During the last 25 years or so, a growing awareness of the importance of the Islamic handwritten heritage led to new research on the production of books in Muslim societies before the introduction of the printing press. Codicology, that is 'the study or knowledge of codices' developped in the sphere of Islamic manuscripts. At the same time, the need to train specialists working in this field is increasingly felt and the al-Furqan Islamic Heritage Foundation which had already started some programmes in this direction decided to publish the present handbook as an answer to this new situation.

With more than 150 illustrations and drawings, indexes and an extensive bibliography, this book is primarily meant to provide a practical guidance for the beginners in codicology. They will find here a clear introduction to the techniques used by the craftsmen who for centuries were involved in manuscript production, from paper making to book binding. On the other hand, the scope of the documentation itself - more than 700 manuscripts are referred to - turns the present volume into a true reference book for those who are already familiar with the world of manuscripts and are looking for comparative material.

Islamic Codicology
an Introduction to the Study of Manuscripts in Arabic Script

AL-FURQĀN
FOUNDATION

Islamic Codicology

an Introduction to the Study of Manuscripts in Arabic Script

Al-Furqān Islamic Heritage Foundation

François Déroche completed his secondary school in Nancy and was admitted to the Ecole Normale Supérieure in Paris where he was educated from 1973 to 1978. He studied there Semitic languages and archaeology, but also classics and passed an *agrégation* in this field. He completed a doctorate on the inscriptions of Dedan, the modern al-□U□ℂ, an oasis in North-Western Arabia (1987).

In 1979, he was appointed member of the scientific staff of the Bibliothèque nationale and worked there until 1983 at the preparation of the catalogue of Arabic manuscripts; two volumes on the Qur'ℂn manuscripts were subsequently published. He carried on his studies on Arabic manuscripts in Istanbul, first as a scientific member of the staff of the French Research Institute (1983-86), then with a scholarship of the Max van Berchem Foundation (Geneva) for a program on the early manuscripts of the Qur'ℂn (1986-88). He was elected in 1990 professor (« directeur d'études ») at the Ecole Pratique des Hautes Etudes, in the department of history and philology, where he teaches the history and codicology of the Arabic handwritten book.

In addition to the catalogue of the Qur'ânic manuscripts of the Bibliothèque nationale (1983-85), he has published *The Abbasid tradition, Qur'ans of the 8th to 10th centuries* (1989), *Buchkunst zur Ehre Allâhs. Der Prachtkoran im Museum für islamische Kunst*, in collaboration with A. von Gladiss (1999), and *Le livre manuscrit arabe, Préludes à une histoire* (2004). He also published with S. Noja Noseda the facsimile of two early Qu'ℂnic fragments, BNF Arabe 328 (a) and BL Or. 2165. He has edited the proceedings of three conferences on manuscripts and codicology, wrote many papers on both topics for various journals and is in charge of the *FiMMOD*, a publication devoted to the description of dated Middle Eastern manuscripts prior to 1500 AD.

François Déroche was elected in 2001 corresponding member of the Académie des inscriptions et belles-lettres in Paris. He is president of the International Congress of Turkish Art and of the SEMPAM, a learned society of studies on the Mahgrib in Classical and Mediaeval times ; he is a member of the scientific council of the Max van Berchem Foundation (Geneva) and of the al-Furqℂn Council for the Preservation of the Islamic Written Heritage (London).

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Contents

Preface

The second conference organised by al-Furqān Islamic Heritage Foundation in December 1993 highlighted the need to provide better training to those interested in the study of Islamic manuscripts, and eventually in the publication of catalogues. It was agreed to make the provision of such training one of the priorities of the Foundation. This effort was to complement the projects of surveying and cataloguing Islamic manuscript collections worldwide, which were already in the implementation stage. Two decisions were taken: the first was to organize training courses in codicology and cataloguing; and the other to prepare and publish a handbook which would give ready access to the knowledge needed by those who wish to work in this field of research.

Training courses were started as early as 1994 and allowed many young scholars to acquire skills and know-how in Islamic manuscripts. The handbook was still no more than a plan, although the publication of the papers of the 1993 conference provided a clearer idea of what it should ultimately include. These papers were published in English as *The Codicology of Islamic manuscripts*, London, 1995, While the Arabic version, *Dirāsat al-makhṭūṭāt al-islāmiyyah bayna i ıtibārāt al-māddah wa-l-bashar*, was published in London, 1997.

Professor François Deroche, a leading authority on Codicology who presented a scholarly paper at the conference, mentioned that he was starting to write a handbook on the same subject. This information was received with enthusiasm, as no better scholar could have been entrusted with such task. The French edition of this book, *Manuel de codicologie des manuscrits en écriture arabe*, was published in 2000. With Professor François Deroche's kind agreement al-Furqan Foundation undertook the translation and publication of this book in Arabic and English. Publishing such a book was all the more urgent because, over the years, the need to preserve the collections of manuscripts became a major preoccupation for the Foundation. The traditional skills necessary for both the production and conservation of the manuscripts declined rapidly during the last century. New dangers appeared to threaten the handwritten heritage of Islam. Hence, the present handbook is seen as a valuable contribution to the training of those who are in charge of the restoration and preservation of Islamic manuscripts.

In order to meet all these goals, the handbook departs from the style of the volumes previously published by the Foundation, as it was deemed necessary to illustrate the various components of the codex.

The Foundation is pleased to present this contribution, hoping that it will serve its general strategy of manuscript preservation and provide those who are interested in manuscripts with a better understanding of the peculiarities of the Islamic tradition in this field.

Ahmed Zaki Yamani
Chairman, al-Furqān Islamic Heritage Foundation
London, November 2005

Foreword

The present handbook is in no sense a history of the handwritten book in the Islamic world. It aims only at providing the reader with the basic facts and methods needed in order to understand the physical characteristics of a manuscript. Even in this respect, it does not claim to be exhaustive: as far as the handwritten tradition in Arabic script is concerned, our knowledge of the materials and techniques which have been used through the centuries is still largely elementary. Many collections still await full descriptive cataloguing and an immense number of important manuscripts have yet to be published. It is my hope that this book will stimulate a wider interest in this field of research and that readers will in turn contribute their observations, comments and criticisms to the development of the codicology of manuscripts in Arabic script.

The English version is not a mere translation of the French original. It has also benefited from comments offered by colleagues after reading the original, and in certain instances I added information either to complete the text or correct a deficiency. In this respect, I want to thank both the translators, Deke Dusinberre and David Radzinowicz, who spared no efforts to find the *mot juste* and the scientific editor, Dr. Muhammad Isa Waley, who made extensive stylistic revisions to the draft translation.

The generous commitment of the al-Furqān Islamic Heritage Foundation has been instrumental in publishing the English translation of a work which was itself prepared with the support of the Max van Berchem Foundation (Geneva). I would like to thank the members of the staff of the Foundation whose dedication and patience contributed to the realisation of this project and also to pay tribute to the memory of the Foundation's former director, the late Prof. Yusuf Ibish, who supervised the beginning of the work. It is my pleasure to thank here colleagues, especially Adam Gacek and Gérard Troupeau, whose helpful comments have contributed towards an improved translation.

François Déroche
Correspondant de l'Institut

Transliteration of Arabic characters

In parentheses the transliterations as they may appear in the bibliography

ا	ā	ض	ḍ/ż
ب	b	ط	ṭ
ت	t	ظ	ẓ
ث	th (t̲, th̲)	ع	ʿ
ج	j (ǧ, d̲j)	غ	gh (ġ, g̲h)
ح	ḥ	ف	f
خ	kh (k̲h)	ق	q (ḳ)
د	d	ك	k
ذ	dh (d̲, d̲h)	ل	l
ر	r	م	m
ز	z	ن	n
س	s	ه	h
ش	š (s̲h)	و	w/ū
ص	ṣ	ى	y/ī

Note

Bibliographical references in the notes have been simplified when a work appears in the Guide to Further Reading at the end of the volume. There are two possible cases:
1) publications frequently cited are given in an abbreviated form listed in the first section of the bibliography;
2) other references that appear in the bibliography are given solely by title, without place or date of publication. Exhibition catalogues are identified by the name of the city in which the exhibition took place, in small capitals, followed by the date.

Introduction

Manuscript: the first appearance of this term as a noun in the late sixteenth century – in English as well as in French – indicates that its existence is due in part to the invention of printing. It was only when books were no longer all copied by hand, as the traditional mode of making them was giving way to this irresistible rival, that a new word entered the language: manuscript, a book 'manually inscribed', written by hand. And it is books that are the subject of this volume. Of course, in many other contexts, ranging from administrative documents to literary composition, the hand continued to favour the pen and was not to abandon it until long after the sixteenth century. This, however, applies not to books but to documents, whose study falls within the domains of papyrology, diplomatics, and so on. Similarly beyond the scope of this study are inscriptions, even though some of them record texts that also appear in manuscripts or were executed with implements similar to those used by scribes. It is the book, copied by hand for centuries – and more precisely a specific form of book, the 'codex' – that is the focus of the field of codicology.

What is codicology? It is a recent term that has its origin in scholarship.[1] A definition that sticks close to the etymological roots would be 'the study or knowledge of codices' (from the Latin *codex* and the Greek *λόγος*). This answer, however, is too brief and needs to be expanded upon. The field that has adopted the name of 'codicology' can arguably claim a certain legitimacy from the way in which the West traditionally referred to books. Unlike Arabic, which places the emphasis on the aspect of writing (in words such as *kitāb* and *makhṭūṭ*), English, following French and Latin, etymologically refers above all to materials: 'book', 'codex', and 'volume' derive respectively from words meaning 'beech tree', 'wooden tablet', and 'roll of papyrus'. Codicology, then, refers primarily to the study of the material aspects of codices: that is, manuscript books comprising a series of gatherings, or quires, of sheets. This remains the basic structure of the book to this day, even though the printing press has replaced the hand of the copyist.

1 The *Shorter Oxford English Dictionary* dates the term to the mid-twentieth century; for the history of its French counterpart, *codicologie*, see Lemaire, *Introduction*, p. 1 (notes 1 and 2).

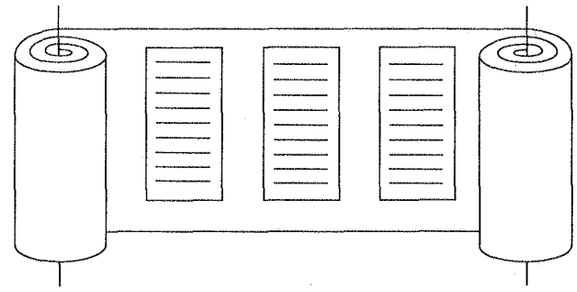
Not all books are codices

Before going further into the subject, it is worth remembering that books can also be made in other ways. The *volumen*, or scroll, long enjoyed a dominant position in the Mediterranean world.[2] Nor did the triumph of the codex banish every other form of book. True enough, manuscripts in the form of *volumina* did not play a major role, numerically speaking, in the Arab and Islamic world.[3] By the time Islam appeared, the Mediterranean world and surrounding regions had replaced scrolls by codices. *Volumina* did survive in vestigial form, thanks to the liturgical use made of them by Jewish communities – in the form of Torah scrolls –which Muhammad and his followers certainly knew of.[4] But when the text of the Revelation came to be compiled into a book, it was the dominant form of the book – the codex - that was employed.

