hand, local craftsmen set out reproducing the imported manuscripts, they would necessarily have copied the manuscript structures and bindings by interpreting the archetypal manuscripts they had as examples. Before Islam was introduced in Southeast Asia, there was no culture of the codex. Texts were written mainly on palm-leaf, bamboo or tree bark. Also, it would have been quite logical to introduce region specific materials such as dluwang, and rattan or bamboo. In addition, for this specific region we have to keep in mind that the Islamic culture was not the only important influential factor; there may also have been European books which could function as an example for bookbinders, which seems a likely explanation for the occurrence of the use of sewing supports in some of the Southeast Asian Islamic bindings.

Another important discovery was made during the survey of the Malay collection in the UBL. It became apparent that a substantial number of manuscripts that I would have selected because of their binding characteristics, were beyond the scope of my survey since they did not conform to the criterion of script. These manuscripts were not written in Arabic but it scripts such as Javanese or Buginese.[1] The fact that the Islamic bookbinding tradition has been used for manuscripts in scripts other than Arabic, is noteworthy, and even more so that the content of some of these volumes can be originally associated with Hindu culture, as is the case with the Ramayana. The common format for manuscripts originating from the Hindu culture is very different from the codex; the textblocks have an elongated horizontal format and consist of single sheets; the leaves were not sewn.[2] The codex format was introduced in Southeast Asia with the advent of Islam, together with the Arabic script, and as we have seen, the Islamic community in this region left its mark on the Islamic binding tradition with a change in the sewing structure and the addition of the characteristic tufts to endbands. To find this type of binding on volumes in other script, containing texts – and sometimes miniatures as well – that originally belonged to the Hindu community, signifies that these texts have been incorporated into the Islamic culture. Otherwise, there would have been no reason for the physical transformation of these manuscripts. The same development is described by Brac de la Perrière (2008), who notes that the manuscripts from the Indian sultanates she examined are a priori manufactured in the same fashion as in the rest of the Islamic world, which would be true for Islamic as well as non-Islamic texts.[3]

In North and West-Africa, the Islamic manuscript tradition developed with still other features and a characteristic appearance. Although the awareness of the differences in the material characteristics help us to recognise regional variations, unto date we do not understand how and why these varieties developed. Also, the assumption that a cultural or religious background can be easily identified by the physical appearance of a book, needs to be reconsidered. When books differ in shape and key features, their otherness seems to be obvious, but we need to be aware that, as the technique of bookbinding spread and developed, traditions and practices may have mingled. We have seen examples of manuscripts which appeared to be bound in what we call an Islamic binding; in the UBL collection a few manuscripts were found with a strong Islamic outer appearance, yet they appeared to

[1] For example, in Javanese script, Or. 4931, a Ramayana, and Or. 4946, a cosmogony; in Buginese script, Or. 5449, a historical manuscript from Luwu', and Or. 5450, a collective volume, containing the story of the Prophet Muhammad's ascent to heaven and the 'Book of the Thousand Questions', with some Arabic script.

[2] This format has its origins in the use of palm leaves, which was the predominant writing material in early Hindu and also in Buddhist cultures. Even after the introduction of paper, the elongated horizontal format remained the common shape of the textblock.

[3] E. Brac de la Perrière, *L'art du livre dans l'Inde des sultanats* (2008), p. 109.

originate from the Arab-Christian community. They were only sewn with a link-stitch that could be called Coptic, but otherwise bound according to the Islamic tradition.

2.4 *The complex nineteenth century*

Trying to disentangle the jumble of data that characterises the nineteenth century is like starting on the wrong side of a knot every time. Many factors play a role in the developments of the bookmaking industry in that period and we have not enough facts to support any particular line of thought. Materials changed, the quality of imported paper from Europe declined, because handmade papers became scarce and machine made papers, often made of wood pulp, increased in quantity. Mechanical processes also adversely influenced the quality of other materials such as leather and thread. At the same time, the general acceptance of the printing press in the Islamic world stimulated book production and the need for bookbinding, especially cheap, as the printing industry first and foremost supplied the general reading public. Apart from these circumstances, the declining Ottoman empire must have had its effects on the bookbinding industry in the big centres, such as Istanbul, while the influence of Western bookbinding methods and their visual appearances become more noticeable. What the situation was like in the more remote areas is guess-work. Much of the material evidence seems to indicate that binders moved farther away from the archetype and traditional methods. Hybrid structures and bindings are no exception, books could be sewn on cords – as a Western book – but still look like a typical Islamic binding. Other specimens are sewn with a typical link-stitch sewing but their covers may extend beyond the textblock, making the books resemble Western bindings. Of particular interest, however, are the constructions that are not a straightforward result of the Islamic binding tradition and do not evolve from European techniques either. Examples are the saw-cut endband or the endband concealed underneath a thick and rigid, long tabbed leather spine. These features can be explained as economising methods, but it is quite possible that in some way the traditional techniques eroded and binders sought methods to create features that resembled the archetype they were remotely familiar with.

Most of these more or less uncharacteristic elements or altered structures seem to be a negative development; the artefacts lack the compact, light but strong quality they had in earlier centuries and one gets a sense of the loss of a tradition, as if the binding language is no longer understood. In certain cases, the loss of strength or functionality is evident. However, this slackening of tradition may also have provided room for some new ideas and attempts to improve the familiar book construction and format. An intriguing example of this is a binding with a fore-edge and envelope flap in which, when closed, the envelope flap rests in a space left vacant in the front board.[4] The layers of the inner surface of the front board have been cut to size or were peeled away to create a space for the flap piece. [figs. 192-194] Although typically the board thickness was the same of all parts of a binding, in this case the board of the envelope flap is thinner than the rest of the front board or the back board so as to fit nicely in the space thus created in the front board. After covering and application of the doublure, the intervention in the board is hardly visible. But, when the book is closed and the envelope flap is nicely accommodated in the front board, we can see how this adjustment of the book shape would lead to a more even stacking of books when shelved horizontally. The upper surface of the manuscripts – as it lays on its back cover – is more level with the ground surface than it would otherwise have been. As a result, the final stack wouldn't be leaning over. All the same, only one item with this particular board adjustment for the flap was encountered. Was the new feature not well marketed? Was it judged too peculiar and not worth copying? Did the economic and cultural situation dictate retrenching instead of

[4] Or. 12.454, a manuscript that is dated 1673, but was rebound in the nineteenth century, which follows from the machine made papers that were used as tipped-on endleaves.

complicating the production process? Until more examples are found these questions cannot be answered.

2.5 *The transition to printed books*

A preliminary survey of the Arabic printed book section in the UBL brought to light a number of interesting facts.[5] The incunabula of the Islamic presses were bound as if they were manuscripts[6]; the materials and techniques used to make these volumes do not differ from the manuscripts made in the same period. Moreover, since this concerns the period in the Islamic bookbinding tradition in which several regional specific varieties develop, it is interesting to observe that the printed book appears to adopt those features that define the manuscript tradition in the region of production at the given time, such as tabs and two-pieces, a twig in an endband core, fringed and saw-cut endbands, and connective strips; they do not merely display the archetypal binding characteristics. [figs. 195-198] Accordingly, we find books printed in Cairo, bound in typical bright red leather with modest tooling, their endbands similar to the roughly made endbands found on manuscripts of the same provenance. Several printed works from Istanbul display gold painted decoration on the leather covers, which were also found on nineteenth-century Turkish manuscripts. There are stabbed volumes and saw-cut endbands from Yemen. [fig. 199] The similarities of printed books and bound manuscripts make visible how the binding tradition resonated in the bookbinding industry of printed works.

Quite surprisingly, the section of Arabic printed books also contains unsewn textblocks with connective strips and wrapper bindings, in substantial numbers.[7] [fig. 197] The theory as proposed in Part Five, which hypothesised that the unsewn manuscripts in wrapper bindings may have functioned in copying workshops because the loose gatherings could be easily, and simultaneously distributed among several copyists, loses relevance in the light of these printed equivalents. Would one still have had to worry about the copying process when there were multiple printed copies available? The other theory, however, could also hold true for these printed books: the unsewn manuscripts in a wrapper binding were a product of the retailer, to keep them safely accessible and eventually to sell the specimen cheaply. From the results of the preliminary survey we can also learn that the practice of not sewing the textblocks was more wide spread. In the UBL manuscript collection, the only dated and localised unsewn textblocks with wrapper bindings were specimens from Egypt. Among the printed volumes, we also found examples from Saudi-Arabia, Turkey, and Malaysia.

Likewise intriguing is the occurrence of partial leather bindings with the two-pieces technique on printed books. [figs. 200, 201] Another item from the printed collection is an

[5] This survey was undertaken together with Hélène Merlet, as part of her internship during November 2012-February 2013. From the Arabic rare printed book section in the UBL, all volumes with Islamic bindings were identified. In total, 529 volumes were recorded. From this selection Merlet focussed on books printed in Cairo and Istanbul. See: H. Merlet, *Le livre islamique entre Orient et Occident. Considérations techniques et historiques sur les reliures orientales et leur conservation au travers des collections de la Bibliothèque universitaire de Leyde* (2013).

[6] It is difficult to determine the Islamic incunabula period precisely. Ibrahim Müteferrika founded the first press that printed texts in Arabic script in the Ottoman Empire, in 1727 in Istanbul. It was active between 1729 and 1743; in 1784 it became a governmental publishing house. In Egypt, the first press to print Arabic in movable type was founded in 1819, in Bulāq, Cairo, just shortly after the first book in the Persian language was printed in movable type in Iran, in 1817. The advantages offered by lithographic techniques, however, motivated many publishing houses to use this technique instead; especially in Iran and the Indian subcontinent many books were printed in lithograph from the second quarter of the nineteenth century onwards. See M. Pehlivanian, *Exotische typen. Buchdruck im Orient – Orient im Buchdruck* (2006), pp. 90-127.

[7] At least 83 unsewn textblocks with connective strips and wrapper bindings, often with the additional protection of a matching slipcase, were recorded. See H. Merlet, *Le livre islamique entre Orient et Occident* (2013), pp. 24-25.

Fig. 192. Or. 12.454. The arrow points at the recessed part in the front board, made to accommodate the envelope flap.

Fig. 193. Or. 12.454. The front board is thinner along the fore-edge, and the envelope flap fits this space.

Fig. 194. Or. 12.454. Closed, the front board accommodates the envelope flap.

Fig. 195. UBL 891 E 37 (Singapore 1877). The endband core is a wooden stick, the secondary endband is missing.

Fig. 196. UBL 891 E 37 (Singapore 1877). A stabbed textblock, though the gatherings consist of proper bifolios.

Fig. 197. UBL 865 C 24 (Cairo 1876). An example of a printed work with unsewn gatherings. Remnants of the connective paper strips are visible on the spine.

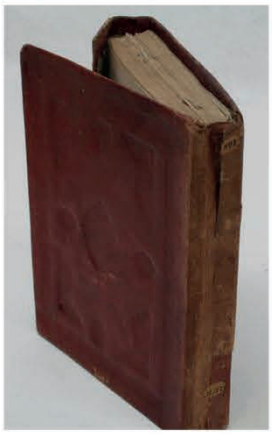

Fig. 198. UBL 891 E 37 (Singapore 1877). A binding in full leather with the two-pieces technique.

Fig. 199. UBL 845 A 19 (Sanaa 1928). A saw-cut endband on a book printed in Yemen.

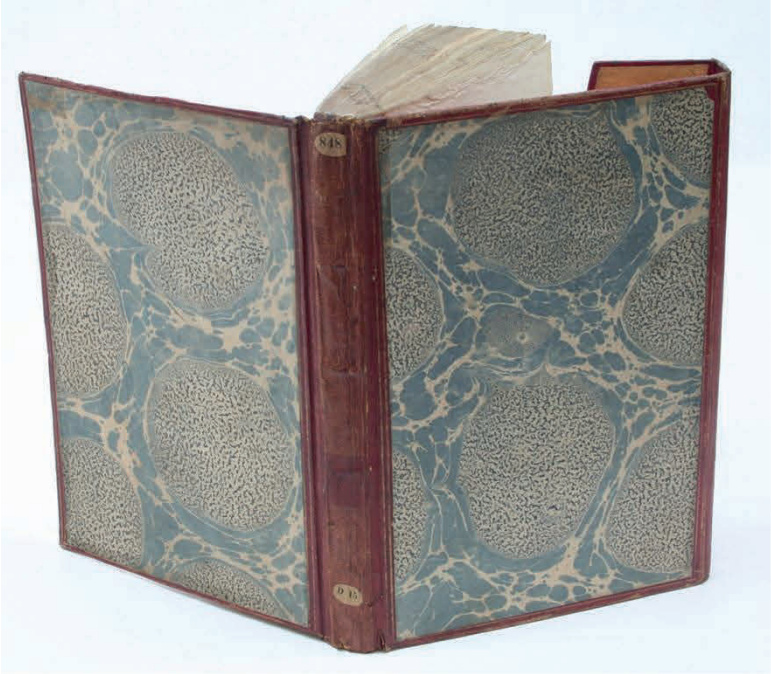

Fig. 200. UBL 848 D 15 (Istanbul 1804). A partial leather binding with all edges covered in leather, and a marbled paper covering the boards.

Fig. 201. UBL 848 D 15. Detail of the spine; the arrow points at the seam of the two-pieces of leather.

Fig. 202. UBL 870 E 25 (Istanbul 1860). A binding with typical Southeast Asian features, such as the dluwang endpapers, the endband with frilled sides and a secondary sewing in three colours.

