The Islamic Bookbinding Tradition. A Book Archaeological Study

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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

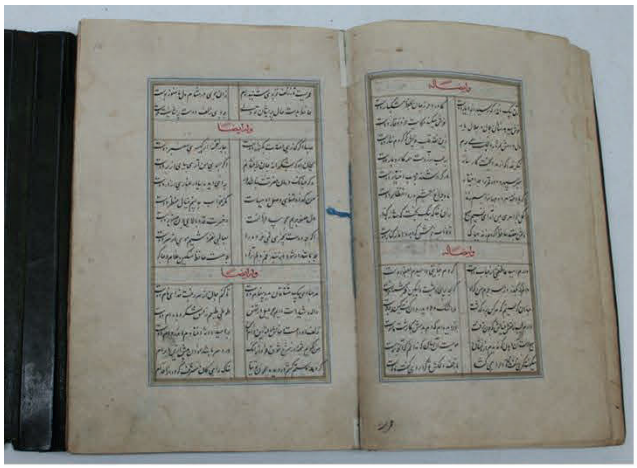

Fig. 1. Or. 1570. The paper repairs at head and tail, underneath the tiedowns of the primary endband sewing, indicate that the textblock is resewn.

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.