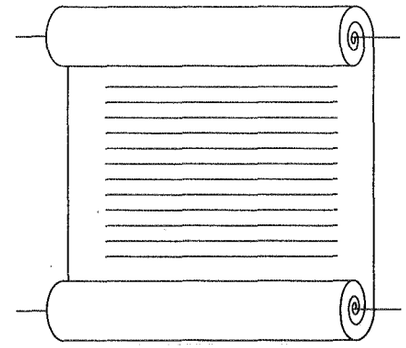
Volumen and *rotulus*

It appears that Muslim scribes never used the *volumen*, a form characterised by the layout of text in lines perpendicular to the axis of the scroll, arranged in a series of columns read one after another (see illus. 1). The only Islamic manuscripts in the shape of rolls that have so far come to light are in the form of a *rotulus* (illus. 2). In this latter case, the text runs parallel to the axis[5]; calligraphic variations on this form are not unknown, most of them being copies of the Qur'ān, but such exceptions are few and wholly untypical. To conclude this brief discussion of scrolls, a form that is peculiar to Indonesia deserves to be mentioned. It consists of long, narrow strips of palm stitched end to end, along which runs a single line of text; a wooden or metal frame holds its two rolls together side by side (MS. Jakarta Perpustakaan Nasional, Vt. 43).[6]

2 There exists an extensive literature on the history of the manuscript book, especially for the period covering the emergence of the codex. See, for example, C. H. Roberts and T. C. Skeat, *The Birth of the Codex*; A. Blanchard (ed.), *Les débuts du codex* [Bibliologia 9] (Turnhout, 1989). **3** They have continued, however, to be employed for almanacs until recent times, and for talismans down to the present day. In addition, the epistle of 'Abd al-Masīḥ ibn Isḥāq al-Kindī claims that the early Muslims left the text of the Qur'ān in the form of leaves and rolls like the scrolls of the Jews, until the Caliph 'Uthmān changed this practice. See P. Casanova, *Mohammed et la fin du monde: étude critique sur l'islam primitif* (Paris, 1911), p. 121; G. Troupeau, 'al-Kindī', *EI*²V, pp. 123-124. **4** In referring to the Torah, the Qur'ān employs the specific term *Tawra* (Qur'ān III: 3, 48, 50, 65, 93; V: 43, 44, 46, 66, 68, 110; VII: 157; IX: 111; XLVIII: 29; LXI: 6; LXII: 5), which implies that it was known to the Prophet's listeners. **5** S. Ory, 'Un nouveau type de muṣḥaf: inventaire des corans en rouleaux de provenance damascaine, conservés à Istanbul', *REI* 33 (1965), pp. 87-149. **6** Grateful acknowledgement is due to J. J. Witkam for drawing our attention to this manuscript.



1. *Volumen.*



2. *Rotulus.*

Accordion-fold books

Other manuscripts may look like a codex from the outside, but their form is based on a different structure, one that does not use quires of sheets. Most people who have studied calligraphy or miniatures will have come across folding albums pleated like an accordion.[7] They are composed of pieces of pasteboard, to which a series of miniature paintings or pieces of calligraphy have been affixed, held together by flexible cloth hinges. Many accordion-style manuscripts of this type are anthologies put together by a third person – the collector – who brought together items of diverse origin as he saw fit. Another distinctive form, found in certain manuscripts from sub-Saharan Africa, is made up of individual sheets held together by a binding.[8] These will be discussed later.

7 For illustrations, see Chicago 1981, pp. 219-221, n° 94, colour plate O (Chicago, Or.Inst. A12100, late eighteenth century CE) and U. Derman, 'Hat', *Sabancı Koleksiyonu*, p. 49. Manuscripts in accordion form are common in certain regions of Southeast Asia. **8** See the chapter 'The Quires of a Codex'; also Munich 1982, p. 140 and fig. 24 (MS. Munich BSB Cod. arab. 2641, dating from the nineteenth century CE).

Single-sheet manuscripts

Manuscripts in the single-sheet format – that is, wherein each leaf corresponds to an individual sheet[9] – were produced mainly during the early Islamic period. The few surviving examples were copied on parchment and make it easy to understand how they were made. Not a single specimen, unfortunately, has come down to us in its original binding, so that it is impossible to know how the sheets were originally held together. A typical example is MS. BNF arabe 324, which can be dated to the latter half of the second/eighth century.[10] Initial examination shows that the flesh side of the parchment most often serves as the recto.[11] Two series of leaves – folios 18 to 27 and 30 to 37 – contain continuous texts, one of ten leaves, the other of eight. In accordance with the usual practice (to be discussed later), the flesh side of the parchment is used for the recto, except for folio 23, which is reversed. It might be thought that these are vestiges of gatherings of sixteen or twenty leaves; but another explanation seems preferable in the light of a study of the 122 leaves of a Qur'ānic text found in two Istanbul manuscripts (TIEM 51 and 52), whose hand is similar to that of the Paris fragments and which present a continuous series of flesh sides as the rectos.[12] Both examples are single-sheet manuscripts, and since each of their leaves represents an entire skin there is no fold, so that the text block is not

9 Hence there is no 'fold', as normally there would be: see below. 10 This is in fact part of a manuscript now dispersed between various collections. For the Paris leaves, see E. Tisserant, *Specimina codicum orientalium*, p. xxxii, pl. 42; R. Blachère, *Introduction au Coran*, 2nd ed. (Paris, 1959), pp. 96, 99, 100; G. Bergsträsser and O. Pretzl, 'Die Geschichte des Korantexts', *GdQ*, III (Leipzig, 1938), p. 254; Déroche, *Cat.* I/1, pp. 75-77. Other leaves are held in other collections: Cairo, Dār al-Kutub (see Moritz, *Ar. Pal.*, pl. 1-12; A. N. Shebunin, 'Kuficheskii Koran Khedivskoi Biblioteki v Kaire', *Zapiski Vostochnago Otdeleniia Imperatorskago Russkago Arkheologicheskago Obshchestva* 14 (1902), pp. 120-125) and Gotha, Forschungsbibliothek MS. Orient. A. 462 (see J. H. Möller, *Paläographische Beiträge aus den herzoglichen Sammlungen in Gotha* [Erfurt, 1844], I, pl. XIV; H. C. von Bothmer, GOTHA 1997, pp. 105-107). 11 For a discussion of 'flesh side', see chapter 'Writing surface: Papyrus and parchment'. 12 Other manuscripts may perhaps also belong to this group, in addition to MSS. Istanbul TIEM 51 and 52 and Paris BNF arabe 324 (see note 10 for bibliography): a Qur'ān in the Sayyidnā Ḥusayn mosque in Cairo and the so-called 'Qur'ān of 'Uthmān' preserved in Tashkent. It is difficult to tell from photographs whether the same arrangement was used in the Sayyidnā Ḥusayn manuscript (which allegedly measures 60 × 70 cm, according to F. Neema, 'Restaurado, el Corán más antiguo', *Excelsior*, Sunday supplement [Mexico City, 25 July 1993]); cf. Ṣ. al-Munajjid, *Dirāsāt fī ta'rīkh al-khaṭṭ al-'Arabī mundh bidāyatih ilā nihāyat al-'aṣr al-Umawī*, pp. 53-54). For the Tashkent manuscript, see A. N. Shebunin, 'Kuficheskii Koran Imperatorskoi Sankt-Petersburgskoi Publichnoi Biblioteki', *Zapiski Vostochnago Otdeleniia Imperatorskago Russkago Arkheologicheskago Obshchestva*, 6 (1891), pp. 75-81; Ṣ. al-Munajjid, op. cit., pp. 50-52; E. Rezvan, 'The Qur'ān and its World: VI. Emergence of the Canon: the struggle for uniformity', *Manuscripta Orientalia*, 4/2 (1998), p. 47, note 11 (bibliography of publications in Russian); compare the folios sold at Christie's in London on 20 and 22 October 1993 (lots 225 and 225 A) and on 19 and 21 October 1993 (lots 29 and 30). The dimensions of these manuscripts seem to indicate parchment made from the skin of a goat, according to the figures given by Reed (*Ancient skins, parchments and leathers*, p. 130).

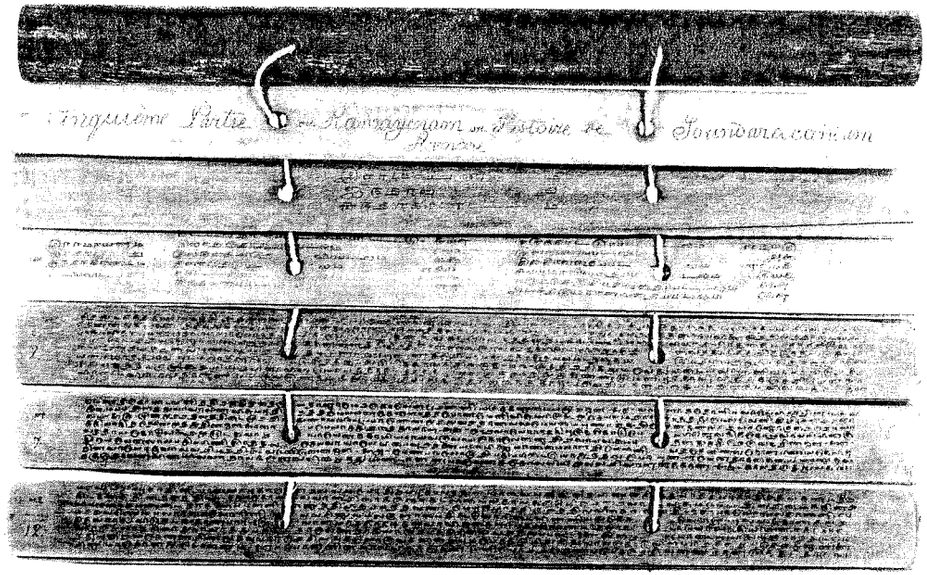
made up of gatherings. The leaves all face the same direction; that is to say, all the rectos employ the flesh sides of the parchment, while all the versos are hair sides. The state of these manuscripts, which have clearly undergone repeated restoration, makes it impossible to determine how the leaves were originally held together. The question as to whether they were stitched flat[13] or mounted on a stub remains unanswered. The Ṣan'ā' manuscript (Dār al-Makhṭūṭāt 20–33.1) may also have been made of single sheets, though it is not clear whether the leaves all face the same way[14] – as of this writing, there is no precise information on this point. Was this approach ever adopted for manuscripts written on paper? We cannot exclude the possibility that Qur'āns of very large size, such as the so-called Baysunghur Qur'ān, each folio of which today measures 177 × 100 cm, may have been made of single sheets.[15]

The expansion of Islam soon brought Arab conquerors into contact with other civilisations in which book manufacture had followed a different path. The repercussions of the encounter with the Chinese at the battle of Talas (CE 751) are well-known: as the story goes, the capture of papermakers slowly led scribes throughout the Islamic world to adopt paper for copying manuscripts.[16] By contrast, there was no such adoption of the form of books typically used in China. Nor did relations with the Indian subcontinent have much impact on Arab and/or Islamic books: for example, the use of palm-leaf slats called *olla* (illus. 3) continued to be confined to the indigenous manuscript tradition, since Muslims employed strips of palm leaves only in very special instances, as mentioned above.

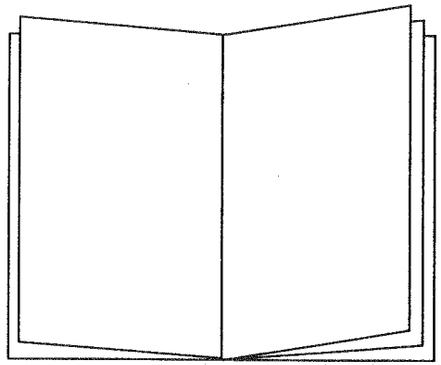
The role of codicology in studying manuscripts

The focus of the codicologist's concern, then, is the codex (illus. 4). This field of study is of relatively recent origin, and is explained by the growing awareness in the twentieth century of the intrinsic interest of books, notably as regards their history. As research has shown, history is quite distinct from that of the texts found in books, whether printed or handwritten. Far from being identical with textual history, codicology sheds light on the history of the period in which a book was produced.

13 That is, stitched through the entire thickness of a gathering along the inner margin, a short distance from the edge; see Muzerelle, *Vocabulaire*, p. 179. 14 U. Dreibholz, 'Der Fund von Sanaa: frühislamische Handschriften auf Pergament', in P. Rück (ed.), *Pergament: Geschichte – Struktur – Restaurierung – Herstellung* (Sigmmaringen, 1991), p. 301, note 9. 15 D. James, *After Timur: Qur'ans of the 15th and 16th centuries* (London, 1992), pp. 18-23. 16 See the next chapter, 'The Writing surface: Paper'.