Fig. 203. UBL 870 A 6-8 (Cairo 1852-1857). A set of three full leather bindings, made with the two-pieces technique. With two volumes the titles are written on the tail edges; the volume lying on top has the title inscribed at its head edge.

interesting reminder of how one should be aware of possible differences between place of printing/production and binding, and how study of a book's materiality can help in establishing its provenance. This is a small Qur'an, printed in Istanbul, shelf-mark 870 E 25. [fig. 202] Its binding consists of full leather covers and a fore-edge and envelope flap, a twig or reed forms the endband core, and the secondary endband has fringes on the side. We now know that these endband characteristics point to a manufacture of the binding in Southeast Asia, and this structure, with its dluwang doublures, is a typical Southeast Asian, possibly Javanese product, whereas the textblock was printed in Istanbul. The textblock of this Qur'an may have been bought by a Haji, and then brought back to Indonesia and bound there.

And there are still more practices that we associate with the manuscript culture that can also be found with printed books, such as shelving the volumes on their front or back covers, instead of placing them upright on their bottom edge. The presence of numerous titles written on the tail edges of printed book textblocks testifies to that practice. [fig. 203]

Given the preliminary stage of the study of the printed books, this paragraph can be no more than a tentative exploration of the topic. However, it illustrates the potential source of information to be found in the materiality of Islamic printed books. As the later centuries of the Islamic manuscript tradition seem to be defined by variety in shape and construction, and the traditional techniques become more scattered, there is an extra need for a large corpus to study, representing as many production centres in the Islamic world as possible. The material characteristics of printed books may provide important supplementary data.

2.6 *A profile of the repairs*

As many manuscripts were used frequently, materials and structures suffered from handling, travelling or changes in climatic circumstances. The damage could be remedied in different ways, varying from professional repair or rebinding to well-meant but rather clumsy mending. At the lower end of the scale it is difficult to capture the execution of the work in a general description, other than that the repair patches and interference are of an unorthodox nature. It seems that whatever was at hand could be used, whether such materials matched those in the original bindings or not. Moreover, it was not uncommon to repair repairs, which confirms that aesthetics were not of great importance. Depending on the ability of the mender to use needle and thread, the repair patches were attached with adhesive or they were sewn. In some cases leather strengthening patches were sewn with leather lace, which would require specific tools such as an awl, and a needle specifically suitable for leather and tongs to pull the lace through the layers of leather and pasteboard. This may point at the possible involvement of shoe or saddle makers in the making of these repairs, as they would have had such tools and leather at their disposal.

Although it is not always possible to say whether repairs were carried out by a binder or a well-informed layman, many manuscripts were repaired by persons who knew very well what they were doing. They used proper materials congenial to the object and applied techniques deriving from the Islamic bookbinding tradition. A few details are of particular interest. The leather covering of spines is particularly vulnerable to wear and tear, the joints may wear out after too much flexing or friction. As a consequence, although the boards may still be intact and capable of protecting the book, damage to the joints may undermine their capacity to provide that protection. Repair of the joints is then the obvious solution. Assuming that the level of intervention depends on the amount of damage to the spine, the exterior joints could be mended with relatively small strips, or the old spine covering could be replaced completely. Especially when the textblock itself required resewing, the renewal of the covering spine would be the obvious choice. What is remarkable is that the repair spine is often applied with the two-pieces technique; one could wonder why the binder did not take one piece of leather for this intervention. At least two theories would logically answer that question. The use of two pieces of leather would allow the binder to use up even smaller strips of leather, a welcome opportunity to economise. Additionally, however, the use of separate

strips may also be inspired by the wish to preserve as much of the original tooling along the board edges as possible. With the two-pieces technique, the leather application would start at the board's edge and so care could be taken to paste the new leather carefully underneath the old covering leather, or else over the old leather but neatly along the tooled frame-line. The extending part of the leather was then pasted onto the textblock spine. Working with one piece of leather only would not allow for such precision. As the two-pieces technique was a common working method anyway, this repair technique is not such a surprising option.

The aesthetics of the repairs is another matter. As mentioned above, they may roughly be divided in repair treatments that aimed to go unnoticed, and mends that primarily served to keep the manuscript's composite elements together or maintain its accessibility. The leather spines are vulnerable to abrasion and the tabbed ends may get torn or they decompose. As mentioned in Part Five, paragraph 5.2, it is quite feasible that many of the once existing tabs were cut more or less flush with the endbands as a preventive measure, to avoid further damage. Other books have repair pieces of leather at head and tail, and it was noted that repaired spines were often executed with tabbed spine-ends. Again, some of the mends blend in with the original and others are executed more clumsily. Often the new leather was pasted on top of the old leather; sometimes the colour matches the original beautifully, but often there is a colour difference. This difference may not have existed while the intervention was done, however; due to the dissimilarity of the leather dyes used the skins may start to show colour differences when aging. In other cases it is rather clear the repair patches never harmonised with the original.

The oldest and most frequent repairs can be found in the spine-folds of gatherings. They serve in the resewing of textblocks, and often these paper repairs display the admirable manual skills of the binders. The common repair and resewing of textblocks can be divided into two groups. The largest by far consists of manuscripts that were resewn in the traditional manner, with a link-stitch sewing on two stations. These manuscripts were not treated any differently than new manuscripts. The smaller group of manuscripts, resewn with a link-stitch sewing on four stations teaches us that some binders took extra care to avoid tension on the weakened paper. How the manuscripts resewn with stabbed sewings fit into this picture can only be explained tentatively. Was this simply a time-saving repair, keeping the damaged textblock together but avoiding the investment of time and materials necessary for repairing the paper and individually sewing the gatherings? Or was this method used perhaps because of a lack of expertise? In many instances the actual circumstances underlying such repairs will remain unknown to us.

3 Discussion

3.1 *The perception of Islamic bookmaking from a Western perspective*

Over time, the outward appearance of Islamic bindings was appreciated in several ways. Decoration techniques such as gold tooling and marbling, and the design of the ornamentation were widely admired, and as a consequence imitated by European binders. Think of the interlaced knotting patterns and the use of central medallions, flanking medallions and corner stamps which inspired European binders. An admiration for the aesthetic qualities of Islamic bindings is also illustrated by the numerous institutions and private collectors who purchased Islamic manuscripts and even empty covers, solely because of their exquisite craftsmanship and splendid designs. If, for some reason, the exotic quality enhanced the appreciation, it only affected visual characteristics, however. With regard to the structure's composition, it seems that the unknown really was unloved. In the literature analysis multiple examples are given of this phenomenon. One of the first to express ignorance of the Islamic binding procedure was Jean Chardin, who deprecated the sixteenth-century Persian bookbinders for using the two pieces of leather technique rather than one

piece as Western bookbinders would.[8] This negative conception was confirmed by William Hoey, when he wrote: "The work of the oriental bookbinder has not the durability or finish of English work".[9] This nineteenth-century view percolated through to influence the perception of twentieth-century students of the Islamic manuscript. That the Islamic book structure is a faulty construction, not fit for the manuscript's function, is a misconception shared even by many of those who, otherwise, clearly expressed their appreciation of the Islamic manuscript culture.[10]

In judging the Oriental binding structure, our observation is blurred by the Western point of perspective. The Western binding tradition is unmistakably regarded as superior to the Eastern tradition, if only for the reason that it shows development and change. That this change is not necessarily positive, or equivalent to improvement, is easily disregarded. Indeed, from the invention of the printing press onwards, bookbinders in Europe started economising, mainly by speeding up the sewing process and developing methods to simplify the operation, and secondly by using cheaper or less material.[11] This meant cutting down on the thickness of the sewing supports, reducing the number of sewing supports used – both for sewing and board attachment – and diminishing the structural function of the endband. Additionally, adhesives were introduced to mask the resulting weaknesses in the binding structures, sometimes inhibiting proper functioning. When the consistent Islamic binding tradition finally started to decline in the nineteenth century, binders began to adopt techniques and materials from the West, while the Western bookbinding tradition, at that point in time, was at its lowest ebb. The resulting loss is larger than just the disappearance of the classic Islamic binding tradition. The idea that the historic structures were not functional or failed to protect the content properly, led to rebinding campaigns in the Islamic world throughout the twentieth century on a vast scale. Often, modern Western binding techniques and materials were employed in the rebinding even if the original boards were reused or new covers were made according to Islamic design.

3.2 *Observation and experimentation*

Initially, it was the examination of a rather random selection of original manuscripts which led me to believe that much was to be learned about Islamic manuscript structures. What had been written so far about their manufacture was not always correct, and I noticed a general misconception about their functionality and strength. In order to generate more coherent information, the database was restructured and the assessment of the physical characteristics extended to the whole of the Arabic collection. The outcome testifies to the intrinsic value of the artefacts. The autopsy of the manuscripts also proved very helpful in studying the historical sources; without the original objects as a reference, it would not have been easy to try and explain the summary instructions written down in the historic treatises. However, a

[8] J. Chardin, *Voyages en Perse, et autres lieux de l'Orient*, vol. 4 (1711), p. 259. See also Part Three, paragraph 5.3.

[9] W. Hoey, *A monograph on trade and manufactures in Northern India* (1880), pp. 122-123. See also Part Three, paragraph 5.3.

[10] G. Bosch et al., *Islamic bindings and bookmaking* (1981), state for example: "Noteworthy in Islamic manuscripts is the frequent use of a sewing thread, of linen or often silk [...], which is much too thin for the binding function it should perform, and which characteristically breaks down. Also usually only two sewing stations are used, unrelated to whether the format or weight of the book requires sewing support at more points", p. 46, and "Regardless of the sequence of operations used to construct it, the Islamic book cover [...] can be considered as a separate structural unit – as the fact that so many covers have survived intact, but separated from their original textblock, abundantly witnesses", p. 56.

[11] I argued this line of thought further in the paper 'Neither weak nor simple' (2014), pp. 253-269. For an elaborate description of the economising methods of Western bookbinders, see N. Pickwoad, 'Onward and downward: how binders coped with the printing press before 1800' (1994), pp. 61-106.

third method of study proved essential to test the findings from the visual examination and analysis of the historic treatises: the making of book models.

These mock-up manuscripts were made in accordance with the observations generated by the survey, which means that a variety of types and constructions had to be made in order to experience any difficulties associated with particular methods and techniques. From this exercise it became convincingly clear, for example, that it is highly unlikely for çaharkuşe bindings to have been made as case structures. Also, the experience of making partial leather bindings as built-on structures then led to the idea that full leather bindings of the two common types – covered with either one piece of leather or with two pieces of leather – could have been made in the same way. For the full leather binding made with one piece of leather, this built-on structure is more obvious; nevertheless, a binding with the two-pieces technique could also be made this way. It seems logical that this particular method had initially been developed in order to prepare and decorate the boards individually, off the book, which would be adhered onto the spine after tooling the outside covers. However, the two pieces of leather can also have been used to cover boards while they were positioned on the textblock, in the same manner as was done with partial leather bindings. The technique allowed the binder to focus on the adhesion of the leather on one board and the spine; and then, only once that cover was satisfactorily attached, he continued to the other board and the second piece of leather. Regardless of the exact execution of the full leather bindings made with the two-pieces technique, it has become clear that both these techniques, as well as the partial leather bindings and the full leather bindings made with one piece of leather can be considered built-on structures.

The making of manuscript mock-ups proved invaluable in a way I could not have predicted. (Examples of models are given in figs. 204-214) Without making the actual models the inevitability of the tab's presence may not have occurred to me. Using the variety of materials also available to the Islamic craftsmen taught me how these materials behaved, and why the oriental binder did not question the strength and functionality of the link-stitch sewing; indeed, he experienced the soundness of the structure while sewing the primary endbands on the sewn and lined textblock, as did I when making the models. Thus, testing the theory through practical experience, and experiencing the workflow, greatly enhanced the understanding of the process as a whole.

3.3 *The impracticability or drawbacks of a typology*

A typology aims to simplify and categorise a large amount of data. Its main purpose is, of course, to bring structure to this data, and subsequently, to allow for easy-reference and generalised description of the objects that provided the data. However, a typology may obscure the overview of the whole spectrum when the subcategories are too broad and based on specifics that are, in fact, not so very specific. The typology of Déroche is an example of this. Apart from the first category he proposes, the Type One (the box-binding), it only distinguishes between manuscripts made with or without a flap. The manuscripts within the group with an envelope flap, the Type Two bindings, contain virtually all specific features and particularities that one can find in the Islamic bookbinding tradition, in a wide range of varieties. However, the same goes for the manuscripts that make up the other group, the Type Three bindings; except for the envelope flap, within this group all other Islamic binding techniques and structural characteristics can be found. As a consequence, this method of division is not very useful as a typology for classifying or surveying manuscripts for region-specific features. On the contrary, it has a counter-productive effect as it has the pretence of being a useful tool while it is not: people may stop looking further for distinctive characteristics.

On a stylistic level, the political and cultural periods have provided useful anchors for classifying the bindings. Terms like Mamluk, Safavid or Persian bindings are generally accepted as a first categorising of the bindings, although the term Ottoman covers already

Fig. 204. A model of a full leather binding with cloth doublures on the boards, a leather doublure on the flaps, and an additional leather inner joint. The leather turn-ins overlap the cloth.

Fig. 205. A link-stitch sewing on four stations. The cloth lining is incomplete and the leather spine not attached so as to keep the sewing visible.

Fig. 206. A leather spine-lining with flanges long enough to form the covering of the interior; at the front the doublure is not attached so that the warp threads remain visible.

Fig. 207. A see-through model with a cloth spine-lining; the full leather binding is made with the two-pieces technique.

Fig. 208. A see-through model with a leather spine-lining. The binding has a partial leather covering with leather strips on all board edges.

Fig. 209. The inside at the front of the same model. The upper part of the leather flange is not pasted onto the board to show structure.

Fig. 210. A model of an unsewn textblock with connective strips (of leather) and a wrapper binding.

Fig. 211. The making of a partial leather binding. After the application of the spine leather, the extending leather at head and tail need to be cut in line with the joint, to allow for the making of the turn-ins.