3. Indian palm-leaf manuscript. Paris, BnF indien 283.



4. Codex.

The goals of codicology

To attain its aims, codicology has to undertake two principal tasks. It must first attempt to analyse, as precisely as possible, all the techniques used in making a manuscript. In this task, laboratory methods can solve problems which visual examination alone cannot hope to, for example in determining the

composition of the colours used or identifying the fibres in a paper.[17] Even without the aid of laboratory measuring instruments, however, codicologists can gather a significant amount of data by relying on two stalwart allies – their patience and their curiosity. It is hoped that they will also find this handbook useful, designed as it is to provide readers with clues to enable them to recognise the methods employed by the craftsmen who made the books under discussion.

Such analysis, however, cannot be an end in itself. It should be accompanied by an effort to date the various techniques and even to pinpoint them geographically. All work in this field therefore faces the crucial need to constitute coherent sets of documents that shed light on one another. Some of these documents are dated, and now and then they contain evidence as to their origin; and such manuscripts therefore play an essential role in establishing the comparisons required for codicology to progress. More than anything else, it is the single object taken alone – in the eyes of the person examining it, at least – that is fraught with the risk of error and misinterpretation. And there are many manuscripts for which we have no parallels, at least in the present state of research. These manuscripts are not necessarily *unica* – unique examples of a text – but are often copies of well-known works, starting with the Qur'ān, which display particularities that are hard to explain given the absence of parallels. For example, the comments made by Jacques Berque concerning a Qur'ān (MS. Tunis Bibliothèque nationale 14.246) are debatable because Berque analysed this copy in isolation,[18] whereas in fact it belongs to a larger group.[19] Of the hundreds of thousands of extant manuscripts in Arabic script, the vast majority have not been adequately studied; many, indeed, remain simply unknown. In order to grasp the limitations of our present knowledge, one need only consider the changes in our understanding of the early centuries of Islam brought about by the discovery of the Qur'ān manuscripts of Ṣan'ā'.[20] Redoubled efforts are therefore required if we are to fully grasp the Arab and Islamic heritage in all its diversity. For the moment, our vision of it is far too incomplete; indeed, it is a limitation of the present handbook that it inevitably reflects the immature state of scholarship in this field, and therefore can represent no more than an initial step.

17 Although somewhat dated, the proceedings of the symposium on *Les techniques de laboratoire dans l'étude des manuscrits* (Paris, 1974) offer a glimpse of the possibilities offered by such techniques. As regards identification of the composition of inks, pigments and dyes, a brief discussion of recent methods will be found later in this introduction; see also the chapter on 'Instruments and preparations used in book production'. Finally, it is worth citing the long experience in this area acquired by the Istituto Centrale per la Patologia del Libro in Rome. 18 J. Berque, 'The Koranic text: from revelation to compilation', in G. Atiyeh (ed.), *The Book in the Islamic World* (New York, 1995), p. 25. 19 F. Déroche, 'The Ottoman roots of a Tunisian calligrapher's tour de force', in Z. Yasa Yaman (ed.), *Sanatta etkileşim = Interactions in art* (Ankara, 2000), pp. 106-109. 20 Kuwait 1985.

Codicology and palaeography

Among the various processes involved in producing a manuscript, writing takes pride of place. Specialists in Western manuscripts traditionally accord special importance to the study of writing, or palaeography, which emerged and developed extensively as a science well before codicology appeared, thereby establishing an independent discipline.[21] In the Arab and Islamic field, however, a number of factors impeded the serious study of book scripts, delaying the commencement of rigorous analysis of their forms and evolution. It would thus seem reasonable to include the study of these scripts within the discipline of codicology, which in no way means that we consider manuscript hands to be entirely unrelated to those used for Arabic inscriptions or papyri.

Toward a history of books in Arabic script

The other direction in which codicology must progress remains, for the moment, a distant ideal: the data that specialists are patiently assembling should provide material for a future reconstruction of the history of manuscript books written in Arabic script, faithfully reflecting the intellectual, social, economic, and even technical conditions under which they were produced. Scholars have sometimes directed their research toward more specific goals; Rudolf Sellheim, in *Materialen zur arabischen Literaturgeschichte*, favours examination of the numerous notes that appear on manuscripts and also accords a larger role to the study of the history of the text, thereby tending to place codicological research more at the service of the history of literature.[22] This latter can in turn shed light on codicology, for example by pointing to the existence of 'families' of manuscripts - in other words, groups of copies that derive from a single prototype, often of distant origin.

Codicology and cataloguing

Although the role of codicology makes it an ancillary field of history, its role cannot be reduced to one of merely gleaning elements that may provide a better grasp of the history of a given period. As we learn more about the methods used to produce manuscripts during various periods, our attempts to determine the date and geographic origin of a copy containing no written evidence of

21 Aspects of the issue of the respective roles of the two disciplines are discussed in Lemaire, *Introduction,* p. 3, notes 4 and 6. **22** Sellheim, *Materialen* 1 and 2. The term used by German specialists, *Handschriftenkunde*, is older and has a broader meaning than *codicologie* in French, which may explain this different tendency. In France, a similar standpoint was adopted with the founding of the Institut de Recherches et d'Histoire des Textes, where codicological studies place great emphasis on the history of texts.

either will steadily improve in accuracy. It is readily apparent, however, that the service which codicology can render to all whose work is based on manuscripts depends above all on painstakingly gathering accurate data and meticulously analysing its implications. It is to be hoped that this development will be significantly advanced by progress in cataloguing,[23] and more particularly in describing manuscripts. This handbook itself is indebted to the remarkable work done in the past twenty-five years by the authors of modern catalogues, to whom an acknowledgement and thanks are due.

These modest yet indispensable tasks entail the use of terminology as precise as possible. Thanks to Denis Muzerelle, French codicologists have at their disposal a taxonomy that has been drawn on extensively in arriving at the technical terms employed here[24]. It is hard to overstate the need for terminological accuracy, even when naming the basic parts of a codex. When a manuscript written in Arabic script is laid down flat, the spine will be to the right when the reader begins to read; it is also called the 'back', and is where the stitches holding the quires are found. The three other sides are 'edges': opposite the back, on the left, is the 'fore-edge'; the top edge, furthest from the reader, is known as the 'head', and the nearer edge is called the 'tail'.

Methodology

On the proper use of originals and reproductions[25]

Any examination of the outside and inside of a book should be undertaken with the greatest care. Working on an original makes it possible to draw up a list of notable features and to measure the size of the volume, the thickness of paper, and the written area. One can also detect the places where special apparatus (magnifying glasses, scanners, lamps, beam generators, beta-radiography, image-analysis software) is required to study features that are otherwise invisible; for example, to identify materials used (inks, papers, pigments) either with the unaided eye, or with a binocular magnifier, or through physical and chemical analysis of micro-samples[26]. Again, with the original to hand, one may even be able to date the document by smell, given that a freshly tanned skin gives off a characteristic odour.

23 See the concluding chapter on 'Codicology and the history of collections'. **24** Denis Muzerelle, *Vocabulaire codicologique: répertoire méthodique des termes français relatifs aux manuscrits* [Rubricæ, 1] (Paris, 1985). **25** This section was written by Annie Berthier. **26** Thanks to the latest techniques, it is sometimes no longer necessary to remove any sample at all from a manuscript; an illustrative example of these non-destructive methods can be found in the chapter on 'Instruments and preparations used in book production'.

Even from a first-rate reproduction it is not possible to ascertain the exact colour of the writing surface (be it papyrus, paper, or parchment), to measure its density, to determine its transparency by holding it up to light, or to assess its grain. Nor is it possible with a reproduction to assess the thickness of the page in order to detect patches added or removed, to note scraped areas, to measure the size of the volume, to count the gatherings or to ascertain how they are sewn. It is difficult to study inks and ruling, to determine where the pen has been raised from the paper or to identify passages that have been altered or erased. It must therefore be said that the complete codicological description of a manuscript needs to be based on an examination of the original. Reproductions, however, (photographs, slides, microfilm and microfiche, facsimiles, digitised images) allow for types of handling not feasible with an original, and studying a reproduction can provide useful images that are necessary at a certain point in the analysis. Handling of the original can be reduced and simplified by determining in advance, thanks to the study of a reproduction, what to look for and where.

There are two types of reproduction: firstly, existing reproductions (books and facsimiles, institutional photographic archives, digital and other types of databases); and secondly the researcher's own reproductions, whose purpose is targeted and precise: sketches, tracings (allowing for visual data to be superimposed), photocopies of books or manuscripts from a microfilm, enlargements and scanned images.

Laboratory techniques for studying manuscripts[27]

Manuscript specialists have long made use of chemical and physical techniques to contribute to their work in either restoring to view writing that has been erased, faded, or worn; attempting to identify the animal from which a given parchment was made (or to date that parchment); analysing the composition of a paper; or identifying the pigments and colours used by copyists and illuminators. The methods employed are now evolving very swiftly, and increasing in accuracy and in ease of use, though of course limitations remain.

It is not possible to provide more than a brief overview of available techniques in these few pages. For further information, readers are advised to consult the proceedings of four conferences, which provide basic information.[28] Although these proceedings provide a convenient survey of current possibilities,

27 This section was written by Bernard Guineau and Jean Vezin. 28 *Les techniques de laboratoire dans l'étude des manuscrits*; L. Fossier and J. Irigoin (eds.), *Déchiffrer les écritures effacées* (Paris, 1990); *Pigments et colorants de l'Antiquité et du Moyen Âge: teinture, peinture, enluminure, études historiques et physico-chimiques* (Paris, 1990); M. Maniaci and P. F. Munafò (eds.), *Ancient and medieval book materials and techniques*, 2 vols. (Vatican City, 1993). Useful references can also be found in Linda L. Brownrigg (ed.), *Making the medieval book: techniques of production* [Proceedings of the Fourth Conference of the Seminar in the History of the Book to 1500, Oxford, July 1992] (Los Altos Hills, 1995).

they do not dispense with the need to keep abreast of recent publications and to refer to competent physical chemists for updates. In this as in many other fields, tools and techniques are evolving very rapidly.

Decipherment of faded and vanished text

Since the nineteenth century, scholars have been using chemical reagents in efforts to recover writing that has been scraped away or erased. Cardinal Angelo Mai in particular strove to decipher palimpsests in this way, although unfortunately the results were disappointing. The script was often restored only for a relatively short time, and the parchment was irrevocably damaged by the various products employed, making any further attempts at recovering the text impossible. Such methods were consequently abandoned. It is nevertheless worth noting that certain chemists now advocate new methods, which are claimed to be harmless.

At the time of writing, ultraviolet rays are the simplest and most commonly used means of reading deleted or erased texts. Reading can be done directly by using a Woo's lamp, although this method has the drawback of tiring the eyes even if protective glasses are worn. It is preferable to begin by taking a photograph of the passage to be deciphered. This not only spares the reader's eyesight but considerably reduces the document's exposure time to ultraviolet rays which, as is well known, are not without deleterious effect. Ultraviolet fluorescence photographs also offer the advantage of being available for examination at greater length; furthermore, they can be subjected to various methods of contrast enhancement, thereby combining the advantages of several methods.

A more recent technique, ultraviolet reflectography, improves results where the text to be deciphered is written in metallo-gallic ink. In the case of carbon-based inks – the type of ink most frequently used in the East – infrared reflectography gives good results with a Vidicon camera hooked up to a monitor and fitted with an appropriate filter.

Infrared light has another advantage, well known to forensic laboratories: it enables one to read texts eradicated or masked by a layer of paint. In favourable circumstances, then, it becomes possible to read instructions to the artist written on the parchment underneath an illumination, even though the text has been covered over with paint.

In the 1970s, new methods made it possible to restore erased texts with the aid of contrast enhancement. They entailed optical examination based on photometric analysis of images or on digital analysis. Both techniques are all the more promising in that they can be applied not to originals but to photos taken in ultraviolet or infrared light, thereby optimising images already obtained. Unfortunately, advances in this sphere, and especially the development of new and much more powerful (and expensive) tools, have not yet greatly benefited codicological studies.

The shrewd application of a variety of techniques can sometimes yield excellent results. Miracles should not be expected, however. If a text has been thoroughly scraped or washed away, so that no trace of ink remains, it is pointless to expect to be able to decipher anything at all. This applies notably to owners' marks, which were often thoroughly removed, depriving researchers of precious information on the history of a manuscript.

Finally, inscriptions were sometimes made on parchment with a stylus. Such notes are usually hard to make out. Photographs taken in oblique light can make them easier to read.

Identifying pigments and colouring materials

Besides those already mentioned, there are other ways in which laboratory techniques can assist the codicologist. Over the past forty years, physio-chemical analysis of pigments and other colorants used in manuscripts has made great strides, not only in terms of the quality and accuracy of results obtained but also in terms of greater ease of analysis. A major factor in this has been the miniaturisation of certain pieces of equipment that can now be carried easily to the place where the manuscript is kept. It can be very risky to transfer a manuscript to a scientific laboratory, and it may therefore be wiser to remove microscopic samples when the apparatus to be used is not portable.

Several types of microanalysis yield quite valuable results even when only tiny samples are available, their minuteness being limited above all by the difficulty of handling them. Among the methods available, it is worth distinguishing between, on the one hand, elementary analysis techniques (the most common of which is currently electronic microscopy combined with energy-dispersion x-ray spectroscopy, or EDXS) and, on the other, various methods of structural or compound analysis (such as infrared absorption spectrometry, UV-visible fluorescence spectrometry, mass spectrometry, and Raman spectrometry). In recent years, such tools have been adapted for the study of minute samples, giving birth to new microspectrometric techniques (infrared and Raman microspectrometry). On the other hand, techniques of nuclear analysis (by neutron or proton activation) – which are highly sensitive methods of elementary analysis – can be used to reveal minute traces of elements within a sample, thus supplying precious information on the source of a material. No one method, however, can alone answer all the questions that arise, and it often happens that the same microscopic sample is subjected to several successive tests. It is therefore important that the sample not be destroyed or significantly altered during the process of analysis.

It is not surprising that the examination of a microscopic sample, even when it proves feasible, can be time-consuming and sometimes costly. These drawbacks can make it hard to justify increasing the number of measurements in order to aid potential comparisons. Equipment that can be easily transported to the site where the manuscript is kept and that provides colour measurements

through reflective spectrometry has recently been developed by Bernard Guineau at the Institut sur les Archéomatériaux (CNRS) in Orléans, France.[29] Because the time required for measurement by this technique is very brief, multiple measurements can be taken, especially since their cost is not prohibitive.

Thanks to the great number of measurements that can be made of a single painting, the palette used by an artist can be determined. Comparison of results obtained from different works ascribed to the same artist provides a crucial means of evaluation which can confirm or contradict conclusions based on stylistic analysis alone. It is also interesting to check whether the results of scientific examination corroborate the formulae for colours recorded in mediaeval texts.

Dating

In recent years, laboratories have attempted to date old parchments by using Carbon-14 techniques. A promising method in theory, it is only really useful if a sufficient number of items are available for comparison in a given region. Furthermore, the size of the sample that needs to be removed for analysis is often too large to allow its use, even though the quantities required for analysis have been reduced to less than one square centimetre, in certain cases. Finally, such tests require the use of apparatus that is scarce and therefore very costly.

Whatever technique is used, a single measurement taken in isolation is of little significance; and multiple measurements only provide usable information if, prior to analysis, a precise *modus operandi* has been established through close collaboration between the physical chemist and the palaeographer or codicologist. Laboratory technicians need to know what is expected of them in order to be able to suggest the most appropriate techniques and to explain, when necessary, the limitations of current methods.

Codicology and its focus of study

Just as the very name of the discipline of codicology makes its object of study – codices – obvious, so any qualifying adjectives reveal how tricky it can be to define a specific field of application. To dodge that difficulty by calling this book 'An Introduction to Codicology' would rightly be considered misleading.

29 B. Guineau, 'Non-destructive analysis of organic pigments and dyes using Raman microprobe, microfluorometer or absorption microspectrometer', *Studies in conservation* 34 (1989), pp. 38-44.

For the moment, the field seems to be broken down into 'regional' divisions. Yet a strict geographical division is impossible here, since the manuscripts in question were copied in places ranging from the Atlantic Ocean to the China Sea, from the Straits of Zanzibar to the shores of the Volga. Nor would using the term 'Islamic' be altogether satisfactory, for it would eliminate texts composed, and manuscripts copied, by members of other faiths even though those manuscripts are related, if only partially, to a larger group. Finally, readers will recognise that a definition limited by language would be, if not incorrect, at least premature. For although it is not unthinkable that some day a specialised codicology of (for example) Persian or Ottoman Turkish manuscripts may emerge, the bilingualism, indeed, trilingualism, of many copyists must be taken into account. How, then, can precise boundaries be established, when the same person may have written texts in Arabic, Persian, and Turkish? The least unsatisfactory solution, then, involves definition by reference to the Arabic script, which is the common denominator of this set of manuscripts written in a range of languages and originating from immensely diverse cultural and geographical regions.

This serves to highlight once again the still rudimentary state of our knowledge, in that the number of thoroughly studied manuscripts remains infinitesimal compared to the tens of thousands of volumes theoretically covered by this field of study. The contents of the following chapters cannot therefore claim to represent anything more than a starting point for what should become increasingly accurate and diversified research. Nonetheless, it is the authors' hope that our efforts to define and describe the most basic features of the codex will be useful to all those embarking on this fledgling but fascinating field of study.

The Writing Surface: Papyrus and Parchment

In the course of history mankind has used many materials – mineral, plant and animal – to write on. The following two chapters will be concerned only with those writing surfaces (papyrus, parchment and paper) employed in the Islamic world in manufacturing handwritten books in codex form.[1] These materials were also utilised for other aspects of book production, such as binding; those other uses will be discussed at greater length in the relevant chapters.

Papyrus

In the Arab and Islamic field, papyrus more readily brings to mind types of documents that do not belong to the sphere of codicology proper: letters, contracts, administrative documents, etc. In fact, though, only scattered remnants of manuscripts written on papyrus in Arabic script have survived the intervening centuries, and our knowledge of the role played by this material in the history of books in Arabic script (illus. 5.) remains scanty. Papyrus preserves traces of its vegetable origin since the fibres of the plant remain visible at the end of the manufacturing process, their two sides being distinguished respectively by whether the fibres run horizontally or vertically.

Origin

The word 'papyrus' denotes both a plant and the writing material made from it. *Cyperus papyrus* L. – to use its botanical name – grows wild in its original habitat, Egypt. During the first centuries of the Islamic period, it was also found in Palestine, Mesopotamia and Sicily.[2] In Arabic, it is designated by terms such

1 Other materials have also been used to make manuscripts in codex form, if only sporadically. One case is represented by a Qur'ān extract copied on wood, published by N. Abbott ('An Arabic-Persian wooden Ḳur'ânic manuscript from the royal library of Shah Ḥusain Ṣafawī I, 1105-35 H.', *Ars Islamica* 5 [1938], pp. 89-94). 2 Grohmann, *AP* I, pp. 67-69. Pliny the Elder already noted (*Natural History*, XIII, 11, 73) that papyrus grew not only in Egypt, but also in Mesopotamia and in Syria. See also the references in note 4.

as *qirṭās, waraq al-qaṣab* ('leaf of reed') and *waraq al-bardī/al-abardī* ('leaf made of papyrus')[3]. The word 'papyrus', from which, paradoxically enough, the word 'paper' originates, is a loanword from the Latin *papyrus* or the Greek *πάπυρος*, both derived from the Coptic *pa-p-ouros*.

Historical background

Used as a writing medium from around 3000 BCE,[4] papyrus was known and employed in Arabia well before Islam.[5] With the meteoric rise of the Islamic empire in the first/seventh century came the conquest of areas in which grows the plant whose stems can be fashioned into papyrus. Offices and private individuals, civil servants and scholars alike used the material for various purposes such as letters, books, contracts, and tax registers. Papyrus continued in use until around the mid-fourth/tenth century, by which time competition from paper became overwhelming,[6] papyrus manufacture practically dying out by the fifth/eleventh century.[7] To judge by the repeated demands issued by the Caliph 'Umar II (reigned 99/717–101/720) that sought to encourage economies in government offices,[8] it must have been a relatively expensive material. The same conclusion emerges from the study of surviving papyrus prices,[9] and is further corroborated by the manner in which every single part of a sheet of papyrus has sometimes been gradually encroached upon by writing until eventually it is completely covered with script in every direction.[10]

The Manufacture of Papyrus

A description of papyrus production by Abū l-'Abbās al-Nabātī (died 637/1239) survives in an Arab source of the seventh/thirteenth century, the

3 Gacek, *AMT*, pp. 11 and 116. 4 See W. Schubart, s.v. 'Papyrus', *Paulys Realenzyclopädie der classischen Altertumswissenschaft*, XVIII/3, col. 1116-1118; also K. Maresch, s.v. 'Papyrus', *Lexicon des Mittelalters*, vol. VI, col. 1693-1695. For the Islamic domain, reference can be made to Grohmann, *AP* I, pp. 66-93, and to G. Khan, *Bills, letters and deeds*, p. 11-22 and 'Arabic papyri', in *Codicology*, pp. 1-16. 5 A number of references to papyrus appear in pre-Islamic Arabic poetry: see Grohmann, *AP* I, pp. 68 and 70. The Qur'ān also mentions papyrus (e.g. VI: 7 and 91, etc.). 6 Grohmann, *AP* I, p. 73. This author maintains that the most recent datable papyrus is from 480/1087. Later documents appear in editions of Arab papyri, a situation that can be explained by the habit among specialists in Arab papyrology of grouping together documents copied on various supports (paper, parchment, etc.) into a single category as 'papyrus'. 7 R. Sellheim, *EI*² V, p. 171, s.v. 'ḳirṭās'. 8 Al-Qalqashandī, *Kitāb Ṣubḥ al-a'shā fī ṣinā'at al-inshā'*, vol. III (Cairo, n.d.), p. 49. 9 Grohmann, *AP* I, pp. 92-93. 10 Grohmann, *AP* I, p. 74. Letters survive in which the receiver has written a reply on the verso, and even in the spaces left empty on the recto. Y. Rāghib ('L'écriture des papyrus arabes aux premiers siècles de l'Islam', *REMMM* 58 [1990], p. 22) points out that government offices themselves had no qualms about employing used leaves that were surplus to requirements.

Jāmi' li-mufradāt al-adwiya wa-l-aghdhiya by Ibn al-Bayṭār (died 646/1248). Al-Nabātī possessed no direct knowledge of the manufacturing process which had in fact died out by the time this passage was written: 'The Egyptians used in former times to split the stalk of the papyrus into two parts, cut [the pulp obtained thereby] into strips, put them [crosswise, in two layers] on an even pad made of wood; spread on them a size (*luzūja*) made from the seeds of the blue lotus (*Nymphæa coerulea* Sav.) mixed with water; having left the strips to dry completely, they would then beat them thoroughly with a piece of wood resembling a small mallet until they got an even, solid sheet.'[11] Apart from the use of size, this text rather closely parallels the classic account given by Pliny the Elder. 'The process of making paper [i.e. sheets] from papyrus is to split it with a needle into very thin strips made as broad as possible, the best quality being in the centre of the plant, and so on in the order of its splitting up. [...] paper [sheets] of all kinds are woven on a board moistened with water from the Nile, muddy liquid supplying the effect of glue. First an upright layer is smeared onto the table, using the full length of papyrus available after the trimmings have been cut off at both ends, and afterwards cross-strips complete the lattice-work. The next step is to press it in presses, and the sheets are dried in the sun and then joined together.'[12] The foregoing description is relatively clear, except with regard to the initial stages of the operation when the leaves are cut up. Papyrologists understand the texts to mean that the stem, triangular in cross-section, is first divided into segments and then split into two halves that are sliced into strips from the centre of the stem outwards, parallel either to one of its sides or else to the incision.