Fig. 212. Detail, after the cut was made and the small part of the spine leather was turned-in over the board edge.

Fig. 213. The making of the next cut at the other joint, so that the next turn-in can be made. After this, the remaining extending part of the spine leather forms the tab.

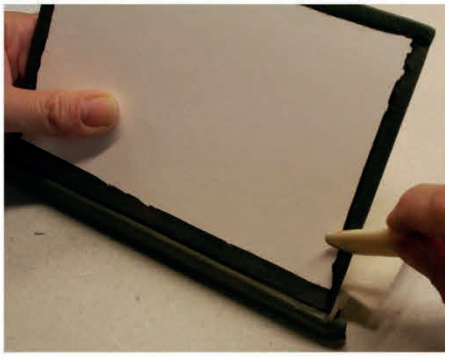

Fig. 214. After the leather on the spine has set and dried, and the turn-ins over the boards are made, the remaining edges of the board are covered with strips of leather.

such a huge geographical area and such a long period that it can only be a first indication of a type. But, though these categories work as an art-historical criterion, with respect to structural features they are not useful. Basic characteristics of the archetypal Islamic binding, such as the two-pieces technique, tabbed spines and leather or cloth full length spine-linings, are found in all periods and cultures. These labels, based on historical periods or dynasties, are therefore not suitable as a basis for a structural typology.

Ideally, a typology differentiates between technical structures, and allows for further subdivision with respect to the outer form and the materials used. In the case of the Islamic bookbinding tradition, this results in a complex system, as both the differences in sewing structures and variations in covering schemes are essential for the technical classification. For example, the two-pieces technique is found as a common method of leather application for full leather bindings, but can be used for çaharkuşe bindings as well. What is more, it is also used for those bindings that have a leather spine only, such as lacquer bindings. Manuscripts with lacquer bindings, however, so far only seem to be made with a link-stitch sewing, whereas the textblocks in full leather bindings – made either with one or with two pieces of leather – can be link-stitched, stabbed textblocks, or sewn on supports. Conversely, unsewn textblocks clearly stand out as a specific category, as they appear never to contain a wrapper binding made with the two-pieces technique; these bindings can be covered in full and partial leather though. Accordingly, it seems that technicalities traverse almost all binding types, though bookbinders had specific reasons to exclude certain practices from certain categories. As a result, the ramification of possible varieties is large. This significantly complicates the grouping of the different features, and a nomenclature would become artificial, or pointlessly lengthy when the characteristics involved are to be incorporated in the name. It also means that a relatively simple typology is not an option, contrary to my initial thoughts that the variant groups within the Islamic bookbinding tradition needed sub-classification. Rather than trying to fit a manuscript and its binding into one category, implying thereby that its characteristics can be neatly typified, I would suggest the diverse aspects need to be described individually and specifically.

3.4 *Further study*

In the process of identifying the selection criteria for the assessment, some features were regarded as not being useful to include at that particular stage of the survey. These features offer avenues for further study.

With regard to material knowledge, for example, there is still much to learn about the leather made and used in the Islamic world. Images of a 'typical' grain pattern of goat, sheep or calf leather can quite easily be found in handbooks on bookbinding or in conservation literature; often drawings are provided, representing the archetypal patterns in order to stress the difference between the animals. Unfortunately, many of the skins we encounter in reality do not resemble these patterns, they lack the clarity and straightforwardness these illustrations conjure up. Apart from the fact that determination of leather is hampered by aging and damages such as abrasion and physical-mechanical damage, the natural deformation of the grain patterns in 'armpit' areas and pleats towards the belly complicate pattern recognition. But more importantly, although it seems that different species of goat and sheep have particular characteristics, some of these animal species seem to share overlapping features. In addition, it is evident that we lack in-depth knowledge on the differences in the other types of leather that may have been used in the Islamic world. It seems that sometimes camel leather may have been used, or leather made from the skin of a mule or donkey or different kinds of deer. Given the enormous geographic region from which the bindings come, it is likely that a wide variety of species was used as a source of leather. Further study might help to identify these species, and subsequently, the origin of the artefacts.

Another topic of material study concerns the Islamic and European papers, used for writing the text as well as for the decorated papers made in the Islamic world. Apart from the limited knowledge about the handmade Arabic papers and papers made in Central Asia, there is still much to learn about the trade of European papers to and within the Islamic world. Additionally, the use of decorated paper could offer clues as to the origin and dating of manuscripts. Current studies in decorated paper mainly focus on the manufacturing of these papers in Europe, but with regard to the Oriental book it would be interesting to know how these papers were traded and exported to different parts in the Islamic world, and whether certain techniques such as the making of brocade papers were ever practiced locally. That way, the contribution made by the materiality of the manuscripts as a source of information to establish provenance may be enhanced. The sub-Saharan manuscript culture especially deserves to be mentioned here. Though excluded from the present study when these artefacts lack a relevant construction due to the use of single folios, the material features of these manuscripts provide leads for further research on their papers, leathers, fabrics, colorants and the stylistic characteristics used for their wrappers and additional enclosures such as bags, pouches or slipcases.

Material research in diverse manuscript collections will be indispensable for a codicological framework. This is not just a matter of quantifying and verifying the findings of the present study. It will prove particularly informative to conduct surveys in different regions of the Islamic world, as it is believed, generally speaking, that most manuscripts in a certain geographic region are products of that same area. Such assessments of local collections will offer much information on regional characteristics and will probably provide insight into the development of certain trends. Material research in other manuscript collections, in the Islamic and Western worlds alike, may also shed more light on some of the theories proposed in this thesis. For example, the hypothesis that the composite leather binding evolved from a repair technique is now based on the flimsy evidence of five manuscripts in the UBL collection only. Other examples of the same technique will doubtlessly offer further clues. By the same token we need more evidence as to the first occurrences of the four station sewing technique. Was this a repair technique that developed into a regular sewing method, or was it an alternative sewing method which proved to be especially functional for the resewing of damaged textblocks? No doubt additional studies of the physical characteristics of Islamic manuscripts will teach us other things as well.

The study of the material culture and the binding trade are interrelated. As yet, little is known about the movements of binders, the trade in the tools, or the dissemination of decoration schemes and stamps; we may yet find written sources to fill this gap in our current framework of knowledge, otherwise the information needs to be built up piece by piece through physical examination of the artefacts.

As mentioned above, additional information may be gained from a renewed study of the historic treatises on bookbinding. With an increased awareness of the various sewing structures and covering schemes, a thorough study and full translation of these sources may provide new clues as to the use of such techniques. It seems attention should particularly be directed to the paragraphs on board attachment, covering and the application of doublures or endleaves.

Historic travel literature is a further potential source of information. As mentioned in previous Parts, three rather matter-of-fact remarks on bookbinding practices were found in such travel journals or accounts. They turned out to be early observations of certain features, supporting some of the findings in this study, while references to these specific techniques were not always found in relevant codicological or conservation literature. Furthermore, even though these texts may not offer a direct explanation of the characteristics described, they do provide context and add a period or geographical region to our framework. Although the three examples could be flukes, they do seem to hint that more information about local practices is to be expected in this genre of literary sources.

Art-historical aspects of the bindings were not included in the present study, as it first and foremost concerned a pioneering research into the technical aspects of Islamic bookmaking. To extend it with a correlative study of stylistic features could be profitable; such an extension could consist of a sub-survey, including only the manuscripts preserved with their first sewing and binding. Thus, the results could eventually lead to the inclusion of more precise data on the decorative characteristics of particular periods and particular regions.

Finally, collaborative projects will be needed. The considerations put forward in Part Four illustrate how the technical framework can be refined when a more detailed system of classifying Islamic scripts becomes available, and when further research into the distribution of Western papers in the Islamic world or a typology of identified Islamic papers would offer more concrete data. On a different level but at least as significant, joint efforts between specialists with in-depth knowledge of the contents of Islamic manuscript collections and specialists of the manuscripts' physical aspects are essential. Ideally, the fields of expertise such as palaeography, philology and codicology would be combined with the necessary book-archaeological knowledge in one person, but given the learning and experience required for any of these specialisms, it is more likely that the desired combined knowledge will have to emerge from collaborative projects.

4 Conclusion

4.1 *An adjusted identity*

The general appearance of Islamic manuscripts has not changed over the centuries in the way Western books have altered structurally and materially. Despite this apparent conservatism, significant differences in construction can be found, as a consequence of different local workshop practices or regional variations. On a more detailed level, we have seen that binders applied certain techniques in particular situations, for example when they chose to sew a formerly sewn, damaged manuscript with a link-stitch on four stations. They utilised the structural function of the primary endband sewing fully, but pragmatically; for instance, when they had to bind two gatherings only, they preferentially adjusted the sewing structure rather than supplying an endband they could not finish properly. We therefore have to conclude that bookbinders in the Islamic tradition had a certain range of technical and material possibilities to carry out the job, from which they made a selection in keeping with a given commission or situation. Accordingly, paying attention to the possible variations and the underlying rationale of their use may offer information on the provenance of a manuscript or the circumstances of its production.

The image of a conservative Islamic bookbinding practice was not only based on the relative consistency in the appearance of the books, it was founded also on a limited understanding of how a trade like bookbinding remained constant in the centuries before industrialisation. Gulnar Bosch et al. for example compare the implements for bookbinding that were described by Ibn Badis, Sufyani and Qalqashandi to later depictions of such tools and scenes of the trade in a nineteenth-century Kashmiri manuscript of crafts and a seventeenth- or eighteenth-century watercolour of a North Indian bookbinder. They conclude: "It is a measure of the conservative nature of the Islamic bookbinding craft that most of the tools mentioned by these earlier authors can be seen in the later depictions [...]".[12] Let us compare this with an observation from Nicholas Pickwoad about the Western binding trade: "From the end of the middle ages until late in the industrial revolution, the equipment and materials used remained essentially unchanged, to the extent that a binder from an early

[12] G. Bosch et al., *Islamic bindings and bookmaking* (1981), p. 41; the images they refer to can be found on the pages prior to the discussion of these tools.

16th-century shop could have walked into a workshop in the early 19th century and started work with scarcely a moment's hesitation – unless it were over the choice of decorative finishing tools he would have found at his disposal".[13] It appears that both in the Orient and in the West the craftsmen's workshop and his tools hardly changed over many centuries; in the West, however, the techniques of sewing, board attachment and covering and the materials used to bind books did change substantially. As a consequence, the consistency in the tools used does not indicate a stagnant bookbinding practice, it merely proves that bookbinders had no need to change their tools, even though they changed their methods. By the same token, the development of the variety in techniques we have seen in Islamic bookbindings must have been possible with an unchanged selection of implements.

Besides the idea of a stagnant and simple tradition, the image of the Islamic binding as an insufficient and weak product appears to be faulty. First and foremost, it is based on a profound misunderstanding of the construction, which is largely caused by a biased Western perspective. The misjudgement is a result of looking at the isolated techniques instead of observing them as a composite functional whole, and secondly, by comparing them to Western equivalents which are, in fact, not equivalents at all. The link-stitch on two stations was dismissed as a proper sewing structure since its use in Western bookbinding is mainly for temporary structures or the sewing of ephemeral publications such as pamphlets or almanacs. By the same token, the leather inner joints were thought to be inadequate board attachments because the actual function of the spine-lining was not recognised and leather inner joints in Western bookbinding were not elementary for that binding construction. Perhaps the most significant misperception is the notion that Islamic bindings were made as case-bindings. Not only is the term a misnomer for the actual structure of the manuscripts, as we have seen, but, since case-bindings in the Western tradition are products that resulted from extensive economising and speeding up the binding process with a mass-production component, they do not exactly have a favourable image. This has contributed to the depreciation of the Islamic manuscript structure.

To know the falsity of these two prejudicial notions fundamentally changes our understanding of the Islamic bookbinding tradition. It also has an impact on preservation strategies and the conservation needs of these items.

4.2 *Implications for conservators*

Conservators equipped with more knowledge about the technique of Islamic bookbinding will approach these manuscripts differently. The rehabilitation of the Islamic manuscript structure and an awareness of its possible variations affect both the documentation made prior to treatment, and the treatment itself. The manuscript's composition as a whole requires attention, and careful observations need to be made in order to register possible traces of former sewing and binding. It is the conservator's task to indicate how a specific volume was constructed, and what materials were used. In short, the wide range of techniques and materials found in Islamic books requires a detailed report, and conservation documentation and object descriptions will have to reflect the conservator's understanding of the manuscripts' materiality.

Secondly, a better understanding of the structure has an impact on the possible treatment of these items. A conservator, prejudiced about the strength and suitability of an object's construction, has a perspective different from one who respects the object's material qualities. The first would be likely to approach the intervention thinking in terms of 'improving' the object, whereas the latter would be more inclined to display the professional integrity so necessary to truly preserve these objects. In addition to this considerable change in approach, it is to be expected that conservation techniques themselves will be adapted. Some methods, developed for Western books structurally so dissimilar from Islamic ones, are

[13] N. Pickwoad, 'Onward and downward' (1994), pp. 61-62.

inappropriate or even harmful to Islamic manuscript structures. An understanding of the original construction *and* a respect for this other identity allows for a different methodology, and may instigate the development of new treatment solutions.

On a different plane, it has become clear that there is still a lot to know and learn from the physical objects, which has further implications for the conservator's practice. The awareness of the manuscripts' materiality as an extra stratum of information may cause a shift in preservation approaches. In some cases, it may even cause a conflict between the traditional valorisation of the artefact – which may be primarily art-historical and aesthetical in a museum context or first and foremost content-directed in the context of a research library – and the newly recognised importance of certain physical characteristics. For example, when the conservation of a manuscript for the purpose of an exhibition on the development of bookbindings would require the cosmetic treatment of a split joint and the addition of some new covering material to improve the visual reception of the artefact, such an intervention might disturb evidence of the original covering technique. Similarly, when accessibility of the manuscript is the most important reason for treatment, certain repair techniques may seem necessary, even though they may be undesirable from the book archaeological point of view. Such conflicts do not have to result in a deadlock in the preservation process. On the contrary, they may stimulate the development of new or adjusted techniques and an original use of conservation methods. The responsibility for pointing out the possible risks from the loss of information about the original object will often lay with the conservator, who should be fully aware of the consequences of an interventive treatment. In that sense the conservator has a signalising and a resolving task.