Adolf Grohmann has countered this view with the following observation: 'It has long been believed that the pieces of pith could be separated merely by being slit longitudinally. Microscopic examination has demonstrated, however, that this was not the case. For if the strips separated by simple longitudinal cuts had been laid side by side, the packs of cells in the pith which to the naked eye look like fibres, should appear spread over two zones, tighter towards the bark but looser in the central section. Consequently, where the strips of pith touch, tight packs of vessels should appear, whereas they should remain sparser towards the middle. But papyri themselves do not in fact demonstrate such a variation. The quantity of fibres is as homogeneous under the microscope as it is to the naked eye.'[13] Grohmann goes on to offer a different interpretation of the cutting process: 'After removing the bark [of the papyrus], the lamellae comprising the stem would be separated with the aid of a sharp point. Another method consisted in [...] attaching a thin blade to a horizontal support and rotating the pieces of pith around their axis, pushing them against this plane-

11 *Jāmi' li-mufradāt*, vol. I, Beirut, 1412/1992, p. 119, l. 17 sq.; Grohmann, *AP* I, p. 76; for a translation of the text see R. Sellheim, loc. cit. 12 Pliny the Elder, *Natural History*, XIII, xxiii, 74-77; vol. 4, ed. H. Rackham (Cambridge, Mass. and London, 1945), pp. 143-145. 13 Grohmann, 'Aperçu de papyrologie arabe', *Études de papyrologie* 1 (1932), p. 31. His critique is taken up in *AP* I, p. 77.

like device. According to whether the strips of pith, whose breadth varies between 1.5 and 8 cm, were extracted from the bark area or from the centre, the variety extracted would be thin or thick, or even extremely thin.'[14]

While the first step in manufacture has, as we have seen, given rise to divergent interpretations, the nature of the subsequent phases, on the other hand, is relatively unambiguous. The strips of pulp were laid out side by side on a flat surface; next, perpendicular to the axis of this first layer was placed a second series of strips, also side by side. Then a preparation designed to bind the various ingredients together might be spread over the sheet[15] and then pressed, before being smoothed out (an operation for which, according to Pliny, a tooth or a shell might be employed).[16] The rectangular pieces thus obtained (Greek, *kollèmata*, the plural of *kollèma* - κόλλημα) commonly measured between 20 and 30 cm wide and from 30 to 40 cm long, but the width tended to increase over time; the minimum and maximum dimensions given by Grohmann vary between 12.7 and 37 cm. for width and between 30 and 58 cm for length.[17] The sheets were then sorted according to quality, and twenty of them were glued end to end with a slight overlap (approximately 2 cm.), care being exercised to lay the fibres in one and the same direction; the joints were then smoothed down so that they would offer no resistance to the passage of the reed pen. The strip thus obtained was then rolled.[18]

By the end of the process, the papyrus appeared as a roll in which the horizontal fibres parallel to its length faced inwards. In accordance with the practice in antiquity of copying books as *volumina*, this was the first side to be written on, and thus constitutes what might be referred to as the 'recto'. On the outside of the roll, the fibres lay vertically: hence this side was in effect a 'verso', and was generally used second. The scribe would copy documents perpendicularly to the fibres of the recto.[19]

14 Op. cit., p. 30. More recently, Grohmann has expanded on the hypothesis of 'peeling' of the papyrus stalk. He bases his argument this time on the techniques employed in China for making rice paper: after making an incision in a piece of *Aralia tetrapanax papyrifera* laid in front of him, the workman holds the knife firmly in his hand and slowly and steadily rotates the pulp against the blade of the knife, thereby extracting the long (2 to 3 foot) leaves in a spiralling movement (*AP* I, pp. 77-78). The results of microscopic examination of papyrus are equally important in this connection: see A. Wallert, B. M. Moeliono and J. D. Kruijer, 'Mikroskopische Untersuchungen von Papyrus und Plinius, Hist. Naturalis XIII, 74-83', *Zeitschrift für Papyrologie und Epigraphik* 76 (1989), pp. 39-44. **15** The use and even the existence of sizing is a matter of dispute: see Grohmann, *AP* I, pp. 78-79. It is questionable, however, whether that was really the desired effect. Pliny the Elder states that the leaves were indeed sized: 'The common kind of paste for paper is made from fine flour of the best quality mixed with boiling water, with a very small sprinkle of vinegar [...] but a more careful process is to strain crumbs of leavened bread in boiling water; this method [...] produces a paper softer even than linen' (Pliny the Elder, *Natural History*, XIII, xxvi, 82). This manner of proceeding is reminiscent of the kinds of preparations employed in papermaking (see below). **16** Pliny, loc. cit. **17** Grohmann, *AP* I, p. 87. **18** This clue as to the number of leaves used to compose a roll derives from Pliny the Elder. The process seems to have endured through the Islamic period (q.v. A. Grohmann, *AP* I, p. 89). **19** Khan, op. cit., in *Codicology*, p. 17 and 18 and fig. 3 b.

The protocol

A strip of poorer quality whose fibres lay perpendicular to those of the rest of the sheets[20] would then be stuck to the head of the roll known as the *protocol* (from the Greek *prôtokollon* – *πρωτόκολλον*), whose function was to protect the roll. As was the custom in Byzantine tradition, this initial sheet bore an inscription also known by the term 'protocol'. During the Arab period, this text was initially written in Greek, and then in Arabic and Greek from 74 or 75/693–694 or 694–695, and finally in Arabic alone.[21] After the *basmala*, the protocol would contain various religious formulae – such as the *shahāda*, the *taṣliya* (invocation of blessings on the Prophet) – or some verses from the Qur'ān, together with the name of the reigning caliph and, as the case might be, that of the governor of Egypt, the director of finance for the province or other senior officials. Authorities differ as to whether this inscription corresponded to a tax levied or to a maker's mark.[22] The script employed for the protocol is of a particular type that might perhaps have been executed with a brush; in later times, combinations of inks of various colours (red and green, more rarely blue) were used to copy this text.

The use of papyrus in Arabic manuscripts

In the Islamic period, makers continued to prepare papyrus as they had done in ancient times, sticking the *kollèmata* together to obtain a roll: this manner of proceeding explains why several ways of using papyrus are found in manuscripts. Too few manuscripts survive to allow any major trends to be extrapolated; only a few necessarily brief observations can be made.

First of all, the whole roll can be used as it is, or else lengthened by sticking several rolls end to end, as required. The result could be a strip of some considerable length: indeed, two surviving letters exceed two meters in length;[23] but, according to one source,[24] the total length might reach nearly fifteen. Copyists could then lay out the lines of writing parallel to the length of the roll and set out their texts in columns side by side, a solution that corresponded to

20 Grohmann, *AP* I, p. 88. **21** Grohmann (*AP* I, p. 82) notes the use of Arabic alongside that of Greek in the reign of Mu'āwiya (reigned 41-60/661-680), and hence at an earlier date than that generally accepted as marking the introduction of Arabic into the work of the administrative offices, i.e. in the reign of 'Abd al-Malik, in 74 or 75/693-694 or 694-695 (see for example G. Khan, op. cit., in *Codicology*, p. 14). **22** Grohmann, *AP* I, p. 80 sq. **23** Heidelberg Institut für Papyrologie MS. Inv. PSR 3-7 measures 2.31 m. (C. H. Becker, *Papyri Schott–Reinhardt*, I, in *Veröffentlichungen aus der Heidelberger Papyrus–Sammlung*, vol. III [Heidelberg, 1906], pp. 68-76, no. III); a letter in the collection in the Museum of Islamic Art in Cairo is 2.4 m. in length (M. Hinds and H. Sakkout, 'A letter from the governor of Egypt to the king of Nubia and Muqurra concerning Egyptian–Nubian relations in 141/758', in W. al-Qadi (ed.), *Studia Arabica et Islamica: Festschrift for Iḥsān 'Abbās* [Beirut, 1981], pp. 209-229). **24** Cited by Rāghib, op. cit., p. 20 and n. 29.

the shape of the book in antiquity (the *volumen*), a form eventually supplanted by the codex in the first centuries of the common era (henceforth CE). In the Islamic world, so far as we are aware, the *volumen* itself is not attested. If, on the other hand, the copyist wrote at right angles to the length of the roll, the term is *rotulus*. The *rotulus* – and more especially when made from papyrus – was employed during the first centuries of the *Hijra*, in particular for notes;[25] one example is the compilation of Traditions made by 'Abd Allāh b. Lahī'a preserved at Heidelberg (P. Schott-Reinhardt Inv. Ar. 50–53).[26]

Another way of handling papyrus consisted in progressively dividing it into pieces of variable size according to need. Sources indicate that the roll could be sold not only whole but also in smaller units, the most current – corresponding to one-sixth of a roll – being known as a *ṭūmār* (from the Greek *tomarion* – τομάριον)[27]. As will be shown below,[28] several pieces of the same size could be cut, superposed, and then folded in the middle so as to comprise a gathering (*kurrāsa*).[29] Papyrus codices are in fact attested in the Islamic world from earliest times, which is hardly surprising since their use was already well established in areas taken over by Muslim conquerors. Some documentary codices in Egypt listed by Jean Gascou have been dated prior to the 'Abbāsid period.[30] Several of these, dating from between 699–705 and 716–721 CE, are made up from leaves (i.e. single bifolium) folded into two;[31] another, from after 716–717, comprises a single gathering. It is thus advisable to treat with a degree of scepticism the theory voiced by several Arab authors of a shift from scroll to unbound quire (*daftar*) within the administration of the empire during the reign of the first 'Abbāsid caliph, al-Saffāḥ (reigned: 749–754).[32] In this connection, it would undoubtedly be interesting to re-examine the history of the use of the *daftar* in the early Umayyad and 'Abbāsid administrations.

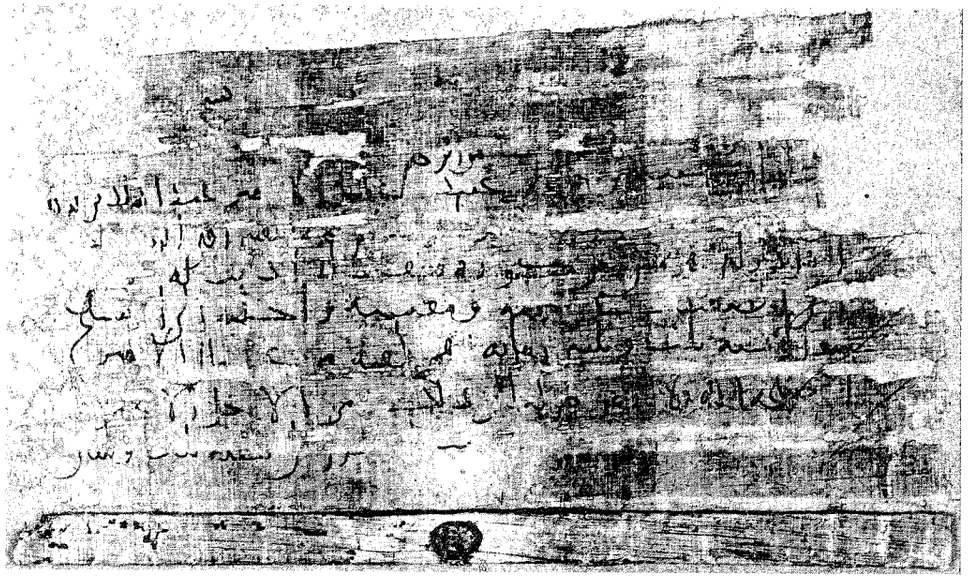
Now, the existence of the documentary codices mentioned above makes it possible to assert that, for papyrus – contrary to what has sometimes been argued[33] – the codex form was employed very early in the Islamic period. Admittedly, the majority of literary papyri subsist in a fragmentary state and provide only an incomplete picture of the use of the material. Nevertheless, these survivals, which include a certain number of bifolia in reasonably good condition, seem to confirm the conclusion that the codex was indeed the