Though book archaeological studies serve the book conservator, the reverse is also true. Conservators of manuscripts can – and should – contribute to the field of book archaeology. They have, after all, an exceptional opportunity to investigate the anatomy of the objects that come to them on the workbench, supported by the material and technical expertise they bring to their observations. With the present study, I have used my experience and insights to make a contribution to the field of Islamic manuscript studies. It is my hope that the results, in the form of the new understanding of the artefact's materiality and the outlined avenues of extended study, will inspire further research.

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APPENDICES

Appendix I Glossary

The terminology used in the present study is based on the illustrated *Glossary for conservators and describers of Islamic manuscripts* which will be accessible through the TIMA website.[1] As this *Glossary* is a working document, terms and their definitions may change slightly over time, and additional terms may be added. Thus, the list below is bound to be somewhat outdated in due course; readers who want to use the terminology for conservation reports or manuscript descriptions are advised to first check the on-line glossary.

Contrary to the web-source, where the terminology is arranged according to sections such as 'textblock', 'structure' and 'binding', and where the terms used in the individual definitions are hyperlinked, the terms below are listed in alphabetical order; this fits the purpose of quick reference for the present study. Furthermore, the list is only a selection of the digital *Glossary*, containing those terms relevant in the present study. Furthermore, positions such as 'head', 'tail', 'fore-edge' etc., are not included because they are illustrated in the figures 13 and 14 in Part Two.

° = Terms that have their own definition

Adhesive	A material used to join two different materials or two separate pieces of a material. The adhesive is usually applied in liquid form which then dries and hardens to a solid.
Bifolio	The basic unit making up a °gathering. The sheet of °support material is folded in the middle, creating the two °folios that constitute the bifolio. These folios can be either conjoint or °non-conjoint.
Binding	The entire structure used to cover and hold the °textblock together, which includes °covers, °flaps (when present), °cover spine, °endbands, °sewing, °spine-lining and fastening.
Block-printed paper	Paper that is decorated by printing in paste-colours from carved woodblocks.
Board	A material, such as thin paper laminates, °pasteboard or wood, used to create a stiff or semi-flexible core of the °covers and °flaps of the °binding over which °leather or some other material is adhered.
Built-on	Binding procedure in which the different elements of the °binding are applied to the °textblock in subsequent stages, requiring separate actions of adhering and time to allow for drying.
Çaharkuşe	Covering scheme in which °leather is applied to the °spine and °fore-edge flap, and thin strips of leather are used to cover the edges of the °boards, while the central panels of the boards are covered with a different material, usually paper, but °cloth or a diverging leather may be used. Sometimes the front edge of the °envelope flap is not covered in leather. In a more economic variant also the horizontal strips of leather are omitted.
Catch stitch	see: Link-stitch

[1] P. Hepworth and K. Scheper, *Glossary for the conservation and description of Islamic manuscripts;* all terms and definitions can be found there, with the exception of 'limp leather binding', 'sewing tour', 'side-sewing' and 'tacket', which were not yet included in the 'definite list' as prepared for the launch of the web-publication. Eventually, the *Glossary* will be available in four languages (next to English, there will be Arabic, Persian, Turkish); it will then be published at the TIMA website. Until then, the English version is available at: http://www.hepworthscheper.com/lexicon/lexicon-en.html (accessed 15-08-2014).

Chain stitch	see: Link-stitch
Chevron pattern	The predominant °secondary endband pattern found in Islamic °endbands. The grain direction of the °thread of the secondary endband alternates in each tour of the sewing, thereby creating a characteristic V-shaped or zigzag pattern. Often these patterns are sewn with two colours.
Cloth	A flexible material composed of woven °threads. When the fibre content of the cloth has not been determined it is more accurate to use this generic term for such material in the manuscript than to call it cotton, silk or linen.
Connective strips	Strips of °leather (and sometimes °cloth or paper) adhered over the °spine of a °textblock that is not sewn, serving to help keep the °gatherings in order.
Coupled leaves	see: non-conjoint
Cover	A composite structure that serves to protect either the front or back outer surface of the °textblock. It is usually formed of a rigid °board and material adhered over the surface of the board. More rarely, the boards are eliminated entirely and the cover is then a limp binding.
Cover spine	The portion of the °binding that covers the °textblock spine.
Covering material	°Leather, °cloth or paper or a combination of these materials used to cover the °board on its outside surface and edges, and usually applied in such a way that the material forms °turn-ins on the inside of the boards.
Decorative cut edge	The edges of the strip of °leather or paper that covers the °inner joint and makes a hinge which reinforces the board attachment, or the edges of the (stubbed) °doublure can be cut in °tracery designs for an aesthetic effect.
Dluwang[2]	A sheet of °support material in which the inner bark of a paper mulberry tree beaten to cause the bark fibres to become enmeshed and to make the surface of the sheet flat and smooth. This support is found in manuscripts from Java and Madura in Indonesia.
Doublure	The material covering the inside surface of a °board or °flap in a °binding when that material is not part of the structure of the °textblock (in contrast to a paste-down). Typically, the inner surface of the back cover, °fore-edge flap and °envelope flap are covered separately; sometimes, however, a single continuous sheet of material covers all of them as well as the joints between them. The material covering the inner board may end at the edge of the °inner joint and thus have no direct connection to the textblock, or, it may extend over the inner joint and be adhered onto the outer leaf of the textblock near the spine. In the latter case, the extension of the doublure onto the textblock is a °stub. In some other cases, the leather used as a °spine-lining extends to cover the inner surface of the front and back covers.
Endband	The sewn and woven structure at the head and tail of the manuscript's °spine that helps keep the °gatherings in the °textblock together and aligned. It

[2] Alternative spellings are possible, such as 'Dluang', used in the *Inventory of the Oriental manuscripts in Leiden University Library* by Jan Just Witkam, (2006-2007), or 'Deluang', used by E.P. Wieringa, *Catalogue of Malay and Minangkabau manuscripts in the library of Leiden University and other collections in the Netherlands* vol. 1 and 2 (1998, 2007). The term 'tapa', which is used for a material that is also made by pounding the inner bark of the paper mulberry tree, is not appropriate; tapa is described as a paper-like cloth and is mostly associated with garments.

	comprises a °primary and °secondary endband. The term ‘Headband’ is less accurate since endbands are made at head and tail of the spine.
Endband core	The narrow °leather strip (and occasionally of different material such as cord, twisted textile or reed) characteristically found in Islamic °endbands over which the °primary endband is sewn and the °secondary endband is woven.
Endband anchoring thread	see: Tiedown
Endleaf	One or more leaves added to the front and/or back of a °textblock to protect it. Although they do not carry the manuscript’s original text, they are a place where other inscriptions and notes are sometimes written. These added leaves may comprise °fly leaves and °paste-downs.
Endpaper	see: Endleaf. The term ‘Endpaper’ may cause confusion since endleaves can consist of other materials such as leather, dluwang or parchment.
Envelope flap	The pentagonal piece of °board and °covering material which in a typical Islamic °binding extends from the °fore-edge flap with a flexible joint. Usually the envelope flap was inserted under the front cover or slid between the leaves of the manuscript. In rare cases it may lie over the front board. This latter arrangement is obligatory if a fastening strap extends from the point of the flap, which was used to wrap around and secure the book.
Fabric	see: Cloth
Fascicle	see: Gathering
Filigree work	Delicate lacy designs cut out of finely °pared leather or paper.
Flange	The extension of the °spine-lining material past the width of the °textblock spine. This extension is often used to help attach the °textblock to the °boards of the °binding and therefore forms part of the °inner joint. It is usually adhered to the inside spine-edge of the adjacent board, more rarely to the outside spine edge of the adjacent board.
Flap	Short for °fore-edge flap and °envelope flap together, although less accurate.
Fly leaf	A °folio, originally blank, at the front or back of the manuscript which was intended to protect the first or last leaves of the °textblock.
Folio	Half of a °bifolio; comprised of side a and side b of a half sheet of the °support used to make up the °textblock.
Fore-edge flap	The small piece of °board and °covering material which in a typical Islamic °binding extends from the back cover with a flexible joint and protects the fore-edge of the manuscript.
Full leather binding	One in which the outer °covering material consists only of °leather (excepting any subsidiary °overlays, inlays or °underlays made of different material). Usually these bindings are made in one of two ways: either with a single piece of leather covering the entire outer surface of the binding, or with two pieces (the °two-pieces technique) covering the outer surface.
Gathering	A group of folded leaves, nested together at their °spine-fold; the basic unit of the °textblock.

Glue	An °adhesive usually made from a protein source such as an animal hide.
Guard	A strip of °support material (usually paper but possibly parchment or °dluwang) adhered to one or more °folios at the °gutter and hence with a °spine-fold of its own through which it is sewn.
Guarded leaf	see: Hooked-in
Gutter	The edge of a °folio adjacent to the °spine of the manuscript.
Headband	see: Endband
Herringbone pattern	see: Chevron
Hooked-in	Describes a single leaf attached to a °gathering by means of a small extension of the leaf (the °stub) past the °spine-fold at the °gutter.
Inner joint	The moveable joint between the inside of a °cover and the °textblock, between the cover and °fore-edge flap or between the fore-edge flap and °envelope flap.
Kettle stitch	see: Link-stitch
Knotted link-stitch	On returning from making the linkage with the preceding °gathering on the °textblock spine, the °sewing thread is pulled behind the preceding stitch in the gathering °spine-fold, creating a loop through which the thread then passes before it continues to the next °sewing station, thus forming a knot. This is the most complicated way of performing a °link-stitch sewing.
Lacquer	Refers to composite materials and associated production techniques in which a base of °pasteboard was painted with miniatures or illumination, often on a coating of gesso, and then coated with lustrous varnish made from linseed oil, gum sandarac and other ingredients. °Covers of some °bindings were made in this manner.
Leaf	see: Folio
Leather	The outer layer of an animal skin, usually a domestic species such as goat, sheep or cow, which is °tanned or °tawed to make it strong, durable and resistant to biological degradation. The principal component of leather is an interlocking three-dimensional network of fibres of collagen, a type of protein.
Limp leather binding	A full °leather °binding made without °boards. The leather may either be °turn-in or cut flush with the °textblock; in the latter case °doublures are usually also absent.
Link-stitch	An unsupported °sewing, dominant in Islamic manuscripts. The °thread goes into the °gathering at one of the °sewing stations, passes along the °spine-fold on the inside of the gathering, and exits the gathering on the spine at the next station. When the thread exits the last station in the gathering, it then passes behind the thread going into the adjacent station on the previous gathering and up through the loop formed by itself in this passage. Once the thread is pulled taut, the loop cinches the thread passing through it, thereby forming a kind of knot to secure the sewing. It then continues on to the next gathering to be sewed. Thus as the sewing progresses, two or more – depending on the number of stations – chains of linkages are formed.

Link-stitch on two stations

This unsupported °sewing is the most common in Islamic manuscripts. The °sewing stations are usually positioned roughly a third or a quarter of the spine-length from the head and tail of the manuscript. The °thread goes into the °gathering at one of these stations, passes along the °spine-fold on the inside of the gathering, and exits the gathering on the spine at the other station. The thread then passes behind the thread going into the adjacent station on the previous gathering and up through the loop formed by itself in this passage. Once the thread is pulled taut, the loop cinches the thread passing through it, thereby forming a kind of knot to secure the sewing. It then continues on to the next gathering to be sewed. Thus as the sewing progresses, two chains of linkages are formed: one chain links all the gatherings at the stations adjacent to each other towards the head, the other links all the gatherings at the stations adjacent to each other towards the tail of the gatherings.

Link-stitch, simplified

Unsupported °sewing similar to the °link-stitch. The °sewing thread passes from °sewing station to sewing station along the °spine-fold on the inside of each °gathering. When the °thread exits one gathering on the spine, it is taken behind the thread going into the adjacent station on the previous gathering. However, unlike the link-stitch sewing, it does not go through the loop formed by itself in this passage. Consequently there is no cinching of the thread by that loop before it proceeds to the next gathering to be sewed. Again, two chains of linkages are formed: one chain linking all the gatherings at the stations adjacent to each other towards the head, the other linking all the gatherings at the stations adjacent to each other towards the tail of the gatherings. These linkages are looser, however, than those formed by the link-stitch sewing.

Link-stitch on four stations

In this °sewing, in addition to the °sewing stations near the head and tail like those in the °link-stitch on two stations, two other stations are created towards the middle of each °gathering. The °thread goes into the gathering at the first station, passes along the °spine-fold on the interior of the gathering and exits at the second station, goes back into the gathering at the third station and then exits the gathering again at the fourth station. At the first and fourth stations, the thread is treated in the same manner as described in the link-stitch on two stations. However, at the second station the thread is taken behind the one passing between stations two and three on the preceding gathering. Thus a very loose linkage is formed near the middle of the gatherings between the one being sewn and the one previous to it. What distinguishes this particular link-stitch is that the thread does not pass continuously inside the fold-line between the outer sewing stations. Instead it passes on the spine side between the second and the third stations.

Marbled paper

A technique to decorate paper, in which pigments in suspension are floated on water and drawn into delicate patterns, which can resemble the patterns found in marble. When paper is laid directly onto the suspension of colorant and binder, the patterns are transferred to the paper and adhere there.

Non-conjoint

Two °folios constituting a °bifolio that are adhered or °guarded together at or near the °fold-line.

Onlay

see: Overlay

Overcasting

A °stabbed sewing technique that connects an indefinite number of °folios. The °thread is taken through a set of aligned transversal holes in the stack of folios, passes around the spine edge to enter the next set of aligned transversal holes, and continues in this manner until it is taken through all of the sets of transversal holes and is then tied off. This technique is often

	used to join loose folios into a structure that functions like a °gathering. A group of these gathering-like structures can then be joined together with a secondary sewing.
Overlay	A material of different colour and/or type to that of the °covering material that is adhered over an area of the °cover or °doublure on which there is already a layer of the covering material. This additional material can then be further decorated with paint and/or °stamping.
Oversewing	see: Overcasting
Page-marker	A tab or tassel (made of a variety of materials, such as °cloth, string, paper, °leather) attached to the fore-edge of certain leaves so as to mark the placement of these leaves.
Pared leather	After °leather has been °tanned or °tawed, it is usually too thick to be used in book making. Consequently it is thinned with sharp knives or other instruments, which constitutes the paring process.
Partial leather binding	A style of °binding in which the °textblock spine and the °fore-edge flap (when a °flap was attached) are covered with °leather. Often thin strips of leather are applied around the edges of the °boards to frame the material (usually °cloth or paper) used to cover the rest of the outer surfaces of the boards and °doublures.
Paste	An °adhesive usually made from a vegetal source such as wheat or rice starch.
Pasteboard	A stiff material created by adhering several layers of paper together.
Paste-down	A °folio adhered to the inside of the front or back °board that is either a °hooked-in or conjoint with a leaf sewn into the °textblock or is conjoint with a leaf °tipped onto the outer page of the sewn textblock. It always covers the inside joint between the °cover and the spine but, in case of the back cover, never extends over the inner surface of the °fore-edge flap and °envelope flap.
Primary endband	The °sewing at the head or tail of the °spine over the °endband core that passes through the °fold-line of each °gathering in the °textblock sequentially from the front to the back of the manuscript and the °spine-lining. This sewing functions to help join the gatherings in the textblock to each other and to keep them from moving independently; the sewing in the gatherings and passing on the °textblock spine are referred to as °tiedowns.
Quire	see: Gathering
Safina	An oblong shaped manuscript, often containing poetry or a compendium of literature. The text is usually written perpendicular to the opening so that the manuscript must be rotated 90 degrees clockwise to be in a correct orientation for reading.
Secondary endband	The °threads woven through the °primary endband sewing over the °endband core. Often colourful, the function of the secondary endband is mostly decorative, although it has some function in keeping the °tiedowns together on the core.
Section	see: Gathering

Sewing	The passage of °thread through the °gatherings in order to connect them and thus form the °textblock.
Sewing stations	The points at which the °sewing thread passes through a °gathering.
Sewing supports	Material, usually cords or bands, that extend across the width of the °textblock spine over or around which the °sewing thread passes, forming a supported sewing structure.
Sewing thread	A long, continuous strand composed of processed plant fibres (cotton, flax, hemp) and/or animal fibres (silk, wool) that are spun together. Often spun single strands are then be plied together to form stronger or thicker multiple strands.
Sewing tour	The total distance or manoeuvre of a °thread within a component (such as a °gathering) or in a material stratum (such as the °secondary endband sewing), between the outer stations, at which point the thread changes direction.
Side-sewing	A °stabbed sewing technique using a minimum of two aligned transversal °sewing stations. The °thread is taken through a set of holes in the stack of °folios, passes over the °support material parallel to the °spine, to enter the next set of aligned transversal holes, and is then tied off, or continues in this manner until it is taken through all of the sets of transversal holes. Varieties can be found in which the thread also passes of the spine edge in order to return in the stabbed station and then to continue its path. This technique is often used to join loose folios.
Signature	see: Gathering
Spine	A vague term because of its threefold meaning. It is used to denote a general location: the back of the °textblock; it is also used to indicate more specifically either the bare °textblock spine, or the °cover spine. Its slipshod usage causes problems in conservation reports or codicological descriptions.
Spine-fold	The crease at the centre of a sheet of the °support material created when that sheet is folded in two to form a °bifolio. A group of bifolios are nested together at their °spine-folds to create a °gathering. Then each of the gatherings is sewn through the nested spine-folds to attach them to each other, thus creating the °textblock.
Spine-lining	°Cloth or °leather that is usually adhered to the full length of the °textblock spine. The lining helps keep the °gatherings from shifting in the °textblock. Additionally, since the °primary endband is sewn through the lining, this material helps prevent the °endband tiedowns from tearing through the gathering folds when the endbands are sewn and also later when the volume is opened and closed. Often the lining is wider than the textblock spine thereby forming °flanges that extend from either side of the spine.
Spine leather	The part of the leather °covering material that is adhered to the °textblock spine, over the °spine-lining. Thus it forms the °cover spine.
Spine loop	The part of the °sewing thread that, in °stabbed sewing, passes around the °textblock spine from one and the same °sewing station.
Square boards	°Boards which project beyond the edges of the °textblock. The term is commonly found in glossaries on Western bookbinding.
Stabbed	A transversal hole is created through the °gatherings near the °spine.

Stabbed connection	A °thread, cord or °leather lace is drawn through the aligned transversal holes in a stack of °stabbed folios and then tied.
Stamping of leather	A hard material carrying a design on its surface is applied with some force to another surface. In one method, the material carrying the design is applied with enough pressure so as to transfer an impression of that design onto the °leather to which it was applied. In another method, the material carrying the design is heated and applied to wet leather. Those areas of the leather exposed to the heated parts of the design become darker in colour than the empty spaces in the design.
Striped vertical pattern	A °secondary endband pattern found occasionally in Islamic °endbands. Woven with two colours of °thread, the grain direction of the thread is kept the same in each tour of the sewing. Each colour of thread is always woven on the same °endband tiedowns in every tour of the sewing, thereby producing stripes vertical to the spine.
Striped diagonal pattern	A °secondary endband pattern found occasionally in Islamic °endbands. Woven with two colours of °thread, the grain direction of the thread is kept the same in each tour of the sewing. However, each colour of thread is woven on °endband tiedowns in one tour of the sewing that are staggered relative to those in the next tour, thereby producing diagonal stripes.
Stub	The small extension of the °hooked-in leaf. Stubs are also found on °doublures (either paper or leather doublures), in which case the stub is the projecting part of the doublure that crosses the °inner joint and is attached to the outer leaf of the °gathering.
Support material	The material in the °textblock which provides the surface on which text is written or paint is applied. Paper and parchment are the most common types of Islamic manuscript supports. In the early period, papyrus was also used in some regions, chiefly Egypt. Other types of regionally specific supports are also used, such as °dluwang in Indonesia.
Tab	Projection of the °spine leather past the end of the °spine at the head and tail. This may have been an artifact of the way the leather was applied to the °boards: when the binder turned in the leather on the head and tail of the boards, the leather at the ends of the spine was cut in the line of the outer joint; the leather on the spine was not °turn-in, but left as an extension with a raw edge. These structures may also have served to cover and protect the °endband, and/or had a decorative function.
Tacket	An individual, short °sewing stitch using two °sewing stations only with a thread or, sometimes, string of parchment, which outer ends are usually cut after tying off. Tackets were used to hold the individual °bifolios of a °gathering together, prior to other steps in the bookmaking process, such as the ruling of the folios, or to support the copying process.
Tanned leather	The skin of an animal is cleaned, scraped and dehaired and then soaked in a series of solutions, some of which contain tannin. Historically a variety of vegetal materials were used as tannin sources. During the tanning process, the protein molecules in the °leather become more durable and resistant to microbiological attack and turn a brown colour.
Tawed leather	The skin of an animal is cleaned, scraped and dehaired and then soaked in a series of chemical solutions which contain aluminium salts, proteins and other compounds. During the tawing process, the protein molecules in the

	°leather become more durable and resistant to microbiological attack. Tawed leather is very light in colour, approaching white.
Textblock	The assemblage of °gatherings and their constituent leaves that comprise the total manuscript without its °binding.
Textblock spine	The edge of the manuscript where the °fold-lines in the °gatherings are stacked adjacent to each other. When the °textblock is sewn, the °sewing thread passes between the different gatherings at the °spine.
Textile	see: Cloth
Thread	see: Sewing thread
Tiedown	The °threads forming the °primary endband that attach the °endband core to the °gatherings. They also serve as the tiedowns on which the °secondary endband is woven.
Tipped-on	Describes the attachment of a °folio or °bifolio to a sewn °textblock by means of adhesion. °Adhesive is applied to the surface of the folio or bifolio to be added in the area immediately alongside the spine edge or the °spine-fold. When the folio/bifolio is put into position in the textblock, the adhesive attaches it to the adjacent folio.
Tooling	Impressed lines or patterns worked in °leather with various tools.
Tracery work	Designs cut out of °leather or paper and adhered to a °binding. °Filigree work represents the fine end of the spectrum of tracery work, but larger, cruder designs can also be cut out of the leather or paper.
Turn-in	The portion of a °covering material that is folded back and adhered behind the covered surface. The turn-in is usually brought over the edges of a °board and adhered on the reverse of the covered board surface. The edges of the turn-in are adhered under or on top of the °doublure, depending on the material used for covering the board's inner surface. If there are no boards, the edges may be folded back and adhered directly to the reverse of the covering material.
Turn-out	The portion of a °doublure that is folded over the °board edges and adhered on the outside of the board. This is rarely encountered.
Two-pieces technique	A method of °leather application using two pieces of leather to make up a °full leather binding. The seam where the two pieces overlap is usually found on the °cover spine but is often difficult to detect because the leather edges are thinly °pared. The two-pieces technique is occasionally used for °partial leather bindings as well.
Underlay	A layer of material of different colour and/or type to that of the °covering material which is adhered over a restricted area of the °boards. Although the covering material is subsequently adhered over this layer, the underlying material can be seen through a cut-out design in the upper layer.
Unsupported sewing	°Sewing that does not pass over °sewing supports on the °textblock spine. Without support, the sewing can be more vulnerable to tearing through the °gatherings. The connection between the °covers and °textblock is also more dependant on the °spine-lining material and the °covering material and possibly by material joining the °doublure to the textblock on the °inner joints.

Warp thread	see: Tiedown
Wrapper binding	A °binding intentionally not joined to the °textblock but simply wrapped around it.

Or.-numbers of manuscripts from the Arabic section

[Golius collection]
Or. 2b
Or. 2c
Or. 2d
Or. 2f
Or. 2g
Or. 2h
Or. 2k
Or. 2m
Or. 2n
Or. 2o
Or. 5
Or. 9
Or. 10
Or. 19a
Or. 21b
Or. 29
Or. 31
Or. 39
Or. 44b
Or. 46
Or. 47
Or. 48
Or. 52
Or. 53
Or. 54
Or. 56
Or. 60
Or. 61
Or. 62
Or. 72
Or. 74
Or. 75
Or. 79
Or. 80
Or. 82
Or. 83
Or. 84
Or. 88
Or. 97
Or. 99
Or. 102
Or. 103
Or. 104
Or. 111
Or. 117
Or. 118a
Or. 118b
Or. 118c
Or. 119
Or. 120
Or. 121
Or. 122
Or. 127
Or. 131
Or. 134
Or. 139
Or. 142
Or. 147
Or. 149
Or. 150
Or. 151
Or. 152a
Or. 152b
Or. 153
Or. 154
Or. 155
Or. 156
Or. 159
Or. 164
Or. 171
Or. 173
Or. 174
Or. 177
Or. 179
Or. 186
Or. 187b
Or. 188
Or. 189
Or. 190
Or. 194
Or. 195
Or. 196
Or. 197
Or. 198
Or. 199
Or. 201
Or. 204
Or. 205
Or. 206
Or. 211

[Scaliger collection]
Or. 216
Or. 217
Or. 219
Or. 222
Or. 224
Or. 229
Or. 232
Or. 233
Or. 238
Or. 239
Or. 240
Or. 241
Or. 250
Or. 256
Or. 257
Or. 261

[Warner collection]
Or. 270
Or. 276
Or. 283
Or. 285
Or. 289
Or. 296b
Or. 297
Or. 300
Or. 302
Or. 303d
Or. 304
Or. 309
Or. 311b
Or. 312
Or. 316
Or. 323
Or. 325
Or. 327
Or. 331 (5)
Or. 333
Or. 339a
Or. 339b
Or. 340
Or. 341
Or. 342
Or. 346
Or. 347a
Or. 352
Or. 354a
Or. 355
Or. 358b
Or. 370
Or. 371
Or. 373
Or. 378
Or. 379
Or. 380
Or. 395
Or. 398
Or. 403
Or. 404b
Or. 405
Or. 406
Or. 407a
Or. 408a
Or. 408b
Or. 412
Or. 413a
Or. 413b
Or. 418
Or. 419
Or. 420a
Or. 420c
Or. 422
Or. 426
Or. 428
Or. 432
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Or. 637
Or. 640
Or. 644
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Or. 656
Or. 667
Or. 670
Or. 671
Or. 672
Or. 681
Or. 685
Or. 690
Or. 691
Or. 692
Or. 695
Or. 701
Or. 702
Or. 703
Or. 706
Or. 707
Or. 708
Or. 711
Or. 715
Or. 719
Or. 720
Or. 721
Or. 722
Or. 723
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Or. 729
Or. 730
Or. 731
Or. 733
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Or. 739
Or. 740
Or. 745
Or. 748
Or. 750
Or. 751
Or. 752
Or. 753
Or. 755
Or. 756
Or. 757
Or. 762
Or. 764
Or. 765
Or. 766
Or. 767
Or. 769
Or. 772
Or. 773
Or. 774
Or. 777
Or. 778
Or. 779
Or. 781
Or. 782
Or. 783
Or. 784
Or. 785
Or. 787
Or. 789
Or. 792
Or. 793
Or. 795
Or. 796
Or. 801
Or. 804
Or. 806
Or. 809
Or. 814
Or. 816
Or. 818
Or. 820
Or. 821
Or. 822
Or. 824
Or. 825
Or. 826
Or. 827
Or. 828
Or. 829
Or. 833
Or. 835
Or. 838
Or. 841
Or. 842
Or. 844
Or. 845
Or. 849
Or. 850
Or. 852
Or. 853
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Or. 857
Or. 858
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Or. 899
Or. 903
Or. 904
Or. 906
Or. 907
Or. 919
Or. 924
Or. 925
Or. 926
Or. 930
Or. 937
Or. 938
Or. 944
Or. 945
Or. 947
Or. 950
Or. 952
Or. 955
Or. 956
Or. 959
Or. 960
Or. 961
Or. 965
Or. 968
Or. 969
Or. 1002
Or. 1005
Or. 1007a
Or. 1007b
Or. 1008
Or. 1011
Or. 1012
Or. 1019
Or. 1026
Or. 1027
Or. 1030
Or. 1034
Or. 1035
Or. 1038
Or. 1041
Or. 1045
Or. 1054
Or. 1056
Or. 1063
Or. 1065
Or. 1067
Or. 1070
Or. 1074
Or. 1076
Or. 1077
Or. 1079
Or. 1081
Or. 1088
Or. 1089
Or. 1090
Or. 1092
Or. 1096
Or. 1097
Or. 1196