25 N. Abbott, *Studies in Arabic literary papyri*, vol. II, *Qur'ānic commentary and tradition* [Oriental Institute Publications, 76] (Chicago, 1967), pp. 57-59, contains a lengthy discussion of the sometimes long rolls in which traditional records were kept; reference may also be made to the chapter on 'The Quires of a codex'. **26** R. G. Khoury, *'Abdallāh ibn Lahī'a (97-174/715-790), juge et grand maître de l'école égyptienne* [Codices arabici antiqui, 4] (Wiesbaden, 1986), p. 232. **27** See Gacek, *AMT*, p. 95. The word can also designate 'leaf', 'page' and 'letter'. The *ṭūmār* can also be divided into sections: Grohmann mentions one-third parts of a *ṭūmār*, i.e. 1/18 of a roll (*AP* I, p. 91). **28** See also the chapter on 'The Quires of a codex'. **29** Grohmann (*AP* I, p. 75) raises this possibility, but is obviously thinking of administrative records rather than of codices. For *kurrāsa*, see Gacek, *AMT*, p. 124. **30** 'Les codices documentaires égyptiens', in A. Blanchard (ed.), *Les Débuts du codex*, [Bibliologia, 9] (Turnhout, 1989), pp. 100-101. **31** Ibid. and p. 79; see also chapter 3, infra. **32** Sellheim, op. cit. **33** See for example Sellheim, loc. cit.; also Gacek, *AMT*, p. 47.

dominant form.[34] Two of these papyrus manuscripts are better preserved and might perhaps provide more precise data: one is preserved in Heidelberg (P. Schott-Rheinhardt Arab. 23, dated to 229/843–844)[35], the other in Cairo (Dār al-Kutub, Ḥadīth 2123, before 276/889–890).[36] According to Nabia Abbott, there was a preference for square formats.[37]

Physical examination of papyrus

Physical examination should concern itself with the direction in which the fibres of the papyrus run (illus. 5). As has been noted, the interior face of the roll is conventionally called the recto, the outside being known as the verso. Papyrologists specialising in the Classical world extend this terminology to pieces cut from the whole, the recto bearing written lines parallel to fibres of the material. Ambiguities arise in the case of a codex, however, since the terms 'recto' and 'verso' can apply to the sheet itself, quite independently of the direction in which the script runs with respect to the fibres. A number of



5. Papyrus. Paris, BnF arabe 4633.

34 For an example of a bifolium, see N. Abbott, op. cit., pl. I. The relationship between codex and gathering is treated at greater length in Chapter 3, infra. **35** R. G. Khoury, *Wahb ibn Munabbih*, 2 vol. (Wiesbaden, 1972). **36** J. David-Weill, *Le Djâmi' d'Ibn Wahb*, 3 vol. (Cairo, 1939-1948). **37** Abbott, op. cit., p. 2 and docs. 4 and 6.

authors have therefore advocated indicating the horizontal fibres by the sign →, while for the other side the symbol ↑ shows that the fibres lie vertically.[38] The occasional presence of joins in the middle of a sheet should also be noted.

Conservation and re-use

Although a substantial amount of papyrus has survived the passage of time, it is nonetheless a fragile and brittle material. Specific precautions were taken to improve conservation: for example, storing it in containers made out of terracotta or glass, or else in parchment envelopes. Arab sources indicate that the Caliphs particularly appreciated papyrus on the grounds that it was impossible to abrade or modify the writing on it without damaging the surface.[39] In reality, it was known for a sheet of papyrus to be washed and re-used, and papyrus palimpsests do indeed survive.[40] This was not however the only manner in which papyrus could be re-utilised. It was also possible to turn it into cartonnage (for boards), a material known to have been used for Coptic manuscript bindings as well as for a very ancient manuscript in Latin;[41] and it is quite possible that the same operation was undertaken in the case of Arabic manuscripts.

Parchment

Unlike papyrus, the manufacture of which was confined to the few and circumscribed areas where *Cyperus papyrus* L. grows, parchment can in theory be produced anywhere, since its raw material, of animal origin, is available in practically every corner of the world and the manufacturing techniques involved are relatively elementary. This constituted a significant advantage, since users did not depend on supplies imported from far-flung regions along routes that political or economic circumstances might disrupt at any time. Until paper became the universal medium of choice, parchment (in Arabic *raqq*, *riqq* and also *jild*[42]) occupied – together with papyrus – a privileged position in manuscript production. It was certainly not restricted to this use, however, as is shown by the many documents on parchment that are traditionally discussed

38 E. G. Turner, 'Recto and verso', *JEA* 40 (1954), pp. 102-106; O. Montevecchi, *La Papirologia*, p. 15. 39 Grohmann, *AP* I, p. 71. 40 Grohmann, *AP* I, pp. 74-75. Also Rāghib, op. cit., pp. 20 and 22. 41 The binding to the Sarrezano Gospel. See E. A. Lowe, *Codices Latini Antiquiores*, IV (Oxford, 1937), p. 436 a-b; N. Ghiglione, *L'Evangelio purpureo di Sarezzano (sec. V.-VI.)* (Vicenza, 1984), p. 26 and fig., pp. 354-355, colour plate; G. Godu, *Codex Sarzanensis* [Spicilegium casinense, 2] (Montecassino, 1936), pl. IV; B. Bischoff, 'Kreuz und Buch im Mittelalter', *Mittelalterliche Studien*, II (Stuttgart, 1987), p. 286. Thanks are due to J. Vezin for these references. 42 Gacek, *AMT*, pp. 24 and 57.

under the rubric of Arabic papyrology but will not be addressed in the context of the present study which is confined solely to the manuscript book. In spite of its time-honoured supremacy, collections of manuscripts today include very few specimens of the parchment codex. This scarcity, together with the still insufficient number of studies devoted to the use of parchment among Muslim copyists, explains why it is impossible as yet to present an overall picture of its use in the Islamic world.[43]

Parchment is defined as skin of an animal 'dressed and prepared for writing'; as Denis Muzerelle has emphasised, 'prepared' means 'unhaired and degrained' and subjected to 'a non-tanning (or very slightly tanning) process, and then dried under tension, rendering it suitable for writing on both sides'[44].

Chronological outline

In spite of the word by which it is known in several languages,[45] parchment was not 'invented' at Pergamon in the second century BCE.[46] It seems to have been known and used in the East from time immemorial, perhaps from as early as the beginning of the first millennium BCE.[47] Although no dated Arabic manuscripts survive from before the third/ninth century, there can be no doubt that parchment was employed throughout the whole of the Muslim world from the onset of Islam.[48] This is attested by Qur'ān fragments in the *Ḥijāzī* style

43 Grohmann's remarks (*AP* I, pp. 108-111; also in *EI*² II, pp. 540-541, s.v. 'djild') have more to do with 'Arabic papyrology'. Pedersen, *The Arabic Book*, pp. 55-57, and G. Endress, 'Pergament in der Codicologie des islamisch–arabischen Mittelalters', in P. Rück (ed.), *Pergament: Geschichte – Struktur – Restaurierung – Herstellung* (Sigmaringen, 1991), pp. 45-46, should also be borne in mind. We return here to part of the data from our earlier presentation in 'L'emploi du parchemin dans les manuscrits islamiques: quelques remarques liminaires', *Codicology*, pp. 17-27. 44 OED. Also Muzerelle, *Vocabulaire*, p. 39. M.L. Ryder ('The biology and history of parchment', in P. Rück (ed.), op. cit., p. 25) stresses that there was no tanning process, but Haran, admittedly referring to 'skin', maintains that a lightly tanning treatment was commonly applied to hides in the Middle East ('Technological heritage in the preparation of skins for biblical texts in Medieval Oriental Jewry', op. cit., pp. 35 and 37). Reed shares this view (*Ancient skins, parchments and leathers*, pp. 122-123). M. Beit-Arié, who makes a distinction between East and West (the latter including Spain), refers in both cases to 'parchment' (*Hebrew codicology*, p. 22, n. 25). 45 As in English *parchment*, German *Pergament*, French *parchemin*, Italian *pergamena*, etc. The Greek word meaning parchment, *διφθερα* (*diphthera*), is the root of the Arabic *daftar* (see B. Lewis, *EI*² II, p. 78, s.v. 'daftar'). 46 See F. Bilabel, in *Paulys Realenzyclopädie der classischen Altertumswissenschaft*, vol. XV/1, s.v. 'Membrana', col. 596-601; P. Ladner, in *Lexicon des Mittelalters*, VI, s.v. 'Pergament', col. 1885. According to Ryder (op. cit., p. 25) Pliny the Elder's account is responsible for the longevity of this explanation. 47 Reed, op. cit., p. 277; Ryder, loc. cit. The term 'parchment', however, should be used with caution. In the first place, the presence of script on both sides of a skin is an insufficient criterion; secondly, superficially similar materials might well result from very different production processes. 48 On early dated manuscripts, see K. 'Awwād, *Aqdam al-makhṭūṭāt al-'Arabiyya fi maktabāt al-'ālam* (Baghdad, 1982); G. Endress, 'Handschriftenkunde', *GAP* I, p. 281; and F. Déroche, 'Les manuscrits arabes datés du III^e/IX^e siècle', *REI* 55-57 (1987-1989), pp. 343-379.

and has been corroborated by the very few Carbon-14 dating analyses performed on parchment from old Qur'ānic manuscripts. This fact seems to tally with practices current before the Arab conquest. Nevertheless, the dissemination of paper manufacturing techniques caused the gradual extinction of parchment. Two Qur'āns from the end of the third/ninth century copied probably in Iran show that, at this date at least, parchment was still being used as a writing material in an area in which paper had become available more than a century previously.[49] In the central area of the Islamic world where remains are more plentiful, the use of parchment was still relatively widespread in the fourth/tenth century. But its golden age was drawing to a close, and the utilisation of parchment was gradually restricted to the Muslim West where manuscript copyists remained loyal to it – though in declining numbers – until the eighth/fourteenth century, and even perhaps until the ninth/fifteenth. A manuscript copied in Syria in 980/1572–1573 (Paris BNF arabe 2547) of primarily anecdotal interest represents a late example of the use of parchment in such a manuscript.[50] At a still more recent date in India, perhaps also in Iran, a peculiar type of parchment was utilised in the copying of complete Qur'āns or of extracts. Invariably of the utmost thinness, it is occasionally so translucent that it was only possible to write only one side of the sheet, as can be seen in a London manuscript (N. D. Khalili Collection of Islamic Art, QUR 500), completed in 1223/1813–14[51]; measuring 20 × 15 cm., this copy is comparatively large.[52]

Parchment manufacture

To judge from the divergent interpretations given in specialised literature, the techniques of parchment manufacture, in spite of their superficial simplicity, remain something of a puzzle. To understand how the material was used, however, a brief outline of the production processes involved is essential.

As is well known, the raw material is of animal origin: the skins of sheep, goat, calf, perhaps donkey and, according to a deeply rooted tradition, gazelle,

49 MSS. Dublin, Chester Beatty Library 1417 (A. J. Arberry, *The Koran illuminated* [Dublin, 1967], no. 260; idem, 'A Koran in "Persian" Kufic', *Oriental College Magazine* 40/3 [May-August 1967], pp. 9-16; D. James, *Q. and B.*, p. 26); and Istanbul, TKS A 1 (F. Déroche, 'Collections de manuscrits anciens du Coran à Istanbul : Rapport préliminaire', in J. Sourdel-Thomine (ed.), *Études médiévales and patrimoine turc* [Cultures and civilisations médiévales, 1] [Paris, 1983], pp. 153-154). **50** See Chapter 'The Quires of a codex'. **51** See M. Bayani, A. Contadini and T. Stanley, *The Decorated Word: Qur'āns of the seventeenth to nineteenth centuries* [N. D. Khalili Collection of Islamic Art, 4] (London, 1999), p. 254. **52** See Qur'ān MS. Paris BNF arabe 6894 (perhaps eighteenth century CE; 6 × 3.7 cm; see Déroche, *Cat.* I/2, p. 113, no. 562, where the writing surface is described as 'oriental paper'!) Also Sotheby's auction catalogue, sale of April 28 1993, lot no. 109 (mid-nineteenth century CE; 7.9 × 4.8 cm) and April 25 1995, no. 32 (mid- nineteenth century CE; 8 × 5.3 cm), both copies being attributed to Qājār Iran. Also see p. 82, n. 52.

were all used in the manufacture of parchment.[53] The extant sources, as we shall see, appear to indicate that the most commonly employed material was sheepskin. For the fourth/tenth century, however, an interesting remark appears in the Calendar of Cordoba for the month of May: 'We make parchment from fawn and gazelle skin until the end of July.'[54] The skin of wild beasts was reputedly of superior quality to that of domestic livestock;[55] this technical consideration may explain the choice of a material that was not without serious economic consequences, given the sheer number of skins required for a relatively thick manuscript. It is conceivable that the term 'gazelle skin' refers rather to a certain quality of parchment, as is the case with vellum. Indeed, a note in Dozy's *Supplément aux dictionnaires arabes* which states that *raqq ghazāl* means 'virgin parchment, the prepared skin of baby goats or stillborn lambs'[56] implies as much. Among the *ḥisba* treatises that provide information (albeit somewhat sketchy) on the techniques employed, that of Ibn 'Abdūn, written in Spain towards the end of the fifth/eleventh or at the beginning of the sixth/twelfth century, recommends 'not using skins from emaciated sheep in preparing [parchment]'.[57] This implies both that the sheep was the most frequently used animal and that parchment manufacturers were well aware that the health of the animal had serious repercussions on the quality of the parchment obtained: an underfed animal would yield a thin, flimsy hide with an uneven grain that would occasionally be marked with the imprint of the bones.[58] Ibn 'Abdūn's reminder, however, surely stems from the fact that some makers were more lax than they should have been.