[several gifts and purchases from 1740 onwards]

Or. 1201
Or. 1202
Or. 1203
Or. 1205
Or. 1206
Or. 1209
Or. 1210
Or. 1217a
Or. 1217b
Or. 1218
Or. 1220

[acquired from the Schultens collection, 1781]
Or. 1274
Or. 1276
Or. 1277
Or. 1283

[several gifts and purchases from ca. 1800 onwards]
Or. 1307
Or. 1308
Or. 1311
Or. 1312
Or. 1313
Or. 1315 (3)
Or. 1317
Or. 1318
Or. 1322
Or. 1324
Or. 1335
Or. 1337
Or. 1341
Or. 1342
Or. 1350a-e
Or. 1354
Or. 1390
Or. 1391
Or. 1392
Or. 1400

[from the Testa collection, first part]
Or. 1442
Or. 1446
Or. 1448
Or. 1449
Or. 1451
Or. 1452

[purchased around 1839]
Or. 1504
Or. 1505
Or. 1506

[from the Testa collection, second part, arrived 1839]
Or. 1508
Or. 1510
Or. 1511
Or. 1516
Or. 1518
Or. 1523 (2)
Or. 1524
Or. 1526
Or. 1528
Or. 1529
Or. 1530
Or. 1531
Or. 1534
Or. 1538
Or. 1545
Or. 1546
Or. 1547
Or. 1548
Or. 1549
Or. 1556
Or. 1557
Or. 1558
Or. 1560
Or. 1561
Or. 1562

[purchased 1840]
Or. 1570

[from library of J.H. van der Palm, probably deriving from the Schultens']
Or. 1577
Or. 1582
Or. 1583
Or. 1584
Or. 1594 (2)

[acquisitions from the 1840s onwards]
Or. 1602
Or. 1604
Or. 1612
Or. 1620
Or. 1621
Or. 1627
Or. 1634
Or. 1647
Or. 1648
Or. 1653
Or. 1654
Or. 1661
Or. 1663
Or. 1669
Or. 1672
Or. 1677
Or. 1680a
Or. 1680b
Or. 1682
Or. 1685
Or. 1716
Or. 1840
Or. 1842
Or. 1886
Or. 1897
Or. 1902
Or. 2064
Or. 2068
Or. 2071a
Or. 2071b
Or. 2072
Or. 2078
Or. 2082
Or. 2084
Or. 2087
Or. 2089
Or. 2097
Or. 2098
Or. 2190
Or. H.2204
Or. 2286
Or. 2288
Or. H.2289
Or. 2289
Or. 2290

[collection from Amin al-Madani, scholar and book-seller in Medina (d. 1898)]
Or. 2364
Or. 2368
Or. 2378
Or. 2380a
Or. 2399
Or. 2400
Or. 2407
Or. 2412
Or. 2415
Or. 2419
Or. 2554
Or. 2556
Or. 2562a
Or. 2562b
Or. 2562e
Or. 2566
Or. 2569
Or. 2585
Or. 2611
Or. 2613
Or. 2620
Or. 2629
Or. 2652
Or. 2655
Or. 2675
Or. 2686
Or. 2696
Or. 2705
Or. 2745
Or. 2747
Or. 2748
Or. 2749
Or. 2761
Or. 2765
Or. 2769
Or. 2795
Or. 2796
Or. 2816
Or. 2855
Or. 2895
Or. 2898
Or. 2902
Or. 2943
Or. 2955
Or. 2956a
Or. 2956b
Or. 2956c
Or. 2956d
Or. 2956e
Or. 2959

[acquisitions from 1887]
Or. 3071
Or. 3071a
Or. 3076

[acquisitions from 1898 onwards]
Or. 4967
Or. 4979
Or. 5466
Or. 5582
Or. 5801
Or. 5809

[acquisitions from 1921 onwards]
Or. 6240
Or. 6254
Or. 6255
Or. 6256
Or. 6270
Or. 6276

Or. 6290
Or. 6292
Or. 6302
Or. 6327
Or. 6348
Or. 6352
Or. 6353a
Or. 6353b
Or. 6363
Or. 6364
Or. 6370

[purchased in Yemen on behalf of the library by C. Adriaanse, registered in 1934 or shortly thereafter]
Or. 6632a
Or. 6632b
Or. 6632c
Or. 6633
Or. 6696
Or. 6760a

[acquisitions from 1937 onwards]
Or. 6771
Or. 6772
Or. 6801
Or. 6806
Or. 6813
Or. 6839
Or. 6866
Or. 6867
Or. 6869
Or. 6892
Or. 6985

[Legacy of C. Snouck Hurgronje (1857-1936)]
Or. 6987
Or. 6997
Or. 6998
Or. 7047
Or. 7048b
Or. 7086
Or. 7093
Or. 7098
Or. 7104
Or. 7163
Or. 7168
Or. 8204

[acquisitions from the 1940s onwards]
Or. 8261
Or. 8303
Or. 8466
Or. 8484
Or. 8520
Or. 8527
Or. 8531
Or. 8654
Or. 8772
Or. 8773
Or. 8795
Or. 8800
Or. 8822
Or. 8907
Or. 8955
Or. 8960
Or. 8962
Or. 10.783
Or. 10.784
Or. 10.804
Or. 10.809
Or. 10.851
Or. 10.861
Or. 10.862
Or. 10.874
Or. 10.983
Or. 10.998a
Or. 11.031
Or. 11.036
Or. 11.037
Or. 11.041
Or. 11.043
Or. 11.050
Or. 11.052
Or. 11.054
Or. 11.057
Or. 11.058
Or. 11.059
Or. 11.066
Or. 11.068
Or. 11.069
Or. 11.070
Or. 11.073
Or. 11.074
Or. 11.076
Or. 11.079
Or. 11.111
Or. 11.113
Or. 11.115
Or. 11.117
Or. 11.121
Or. 11.518
Or. 11.519
Or. 11.520
Or. 11.524
Or. 11.526
Or. 11.537
Or. 11.540
Or. 11.541
Or. 11.542
Or. 11.545
Or. 11.547
Or. 11.549
Or. 11.550
Or. 11.555
Or. 11.558
Or. 11.559
Or. 11.560
Or. 11.565
Or. 11.566
Or. 11.567
Or. 11.570
Or. 11.578
Or. 11.582
Or. 11.587
Or. 11.588
Or. 11.593
Or. 11.599
Or. 11.600
Or. 11.609
Or. 11.614
Or. 11.682
Or. 11.684
Or. 11.694
Or. 11.696
Or. 11.697
Or. 11.699
Or. 11.701
Or. 11.702
Or. 11.703
Or. 11.710
Or. 11.711
Or. 11.713
Or. 11.714
Or. 11.717
Or. 11.718
Or. 11.719
Or. 11.724
Or. 11.725
Or. 11.727
Or. 11.730
Or. 11.735
Or. 11.736
Or. 11.741
Or. 11.743
Or. 11.750
Or. 11.759
Or. 11.762
Or. 11.769
Or. 11.794
Or. 11.800
Or. 11.831
Or. 11.835
Or. 11.880
Or. 11.886
Or. 11.887
Or. 11.888
Or. 11.889
Or. 11.890
Or. 11.893
Or. 11.895
Or. 11.898
Or. 11.902
Or. 11.907
Or. 11.912
Or. 11.913
Or. 11.918
Or. 11.920
Or. 11.921
Or. 11.924
Or. 11.928
Or. 11.929
Or. 11.930
Or. 11.932
Or. 11.933
Or. 11.935
Or. 11.943
Or. 11.945
Or. 11.948
Or. 11.949
Or. 11.954
Or. 11.955
Or. 11.957
Or. 11.963
Or. 11.966
Or. 11.969
Or. 11.971
Or. 11.972
Or. 11.973
Or. 11.974
Or. 11.976
Or. 11.981
Or. 11.982
Or. 11.993
Or. 12.000
Or. 12.016
Or. 12.051
Or. 12.053
Or. 12.055
Or. 12.057
Or. 12.065
Or. 12.068
Or. 12.082
Or. 12.088
Or. 12.108
Or. 12.110
Or. 12.111
Or. 12.115
Or. 12.117
Or. 12.297
Or. 12.313
Or. 12.333

Or. 12.337

[collection F. Taeschner (1888-1967)]
Or. 12.343
Or. 12.345
Or. 12.355
Or. 12.357
Or. 12.359
Or. 12.362
Or. 12.363
Or. 12.372
Or. 12.384
Or. 12.385
Or. 12.387
Or. 12.404
Or. 12.414
Or. 12.420
Or. 12.426
Or. 12.438
Or. 12.442
Or. 12.451
Or. 12.455

[acquisitions from 1970s onwards]
Or. 12.480
Or. 12.487
Or. 12.609
Or. 12.615b
Or. 12.616
Or. 12.645
Or. 12.649
Or. 12.650
Or. 12.831
Or. 14.078
Or. 14.098
Or. 14.108
Or. 14.109
Or. 14.110
Or. 14.111
Or. 14.182
Or. 14.191
Or. 14.201
Or. 14.202
Or. 14.203
Or. 14.204a
Or. 14.204b
Or. 14.209
Or. 14.210a
Or. 14.210b
Or. 14.210c
Or. 14.210d
Or. 14.249
Or. 14.252
Or. 14.257
Or. 14.263
Or. 14.323
Or. 14.327
Or. 14.328
Or. 14.332
Or. 14.336
Or. 14.339
Or. 14.366
Or. 14.369
Or. 14.374
Or. 14.404
Or. 14.407
Or. 14.409
Or. 14.410
Or. 14.417
Or. 14.418
Or. 14.419
Or. 14.420
Or. 14.421
Or. 14.424
Or. 14.425
Or. 14.427
Or. 14.449
Or. 14.475
Or. 14.479
Or. 14.482
Or. 14.491
Or. 14.496
Or. 14.511
Or. 14.515
Or. 14.535
Or. 14.541
Or. 14.543
Or. 14.556
Or. 14.571
Or. 14.580
Or. 14.583
Or. 14.590
Or. 14.595
Or. 14.596
Or. 14.603
Or. 14.605
Or. 14.610
Or. 14.627
Or. 14.636
Or. 14.637
Or. 14.638
Or. 14.673
Or. 17.050
Or. 17.059
Or. 17.105
Or. 17.106
Or. 17.117
Or. 17.120
Or. 17.149
Or. 17.155
Or. 17.933
Or. 17.934
Or. 17.956
Or. 18.011
Or. 18.059
Or. 18.155
Or. 18.274
Or. 18.318
Or. 18.403a
Or. 18.691
Or. 18.697
Or. 18.896
Or. 20.191
Or. 20.193
Or. 20.400
Or. 20.401
Or. 20.524
Or. 20.525
Or. 22.305
Or. 22.322
Or. 22.323
Or. 22.331
Or. 22.536
Or. 22.688
Or. 22.773
Or. 22.774
Or. 22.934
Or. 23.122
Or. 23.280
Or. 23.281
Or. 23.285
Or. 23.286
Or. 23.288
Or. 23.309
Or. 23.311
Or. 23.341
Or. 23.342
Or. 23.343
Or. 23.344
Or. 23.381
Or. 23.412
Or. 23.449
Or. 23.464
Or. 23.470
Or. 23.471
Or. 23.475
Or. 23.492
Or. 23.517
Or. 23.637
Or. 23.640
Or. 23.653
Or. 23.657
Or. 23.658
Or. 23.663
Or. 23.666
Or. 23.965
Or. 23.973
Or. 23.975
Or. 23.980
Or. 23.988
Or. 25.170
Or. 25.180
Or. 25.290
Or. 25.299
Or. 25.300
Or. 25.307
Or. 25.334
Or. 25.354a
Or. 25.354b
Or. 25.354c
Or. 25.359
Or. 25.360a
Or. 25.360b
Or. 25.360c
Or. 25.360d
Or. 25.360e
Or. 25.360f
Or. 25.361
Or. 25.399
Or. 25.414
Or. 25.417
Or. 25.526
Or. 25.573
Or. 25.578
Or. 25.637
Or. 25.657b
Or. 25.662
Or. 25.663
Or. 25.664
Or. 25.693
Or. 25.720
Or. 25.723
Or. 25.744
Or. 25.757
Or. 25.763
Or. 26.271
Or. 26.417
Or. 26.606
Or. 26.615
Or. 26.620
Or. 26.657
Or. 26.659
Or. 26.660
Or. 26.661
Or. 26.662
Or. 26.663
Or. 26.667
Or. 26.668
Or. 26.669
Or. 26.674
Or. 26.675
Or. 26.676
Or. 26.677
Or. 26.682
Or. 26.684
Or. 26.685