The parchmenter began by unhairing the hide; mediaeval Western treatises indicate that the skin of the animal was first plunged into a lime bath to ensure the fleece peeled off more easily. This technique was known to the author of the *Fihrist* in the fourth/tenth century; he mentions a depilatory paste,

53 So far as the present writer knows, there has not yet been any systematic investigation of the animal species involved. There are no clues in ancient sources (Bilabel, op. cit., col. 597). For the Islamic world, authors mentioning the use of parchment refer to sheep, goats and calves: see Grohmann, *AP* I, p. 108; Endress, op. cit., p. 45; U. Dreibholz, 'Der Fund von Sanaa: frühislamische Handschriften auf Pergament', in P. Rück (ed.), op. cit., p. 301. Gazelle skin is often mentioned in catalogues and albums: see e.g. A. Mousa, *Islamische Buchmalerei* (Cairo, 1931), p. 46 and pl. XVIII [29]; M. Ülker, *Başlangıçtan günümüze Türk hat sanatı*, p. 110; etc.). Grohmann devotes a few lines to the question (*AP* I, p. 110). Armenian instructions, on the other hand, list the animals whose hides were used: goat, kid, sheep – domestic or wild – but also deer, hare, calf and donkey foal (P. Schreiner, 'Zur Pergamentherstellung im byzantinischen Osten', *Codices manuscripti* 9 [1983], p. 126). **54** R. Dozy (ed.), *Le Calendrier de Cordoue* [Medieval Iberian Peninsula, Texts and Studies, 1], new edition with a French translation annotated by C. Pellat (Leiden, 1961), pp. 90-91. **55** Reed, op. cit., p. 37; also p. 106, on buckskin used in parchment manufacture. **56** Vol. I, p. 545, s.v. 'raqq'; also Gacek, *AMT*, p. 24. The zoological facts also must not be forgotten: Eastern varieties of gazelle yield hides measuring approximately 40 × 50 cm. **57** É. Lévi-Provençal, *Séville musulmane au début du XII^ème siècle: le traité d'Ibn 'Abdūn sur la vie urbaine et les corps de métier* [Islam d'hier and d'aujourd'hui, 2] (Paris, 1947), p. 133, no. 219 (translation); idem, *Documents arabes inédits sur la vie sociale and économique en Occident musulman au Moyen âge, 1^ère série: Trois traités de hisba* [Publications de l'IFAO, Textes and traductions d'auteurs orientaux, 2] (Cairo, 1955), p. 59 (Arabic text). **58** Reed, op. cit., p. 37.

nūra, comprising arsenic and lime,[59] though he goes on to say that it had the disadvantage of drying out the skin. Another process, common at Kūfa, made it possible to obtain a more pliable skin thanks to the use of a preparation containing dates.[60] In the third/ninth century, lime was used in the Middle East to remove hairs[61]; it is already mentioned in a recipe for curing parchment in a Latin manuscript copied in eighth-century Italy (MS. Lucca, Biblioteca Capitolare 490). Two incompatible hypotheses have been advanced: the partisans of the first maintain that processing skins in a lime bath was, if not actually invented by the Arabs, at least transmitted by them to the Europeans,[62] whereas its detractors contend that the diffusion of this technique took place in the opposite direction.[63] As for the use of dates, it was known to Jewish communities in the Middle East in the mediaeval period.[64]

59 The exact ingredients are not given in the text of the *Fihrist* (Ibn al-Nadīm, *Fihrist*, ed. G. Flügel [Leipzig, 1871], p. 21; ed. R. Tajaddud [Tehran, 1350/1971], p. 23); its composition is, on the other hand, indicated in various dictionaries – in Arabic and Turkish as well as Persian – and in B. Dodge (tr.), *The Fihrist of al-Nadīm*, I (New York and London, 1970), p. 40, n. 92. **60** Ibn al-Nadīm, ibid.; Dodge, op. cit., p. 40. **61** It is mentioned by R. Hay Gaon (Iraq, late ninth century CE): see. A. Harkavy, *Studien und Mittheilungen aus der kaiserlichen öffentlichen Bibliothek zu St. Petersburg*, 4. Teil, *Responsen der Geonim (zumeist aus dem X.-XI. Jahrhundert)* (Berlin, 1885-1887), p. 28. **62** Reed, op. cit., pp. 135-136; Ryder, op. cit., p. 27. **63** According to Schreiner (op. cit., p. 126), this method was known in ancient times; Haran (op. cit., p. 42) shares this opinion. These divergences, due in part to difficulties in interpreting the textual sources, should not detract from the potential value of a comparative approach in codicology. Comparing various manuscript traditions from regions such as the Middle East or Spain can help to complement scant information from elsewhere. A case in point is the thorny question of whether pelts might have been sawn along their thickness – basically so as to make two sheets from a single skin. Haran believes that two traditions coexisted: one in the West producing what might properly be called parchment, and the other in the Orient which manufactured an analogous but not identical product. He maintains that Muslim parchmenters had mastered the above-mentioned technique of 'sawing' and could extract from a single pelt the *raqq* (Hebrew *raq* corresponding to the thick layer near the flesh) and the *qasht*, the thinner layer on the hair side. See Haran, 'Bible scrolls in Eastern and Western Jewish communities from Qumran to the High Middle Ages', *Hebrew Union College Annual* 56 (1985), pp. 47-50. As well as the oft-cited text by Maimonides (*Mishne Tora*, II, *Hilkhot tephillin*, 6-7), Haran cites a *responsum*, also by Maimonides, in which the various names of these types are listed; he reads *qsht*, whereas the text edited by J. Blau - *R. Moses b. Maimon responsa*, ed. J. Blau, vol. I (Jerusalem, 1957), p. 268, l. 7 - (for the Arabic and Hebrew texts) has *qnṭ*. There seem to be no traces of this technique in the Arabic sources on parchment, and, while the root *qsht* is reasonably meaningful, a word *qasht* designating a variety of parchment is not attested in the dictionaries consulted. The same root, however, appears again in connection with palimpsests: see note 88 below). The technique may well have been an ancient one, nonetheless. Before Maimonides, who lived in Egypt in the twelfth century, it is the object of an earlier *responsum*, dated to the ninth century: that is, to a time when parchment was still produced in quantities. Haran (op. cit., pp. 48-49) goes on to reconstruct the Arab method of making both *raqq* and *qasht* at the end of his study. First, the skin was salted for two or three days; next, it was plunged into a water and lime bath, then dried while being stretched over a timber frame; finally, the remaining hairs were removed, and it was also at this stage that the *raqq* and *qasht* were separated. Apart from the last phase, it is clear that the process was in fact relatively close to that undertaken in Europe. It should be added that in our study of manuscripts we have not been able to identify any parchment as having been produced by splitting the hide into layers. **64** Haran, ibid., p. 36; op. cit. (1985), pp. 36-37.

On the flesh side of the skin, scraping with a tool (a blade, for example) removed the residual flesh and fat. Ibn 'Abdūn's text seems to be stressing this very point when it states that 'only scraped parchment should be prepared,' unless the author is referring to a subsequent, finishing, phase.[65] After Ibn 'Abdūn, 'Umar al-Jarshifī (early seventh/thirteenth century?) likewise decreed: 'The *muḥtasib* will supervise papermakers in particular; [...] similarly with the parchmenters as to their choice of skins, which must be uniformly scraped and cleaned.'[66] It is not clear, however, whether in the Islamic world the skin was then systematically smoothed with pumice so as to eliminate the difference between the flesh and hair sides.

A crucial phase of processing took place when the skin was dried over a wooden frame or stretcher. Since this required a significant amount of space, Andalusian parchmenters were in the habit of using the lanes in cemeteries, a practice of which Ibn 'Abdūn took a dim view: 'It must not be permitted to lay unclean things, such as tanners' and parchmenters' skins, on the ground along the paths [in the cemetery].'[67] Ronald Reed mentions that chalk or plaster was used to control the drying of the stretched skin,[68] though chalk on parchment may in fact have been intended to render the appearance of the two sides more homogeneous. Although, as has been noted above, this type of writing material could be produced more or less anywhere, certain cities were famous for the quality of the parchment manufactured, and surely such products were in greater demand. Kūfa and Edessa (al-Ruhā') enjoyed a glowing reputation in this respect,[69] but unfortunately the precise reasons for their pre-eminence – be they technical[70] or climatic[71] – are unknown. Before being used by the copyist, parchment could be dyed, a practice well known in the Mediterranean region.[72] Further comment on the most famous Islamic manuscript to be

65 Lévi-Provençal, op. cit., p. 59 (Arabic text); p. 133, no. 219 (translation). **66** Lévi-Provençal, op. cit., p. 124 (Arabic text); R. Arié, 'Traduction annotée et commentée des traités de ḥisba d'Ibn 'Abd al-Ra'ūf et de 'Umar al-Ğarsīfī', *Hespéris Tamuda* 1 (1960), p. 371. **67** Lévi-Provençal, op. cit., p. 27, l. 17-18 (Arabic text); p. 60, no. 54 (translation). **68** Reed, op. cit., p. 147. **69** According to Grohmann, *AP* I, p. 110, who refers to al-Rāghib al-Iṣfahānī and to al-Bakrī; to this should be added the passage from the *Fihrist* mentioned above (see note 60). **70** In the case of Kūfa, it might well be that the use of the preparation based on dates referred to above had an effect on the reputation of parchment produced in the city. There may be something of an analogy with Pergamon, where, as some authorities have it, the technique of parchment-making made such strides that it became known as the birthplace of parchment; see Ryder, op. cit., p. 25. **71** Reed stresses the crucial importance of water in parchment-making (op. cit., p. 132) as well as the problems of drying hides in warm climates (p. 147). **72** According to Bilabel's interpretation of a text (op. cit., col. 598), a type of parchment dyed yellow was known in ancient times. The author cites in this connection Isidore of Seville ('fiebant autem coloris lutei') who also mentions a purple-dyed parchment: 'membrana autem aut candida aut lutea aut purpurea sunt'(*Etimologias* [BAC, 433], Latin text, ed. with Spanish version and notes by J. Oroz Reta and M. A. Marcos Casquero, and with a general introduction by M. C. Diaz y Diaz, vol. I [Madrid, 1982], pp. 586-589 : VI, 11, 2-5). Bilabel (loc. cit.) also notes that examples of a yellow hue occur in the collection of Coptic fragments on parchment preserved at the library of the University of Heidelberg. Better known are Byzantine examples, which may have had an impact on production in Islamic areas: see for example the anecdote recounted by Grohmann, *AP* I, p. 111.