Or.-numbers of manuscripts from the Malay section

[acquisitions from 1867 onwards]
Or. 1895
Or. 1896

[acquired around 1871, previously in the collection of A.D. Cornets de Groot (1804-1829)]
Or. 1970
Or. 1971
Or. 1978
Or. 2014
Or. 2016
Or. 2027

[from the collection of Taco Roorda (1801-1874)]
Or. 2118
Or. 2149

[from the library of the 'Rijk-Instelling tot opleiding van Oost-Indische ambtenaren', transferred to the UBL after its closure in 1878]
Or. 2226

[Legacy of H.N. van der Tuuk (1824-1894)]
Or. 3375
Or. 4044
Or. 4045
Or. 4233
Or. 4585
Or. 4710

Or. 4900a
Or. 4900b
Or. 4911
Or. 7725
Or. 7735
Or. 8487
Or. 8566

[acquisitions from 1965, formerly of the Islam Foundation]
Or. 11.001
Or. 11.002
Or. 11.003
Or. 11.004

Or. 18.959

content

record nr: **Or.:** **Ar.:** **origin:** **date:**

size: **format:** ☐ square ☐ oblong ☐ elongated **autopsy jjw or js**

repairs: ☐ local ☐ paper repairs indicate rebinding ☐ western ☐ recent cons.treatment **maghribi script**

covering material:

- ☐ full leather 1 piece
- ☐ full leather 2 pieces
- ☐ repairs prohibiting analysis structure
- ☐ full leather, technique not detectable
- ☐ çaharkushe
- ☐ çaharkushe no leather fore-edge env.flap
- ☐ 1/2 çaharkushe
- ☐ ç plain paper
- ☐ ç marbled paper
- ☐ ç tooled recessed leather
- ☐ Andere...

envelope cover and flap

- ☐ no flap
- ☐ flap or traces of flap

inside fore-edge flap covering

- ☐ leather
- ☐ remnant joint is leather
- ☐ textile
- ☐ paper
- ☐ dluwang
- ☐ see remark

inside envelope flap covering

- ☐ leather
- ☐ leather cont. with doublure
- ☐ textile
- ☐ dluwang
- ☐ plain paper
- ☐ coloured paper
- ☐ marbled paper
- ☐ not applicable/flap missing

extra remarks

- ☐ leather doublures block-stamped
- ☐ fixed page-markers
- ☐ no board cores
- ☐ lacquered boards
- ☐ wrapper binding unsewn textblock

remarks

spine ending:

- ☐ flat
- ☐ turn-in
- ☐ tabbed
- ☐ tabbed indented
- ☐ not detectable
- ☐ repair spine tabbed
- ☐ see remarks
- ☐ semi-tabbed

doublure covering material

- ☐ leather
- ☐ textile
- ☐ plain paper
- ☐ coloured paper
- ☐ marbled paper
- ☐ painted on gesso ground
- ☐ dluwang
- ☐ western (style) endpapers
- ☐ none

sewing structure

- ☐ link-stitch 2 stations
- ☐ link-stitch 4 stations
- ☐ link-stitch other stations
- ☐ stabbed
- ☐ side-sewing
- ☐ overcasted
- ☐ concertina structure
- ☐ leather strips no sewing
- ☐ cloth strips no sewing
- ☐ paper strips no sewing
- ☐ no sewing
- ☐ so tight not visible
- ☐ sewn on supports
- ☐ 2 former stations I-s visible
- ☐ see remarks

images

endbands:

- ☐ Prim.warp threads as sewing
- ☐ prim.warp threads differs
- ☐ sec.sewing herring bone
- ☐ sec.sewing other
- ☐ fringed sides
- ☐ missing
- ☐ see remarks
- ☐ prim.warp through lining
- ☐ prim.warp sewn through not visible

textblock spine-lining

- ☐ leather
- ☐ --- could be doublure
- ☐ textile
- ☐ --- funtional as inner joint
- ☐ --- cut of at shoulder
- ☐ --- pasted onto outer leaves tb
- ☐ paper
- ☐ none
- ☐ not visible
- ☐ cloth later repair addition?

inner joints

- ☐ leather stub from doublure
- ☐ leather from spine-lining
- ☐ leather strip from textblock
- ☐ cloth strip from textblock
- ☐ paper strip from textblock
- ☐ paper stub from doublure
- ☐ joint over doublure
- ☐ tipped on leaf, with stub covering jo
- ☐ guarded leaf folded around outer g
- ☐ tipped on bifolio - endpaper
- ☐ paste-down outer leaf gathering
- ☐ guarded stub folded around outer g
- ☐ joint possibly later addition
- ☐ meddled with - not visible
- ☐ other, see remarks
- ☐ none

Appendix IV List of manuscripts used in illustrations

Cover illustrations

Front cover illustrations, left to right and head to tail:

Or. 25.723	A partial leather binding, link-stitch sewing, tiedown and tacket
Or. 703	A leather spine-lining with tiedowns visible
Or. 1218	A cloth spine-lining with the tiedowns visible
Or. 1079	A damaged leather spine-lining: a built-on structure
Or. 1548	A limp leather binding with a tabbed spine
Or. 8204	A Southeast Asian manuscript with a link-stitch sewing on multiple stations
Or. 1548	The archetypal structure: unsupported sewing, spine-lining, endband sewing
Or. 14.366	A composite leather binding
Or. 14.204a	An unsewn textblock with connective strips and wrapper binding
Or. 153	A full leather binding with the two-pieces technique

Back cover illustrations, left to right and head to tail:

Or. 14.210	Unsewn textblock, formerly with connective strips and wrapper binding
Or. 2747	Annotated paper margin cut and folded
Or. 5467	Southeast Asian board of woven plant material
Or. 2118	Southeast Asian endband characteristics
Or. 20.400	Turn-ins over the flange and paper inner joint
Or. 969	Page-markers

Text illustrations

The manuscripts and some printed volumes, ordered numerically, according to their classmarks.

Or. 2C	fig. 99	Or. 656	fig. 30
Or. 47	fig. 73	Or. 685	fig. 168, 169
Or. 61	fig. 98	Or. 731	fig. 66
Or. 94c	fig. 101	Or. 752	fig. 168, 169
Or. 134	fig. 100	Or. 755	fig. 61
Or. 151	fig. 132	Or. 765	fig. 135
Or. 155	fig. 79, 186	Or. 795	fig. 9, 133
Or. 196	fig. 110	Or. 829	fig. 89, 187
Or. 197	fig. 174	Or. 835	fig. 168, 169
Or. 206	fig. 7	Or. 849	fig. 26
Or. 241	fig. 111	Or. 854	fig. 83
Or. 270	fig. 92	Or. 859	fig. 136
Or. 309	fig. 180	Or. 860	fig. 134
Or. 312	fig. 90	Or. 872	fig. 8
Or. 340	fig. 32	Or. 873	fig. 176
Or. 398	fig. 63	Or. 894	fig. 121-123
Or. 408a	fig. 97	Or. 930	fig. 64
Or. 426	fig. 81, 82	Or. 961	fig. 104
Or. 428	fig. 4	Or. 968	fig. 168, 169
Or. 442	fig. 95	Or. 969	fig. 102
Or. 465	fig. 168, 169	Or. 1007a	fig. 94
Or. 504	fig. 57	Or. 1065	fig. 65, 69
Or. 511	fig. 124	Or. 1070	fig. 12
Or. 546	fig. 56, 88, 151, 153	Or. 1079	fig. 75, 76
Or. 565	fig. 93	Or. 1097	fig. 173
Or. 590	fig. 103	Or. 1196	fig. 52, 184
Or. 650	fig. 91	Or. 1210	fig. 11

Or. 1341	fig. 188
Or. 1392	fig. 70
Or. 1442	fig. 183
Or. 1506	fig. 170
Or. 1548	fig. 170
Or. 1570	fig. 1, 128-131, 160-163
Or. 1604	fig. 85
Or. 1647	fig. 125
Or. 1652	fig. 168, 169
Or. 1654	fig. 126-127
Or. 1676c	fig. 144
Or. 1677	fig. 54, 55
Or. 1840	fig. 34
Or. 1842	fig. 53
Or. 1886	fig. 114
Or. 1902	fig. 105
Or. 2064	fig. 115
Or. 2072	fig. 109, 150
Or. 2089	fig. 10
Or. 2098	fig. 112
Or. 2116	fig. 113
Or. 2118	fig. 191
Or. 2149	fig. 177, 190
Or. 2286	fig. 48, 49
Or. 2378	fig. 44
Or. 2611	fig. 60, 155
Or. 2686	fig. 62
Or. 2747	fig. 2, 3
Or. 2748	fig. 87
Or. 2749	fig. 43
Or. 2761	fig. 146
Or. 2956c	fig. 181
Or. 5467	fig. 78
Or. 6329	fig. 116
Or. 6348	fig. 59
Or. 6633	fig. 108
Or. 6866	fig. 171
Or. 6892	fig. 84
Or. 6987	fig. 35
Or. 6997	fig. 47
Or. 8205	fig. 37, 38
Or. 8261	fig. 164, 165
Or. 8350	fig. 157, 158, 159
Or. 8907	fig. 28, 29
Or. 10.783	fig. 74, 80
Or. 11.037	fig. 171, 172
Or. 11.058	fig. 145
Or. 11.074	fig. 189, 182
Or. 11.526	fig. 86
Or. 11.550	fig. 72
Or. 11.723	fig. 58
Or. 11.828	fig. 6
Or. 11.898	fig. 185
Or. 11.913	fig. 152
Or. 11.957	fig. 137
Or. 12.454	fig. 192, 193, 194
Or. 12.645	fig. 147
Or. 12.831	fig. 77
Or. 14.201	fig. 67
Or. 14.204b	fig. 67
Or. 14.209	fig. 67
Or. 14.366	fig. 166, 167
Or. 14.427	fig. 68
Or. 17.143	fig. 27, 51
Or. 18.155	fig. 96
Or. 20.400	fig. 71
Or. 22.321	fig. 179
Or. 22.322	fig. 179
Or. 22.784	fig. 117
Or. 25.428	fig. 41
Or. 25.662	fig. 154
Or. 25.693	fig. 42
Or. 25.723	fig. 148, 149, 175
Or. 26.660	fig. 178
Or. 26.663	fig. 107
Or. 26.679	fig. 5
Or. 26.684	fig. 106
UBL Acad 262	fig. 156
UBL 845 A 19	fig. 199
UBL 848 D 15	fig. 200, 201
UBL 865 C 24	fig. 197
UBL 870 A 6-8	fig. 203
UBL 870 E 25	fig. 202
UBL 891 E 37	fig. 195, 196, 198

SAMENVATTING

De islamitische boekbindtraditie
Een boek-archeologisch onderzoek

De afgelopen decennia heeft onderzoek naar de materialiteit van boeken een belangrijke plaats verworven in het vakgebied van de boekgeschiedenis en codicologie. Inzicht in de gebruikte materialen en technieken, zowel voor de productie van handschriften als van gedrukte werken, kan van groot belang zijn voor het leren kennen van de context van een bepaald werk, voor het achterhalen van de herkomstgeschiedenis van een collectie, of meer algemeen voor onderzoek naar verspreiding van kennis en van boeken als gebruiksartikelen. Tot nu toe waren echter vooral boeken behorend tot de Westerse cultuur onderwerp van studie. De aandacht voor het islamitische boek (kort gedefinieerd als een boek gemaakt voor of door een Moslim) als materieel object beperkte zich grotendeels tot de uiterlijke kenmerken van de boekband. De gebruikte technieken en materialen van de islamitische boekconstructie worden niet of slecht beschreven; in de meeste gevallen wordt de zaak afgedaan door te stellen dat de islamitische boekband een soort bandzetter is. De naaiconstructie, bestaande uit een kettingsteeknaaisel, wordt daarbij meestal aangeduid als onvoldoende sterk, en de verbinding tussen boekblok en band zou zwak zijn. In het algemeen bestaat de indruk dat het vakmanschap van de islamitische binders hoog is als het gaan om het ontwerp en de verfijnde uitvoering van de banddecoratie, maar dat de bindwijze zelf van matige kwaliteit is, en inferieur aan Westerse boekconstructies.

Dit beeld van de islamitische boekbindtechniek heeft er toe geleid dat in zowel Westerse instellingen waar Oosterse collecties bewaard worden, als in de Islamitische wereld zelf, veel handschriften zijn herbonden of gerepareerd met aanpassingen in de constructie. Vaak worden Westerse boekbindtechnieken gebruikt om de boekblokken en banden weer te verbinden, met desastreuse gevolgen voor de originele materialen. Door dergelijke ingrepen gaat niet alleen veel materiaal en informatie over de oorspronkelijke vervaardiging verloren, de fysieke verandering van de constructie leidt ook tot een andere mechaniek waardoor gemakkelijk nieuwe schade ontstaat of het boek niet meer goed opent.

Het gebrek aan kennis over de materialiteit van het islamitische boek heeft dus directe, negatieve gevolgen voor het behoud van de fysieke kenmerken van deze boeken. Die consequentie wordt versterkt doordat de restauratieve ingrepen de de mogelijkheid om oorspronkelijke fysieke karakteristieken te bestuderen steeds kleiner maken, want door de stelselmatige aanpassingen en zogenaamde verbeteringen van de constructies worden die juist vernietigd. Zoekend naar oplossingen voor de zeer uiteenlopende conserveringsproblematiek van handschriften in de Oosterse collecties van de Universiteitsbibliotheek van Leiden, confronteerde mijn werk als restaurator mij direct met de beperkte literatuur over islamitische handschriften als fysieke objecten. Tegelijkertijd stelden de beschadigde handschriften op mijn werktafel me in staat om hun constructie nauwkeurig te bestuderen. Op deze manier stelde ik vast dat het breed geaccepteerde beeld van het islamitische boek als verbetering behoevend artefact vaak niet klopte met de werkelijkheid. Ook werd me duidelijk dat de traditie wel degelijk ontwikkelingen in materiaalgebruik en technieken liet zien, en bovendien variaties vertoonde in de meest voorkomende naaiconstructie en bekledingsmethoden.

In dit boek worden de technieken waarmee islamitische boekbinders hun handschriften bonden voor het eerst gedetailleerd beschreven. De Oosterse Collecties van de Universiteitsbibliotheek Leiden vormen de basis voor het onderzoek; die collecties, verzameld vanaf het begin van de zeventiende eeuw, bevatten handschriften uit alle regio's van de islamitische wereld. Uit de Midden-Oosterse en Zuidoost-Aziatische collecties zijn in totaal 1085 handschriften geselecteerd; de handschriften moesten zijn geschreven in Arabisch schrift, zijn gebonden in een band die in de Islamitische wereld is gemaakt en voldoende in tact zijn zodat de oorspronkelijke constructie kon worden bestudeerd. Handschriften die al eens waren hernaaid of herbonden, of die duidelijke sporen van reparaties vertoonden zijn niet noodzakelijkerwijs gedeselecteerd. Wanneer de reparaties of herbindingen duidelijk in de islamitische wereld zijn uitgevoerd geven de technische details immers evenzogoed informatie over de gebruiken van de boekbinders. In die gevallen kon weliswaar de informatie over de provenance niet langer direct gerelateerd worden aan de materiële kenmerken van de constructie en band, maar voor het begrip van de ontwikkeling van methoden en materialen zijn ook de gerepareerde handschriften waardevol.

De gebruikte materialen en technieken en relevante bijzonderheden van alle handschriften in het corpus zijn vervolgens beschreven in een database, waarna de catalogusgegevens aan de records

werden toegevoegd zodat bij het doorzoeken van de database een relatie kon worden gelegd met plaats van herkomst en datering. Het onderzoek richtte zich nadrukkelijk op de technische aspecten van het boekbinden. Hoe zijn de boeken genaaid? Welke componenten maken deel uit van de constructie? Hoe zijn de platten aan het boekblok bevestigd en hoe en in welk stadium is het bekledingsmateriaal aangebracht? Kunsthistorische aspecten zijn buiten beschouwing gelaten, in de eerste plaats omdat de beschrijving en waardering ervan een belangrijke subjectieve component heeft, en in de tweede plaats omdat bij een groot deel van de banden in de Leidse collectie – die toch vooral een gebruikscollectie is en niet een verzameling van museale, kunstnijvere hoogtepunten – de decoratie eenvoudig is en daarmee heel moeilijk in te delen volgens een kunsthistorische classificatie. Daarnaast bemoeilijkt de gewoonte om boekbanden te hergebruiken en stempelmateriaal te circuleren het trekken van conclusies op kunsthistorische gronden. Tenslotte is mijn expertise als restaurator juist gebaseerd op het herkennen van materialen en analyseren van gebruikte technieken. Dit vaktechnische perspectief draagt niet alleen bij aan het professionele onderzoek van de fysieke eigenschappen van de handschriften, ook de duiding van de beschrijvingen in de literatuur wordt hierdoor in een nieuw licht geplaatst.

Het boek bestaat uit zes delen. In het eerste deel wordt de context van dit onderzoek geschetst. Daarbij hoort een vergelijking met de ontwikkeling van de boekarcheologie in de Westerse boekgeschiedenis, de positie van het vak restauratie, en veranderingen in het veld ten gevolge van de mogelijkheden van digitalisering. Daarna volgt een toelichting op de gebruikte materialen voor de islamitische handschriftproductie, omdat specifieke kenmerken van die materialen relevant zijn voor de achterstand op het gebied van de boekarcheologie. Het belang van de geselecteerde handschriften voor dit onderzoek wordt duidelijk gemaakt door een beknopte geschiedenis van de vorming van de Leidse Oosterse collecties; hieruit blijkt dat het corpus representatief is voor de handschriftproductie in de islamitische wereld, hoewel de collectie zwaartepunten heeft in bepaalde geografische gebieden, met name het Midden Oosten en Zuidoost Azië.

Deel twee is gewijd aan de anatomie van het islamitische handschrift in al zijn variaties. Het doel is om hier de grote verscheidenheid te tonen, zodat de mythe van eenvormigheid in naaiwijze en gebrek aan ontwikkeling wordt ontkracht. De verschillende naaiwijzen en constructiemogelijkheden zijn geïllustreerd met tekeningen, en de opbouw van de beschrijving volgt de logische werkvolgorde van de boekbinder. De karakteristieken en bijzonderheden worden geïllustreerd met foto's van handschriften uit de UBL collectie, en de beschrijving van de technische onderdelen volgt de logische bindvolgorde: naaisel, rugoverlijming, het besteken van de kapitalen, het aanbrengen van de platten en de bandbekleding. Hoe de negatieve beeldvorming over de constructie van het islamitische boek heeft kunnen ontstaan wordt ook uiteengezet in dit deel, aan de hand van de beschrijving van de fysieke kenmerken, en door deze karakteristieken te vergelijken met bepaalde methoden die in het Westerse boekbinden werden gebruikt. Vanuit een Westers referentiekader kon de islamitische boekconstructie gemakkelijk verkeerd worden geïnterpreteerd, en eenmaal gekarakteriseerd als 'bandzetter' blijkt die misperceptie vrij kritiekloos overgenomen te worden door vrijwel iedereen die een islamitisch boek moest beschrijven.

Deze redenering wordt ondersteund door de literatuuranalyse in Deel drie. De literatuur is onderverdeeld in de historische bronnen, en de meer recente literatuur die ruim een eeuw aan publicaties beslaat. De onderlinge vergelijking van de vijf overgeleverde historische traktaten over boekbinden in de islamitische wereld levert een aantal nieuwe inzichten op, in de eerste plaats omdat ze nog niet eerder inhoudelijk als groep werden geanalyseerd. Bovendien biedt mijn materiaal- en vaktechnische invalshoek een aantal nieuwe verklaringen voor de soms ingewikkelde beschrijvingen; het accent van de onderzoekers die deze Arabische bronnen beschikbaar maakten in het Engels lag veel meer op het historisch en taalkundig belang. Het is van groot belang dat de beschrijvingen van de boekbindtechnieken in de historische bronnen corresponderen met de belangrijke fysieke kenmerken van de handschriften zoals die in de database zijn beschreven, ook met die karakteristieken die in de recente literatuur nog niet duidelijk beschreven zijn als behorend bij de islamitische boekbindtraditie. De bronnen bevestigen daarmee dat de tijdens het fysieke onderzoek geobserveerde technieken courant waren, in ieder geval in de desbetreffende periode. De recente literatuur bestaat onder andere uit codicologische werken, catalogi en publicaties vanuit het veld van restauratoren. Uit de analyse van deze bronnen blijkt dat de islamitische boekconstructie tot nu toe slecht begrepen werd, maar ook dat in veel studies over islamitische handschriften dit aspect uiteindelijk een ondergeschikte rol speelde.

In Deel vier wordt de opzet van het onderzoek beschreven. Hier wordt gedetailleerd uiteengezet hoe de database is opgebouwd en welke overwegingen een rol hebben gespeeld bij het begrenzen van het fysieke onderzoek van de handschriften. In hetzelfde deel wordt een overzicht van

de kwantitatieve resultaten gegeven. Deze gegevens worden ingeleid door weer te geven wat de verhouding is tussen gedateerde en ongedateerde handschriften, gelokaliseerde en ongelokaliseerde handschriften, en wat de ratio is van originele en herbonden handschriften in deze categorieën. Bij de presentatie van de kwantitatieve gegevens betreffende de gebruikte technieken en materialen wordt nog geen onderscheid gemaakt tussen de handschriften met een oorspronkelijke constructie en band, en gerepareerde handschriften. Dit overzicht geeft daarom vooral een goed beeld van de algemene verschijningsvorm en het archetypische islamitische boek.

Deel vijf daarentegen geeft een nauwkeurig overzicht van alle materiele componenten, met een duidelijke focus op de handschriften met een oorspronkelijke constructie die gedateerd en/of gelokaliseerd zijn. De beschrijving van de constructieve componenten en karakteristieken van deze handschriften volgt opnieuw de logische werkvolgorde, en brengt zoveel mogelijk een relatie aan met de plaats van herkomst en een tijdsperiode waarin de verschillende methoden en materialen voorkomen. Hierdoor worden tendensen zichtbaar: sommige materialen en technieken laten een verloop in gebruik door de eeuwen heen zien, anderen kunnen vooral worden geassocieerd met lokale ontwikkelingen.

Voor het eerst blijkt duidelijk dat de techniek van het islamitische boekbinden geen simpele en onontwikkelde traditie vormt. Hoewel de uiterlijke verschijningsvorm van deze gebonden handschriften van de middeleeuwen tot en met de negentiende eeuw gekenmerkt wordt door een zekere gelijkvormigheid, is gebleken dat de islamitische boekbinder zich bediende van diverse technieken en materialen, en dat de keuze voor die verschillende methode soms werd bepaald door bepaalde eigenschappen van een specifiek handschrift, zoals het formaat of de kwaliteit van het papier, maar ook kan worden herleid tot regionale verschillen en tradities. De regio waar de verschillen ten opzichte van ‘de klassieke’ islamitische bindtechniek het grootst zijn is Zuidoost-Azië. Zowel de naaiwijze als de uitvoering van het kapitaal zijn significant anders, terwijl de uiterlijke fysieke kenmerken nog steeds overeenstemmen met ‘het islamitische boek’: de vaste rechte rug, de platten gelijk af met het boekblok, en de flap aan het achterplat. Vanaf de negentiende eeuw worden de variaties groter en krijgen Westerse methoden een grotere invloed op het islamitische boek.

Het laatste deel vat de ontwikkeling van de islamitische boekbindtraditie samen, en legt nog eens het verband met de nieuwe inzichten die door een vaktechnische analyse van de literatuur zijn verkregen. De bestudering van zowel de fysieke artefacten als de historische bronnen leidt uiteindelijk tot een nieuwe perceptie van het islamitische boek. Het onderzoek toont aan dat de constructie niet ondergeschikt was aan de uiterlijke vorm en decoratie, en dat de constructie wel degelijk berekend was op het veelvuldige gebruik van de handschriften. Bovendien is duidelijk gebleken dat de islamitische boekband niet kan worden getypeerd als een bandzetter; de constructie van deze artefacten is veel degelijker en duurzamer dan vaak wordt gedacht. De constante factor die binnen de traditie zichtbaar is kan dan ook heel goed worden gerelateerd aan de kwaliteit van de bestaande bindwijze. Voor specialisten betrokken bij de conservering van islamitische handschriftcollecties is deze kennis van groot belang; het inzicht verandert de conserveringsbenadering aanzienlijk. Voor andere onderzoekers van deze handschriften kan de verworven kennis over de materialiteit helpen bij het dateren en het plaatsen van de objecten in hun geografische en sociale context.

CURRICULUM VITAE

Catharina Helena (Karin) Scheper was born in the Noordoostpolder in 1970. She attended secondary school in Emmeloord which she finished in 1988. Her education was continued in Amsterdam, where she first studied history of art at the Vrije Universiteit, though she switched to Conservation in 1991. During the four year training programme at *Opleiding Restauratoren,* Karin was trained as a Book and Paper conservator. When the programme allowed she worked at *Lingbeek & van Daalen*, a paper conservation studio, in order to build up hands-on experience, and over two summers she participated in a conservation project of the family archive of Victor de Stuers at *De Wiersse*, in Ruurlo, the Netherlands. After graduation in 1995 she started her working career at the Municipal Archives in Amsterdam. Two years later the opportunity arose to specialise further in book conservation, at the private workshop *Mooie Boeken*. In 2000 she was asked to consider the setting up of the conservation workshop at the University Library Leiden. It was in Leiden, with its unique and internationally well-known Oriental collections that her interest in Islamic book structures was raised.

Next to the bench work and the additional tasks a conservator must see to, Karin always felt that teaching was an important aspect of the profession. For twelve years she was one of the two teachers of the two year evening course for book conservators. Wineke Meeuws mentored her through the first course and was her co-teacher for six years; the venue for this course changed from the Amsterdam Municipal Archives to the ICN (the Dutch Institute for Cultural Heritage) to the National Archives in the Hague. In addition, Karin was a guest lecturer for the Book and Paper conservation program at the ICN, and now that the programme is transferred to the University of Amsterdam she is a guest lecturer still. She also contributes to courses at Leiden University: to Book and Digital Media studies, as well as to the course 'From Manuscript to Modern Media' at the School of Middle Eastern Studies.

Karin presented her first public lecture on the topic of Islamic manuscripts at a conference on the conservation of Middle Eastern manuscripts in 2007, which she considers to be the starting point of her specialisation. Other conferences and papers followed, and Karin partook in the European project Comparative Oriental Manuscript Studies and became a co-opted Board member for The Islamic Manuscript Association. She has given workshops – often in collaboration with her colleague Paul Hepworth – at the International Islamic University of Malaysia, in Cambridge, Cairo, Doha and Beirut. She finally started the in-depth examination of the Leiden Islamic manuscripts and officially registered as an external PhD student, at the research institute Leiden University Centre for the Arts in Society, in March 2011.