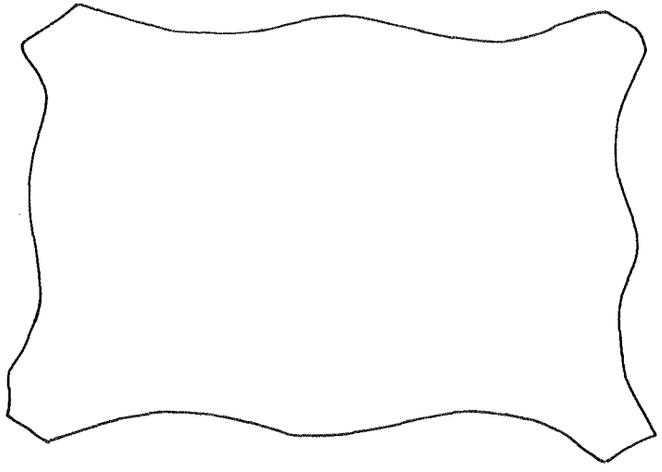
copied on dyed parchment, the well-known Blue Qur'ān,[73] would be superfluous, though it should be recalled that Muslim craftsmen had at their disposal other colours, such as saffron yellow and orange.[74] The specific qualities of parchment explain why certain coloured inks existed which were employed exclusively on this material: Ibn Bādīs refers to both a gold and a blue type.[75]

Dimensions of parchment

It should be noted first of all that the size of a manuscript is partly determined by the animal species whose pelts are used in preparing the parchment. In a study of the dimensions of French manuscripts, Carla Bozzolo and Ezio Ornato have estimated the average 'usable' surface area of a mediaeval sheepskin at 48 × 60 cm. It should be borne in mind that the animals concerned were at that time smaller in size than those of the present day. For modern parchments manufactured from lamb- and sheepskin, the same authors calculate that the average surface area amounts to 45 × 55 and 59 × 76 cm, respectively.[76] Thus in order to make larger books it was necessary to select materials produced from the skins of bigger species, whereas those of smaller animals, such as gazelles, could only be turned into volumes of modest dimensions. Of greater interest[77] than these lower limits are the following two examples, one a manuscript, the other a document, that seem to represent the upper limits in size for parchment. The fragments of a Qur'ān (Paris BNF arabe 324) includes leaves that, though heavily cropped, measure 53.7 × 62 cm.,[78] while a document preserved in

73 Three studies have been devoted to this Qur'ān: two by J. Bloom – 'Al-Ma'mun's Blue Koran?', *REI* 54 (1986) [L. Kalus (ed.), *Mélanges D. Sourdel*], pp. 59-65; idem, 'The Blue Koran. An early Fatimid Kufic manuscript from the Maghrib', *Mss du MO*, pp. 95-99; T. Stanley, 'The Qur'ān on blue vellum. Africa or Spain?', in *The Qur'ān and calligraphy: a selection of fine manuscript material* [Bernard Quaritch, catalogue 1213] (London, n.d.), pp. 7-15. A bibliography appears in Déroche, *Abbasid tradition*, p. 92. **74** For an example of orange tinting, see Déroche, *Abbasid tradition*, p. 58, no. 11. **75** M. Levey, *Mediaeval Arabic bookmaking and its relation to early chemistry and pharmacology* (Philadelphia, 1962), pp. 22-23. **76** C. Bozzolo and E. Ornato, *Pour une histoire du livre manuscrit au Moyen Âge* (Paris, 1983), pp. 267 and 293; see also pp. 258-259. **77** Grohmann, *AP* I, p. 111. **78** E. Tisserant, *Specimina codicum orientalium* (Bonn, 1914), p. XXXII pl. 42; R. Blachère, *Introduction au Coran*, 2nd ed. (Paris, 1959), pp. 96, 99, 100; G. Bergsträsser and O. Pretzl, *Die Geschichte des Korantexts*, *GdQ*, vol. III (Leipzig, 1938), p. 254; Déroche, *Cat.* I/1, pp. 75-77. Further leaves appear in other collections: Cairo, Dār al-Kutub (see Moritz, *Ar. Pal.*, pl. 1-12; A. N. Shebunin, 'Kuficheskii Koran Khedivskoi Biblioteki v Kaire', *Zapisok Vostochnago Otdeleniia Imperatorskago Russkago Arkheologicheskago Obshchestva* 14 [1902], pp. 120-125); and MS. Gotha, Forschungsbibliothek Orient. A 462 (see J. H. Müller, *Paläographische Beiträge aus den herzoglichen Sammlungen in Gotha*, 1. Heft [Erfurt, 1844], pl. XIV; H. C. von Bothmer, Gotha [1997], pp. 105-107). Other manuscripts of comparable style and dimensions exist; according to a non-academic source (F. Neema, 'Restaurado, el corán más antiguo', *Excelsior*, Sunday supplement [Mexico City, July 25 1993]), the Qur'ān of the Sayyidnā al-Ḥusayn Mosque in Cairo measures 70 × 60 cm (see Ṣ. al-Munajjid, *Dirāsāt fi ta'rīkh al-khaṭṭ al-'Arabī mundh bidāyatih ilā nihāyat al-'aṣr al-Umawī* [Beirut, 1972], pp. 53-54). Reed (op. cit., p. 130) maintains that these dimensions correspond to a parchment made from goatskin.

London (BL Or. 4684/III) attains 85 × 82 cm.[79] Once the manufacturing process is complete, the parchment appears roughly oblong in shape (illus. 6). Volumes copied on parchment are almost all codices and are rectangular, more rarely square, in form, though there also survive examples of rolls, known as *rotuli*, on which the written lines lie perpendicular to the longer side.[80]

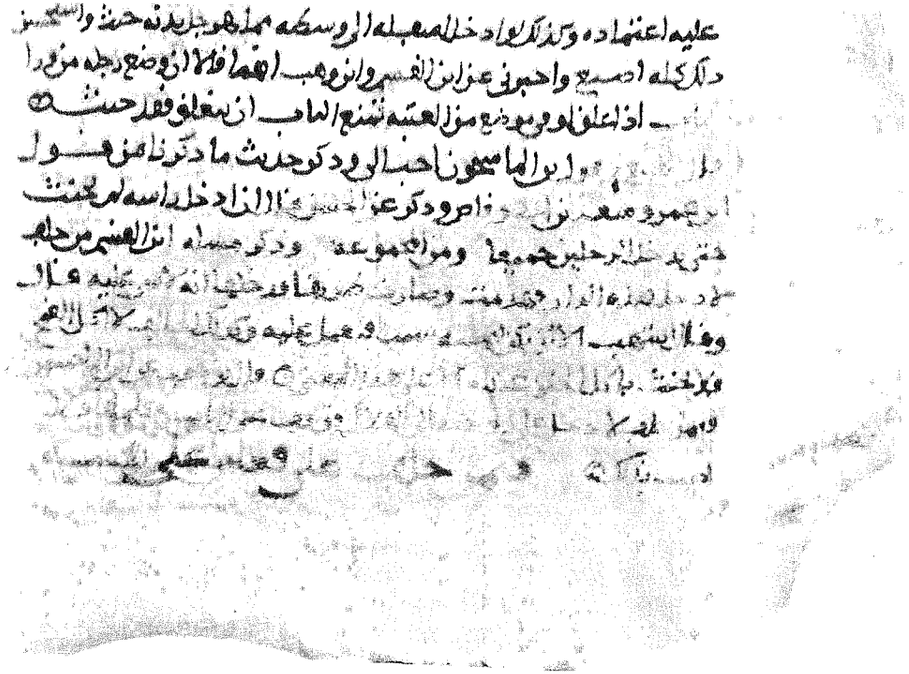


6. The shape of a hide used for parchment.

Characteristics of parchment

The quality of a piece of parchment was also affected by other characteristics, quite apart from those of size, factors which in turn also had repercussions on the final price paid by the purchaser or the individual commissioning the manuscript. Two animals of the same species and variety do not necessarily yield parchment of identical quality since, as has already been observed, the state of health of an animal – and more specifically that of its skin – has an effect on the finished product. Injuries, stings, or mistreatment prior to slaughter might leave marks on the hide, and it could also be damaged in places during preparation: these lesions will inevitably leave traces on the parchment, in the form of either roughness defects or glassy patches (illus. 7). Areas of translucency are caused by the tension applied to a skin during the drying phase (a case in point is MS. Paris BNF arabe 6090, f. 47).[81] It sometimes happens

79 Grohmann, *AP* I, p. 111. **80** S. Ory, 'Un nouveau type de muṣḥaf: Inventaire des corans en rouleaux de provenance damascaine conservés à Istanbul', *REI* 33 (1965), pp. 87-149. **81** E. Blochet, *Catalogue des manuscrits arabes des nouvelles acquisitions: 1884-1924* (Paris 1925), p. 184; *FiMMOD* 68.

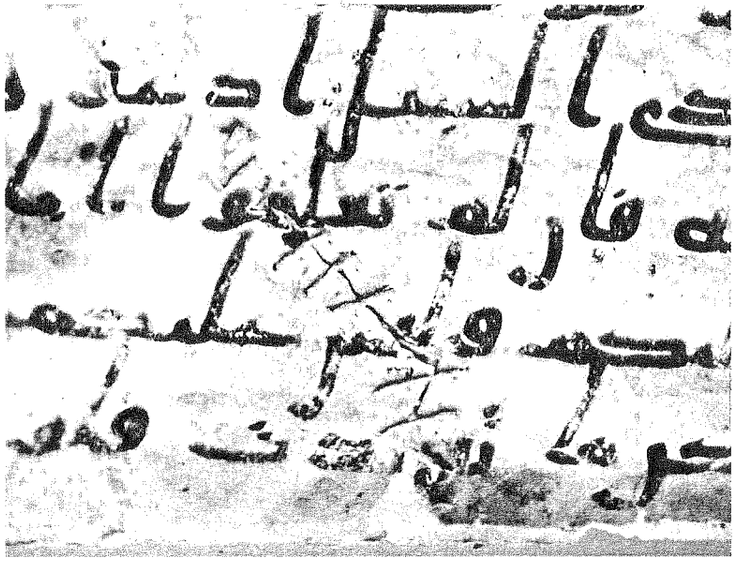


7. Parchment: a hole, hair marks, and a natural edge. Paris, BnF arabe 6095, f. 25v° (detail).

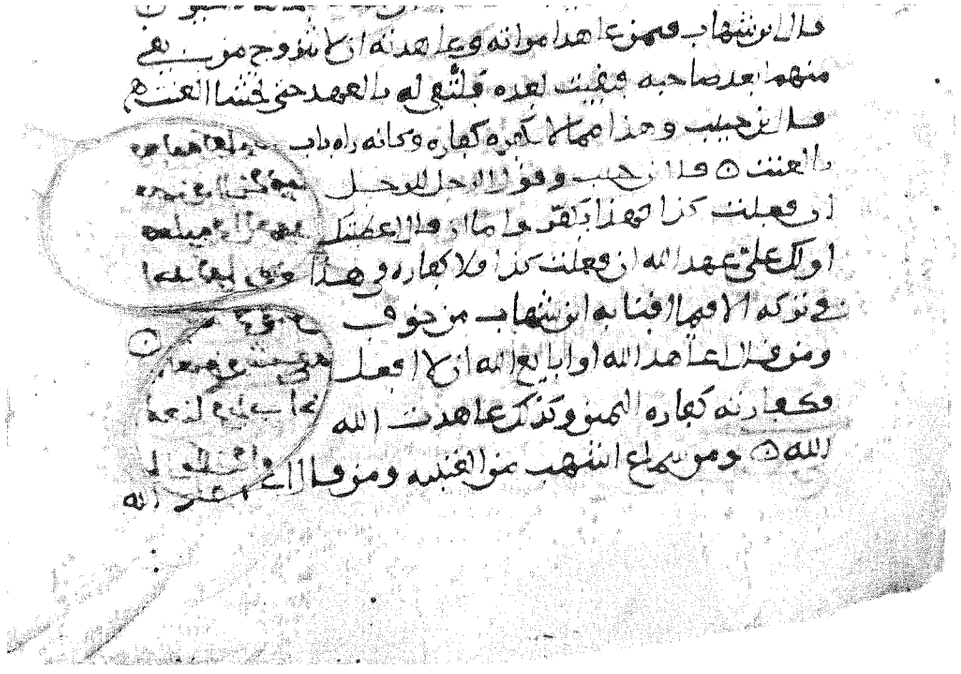
that a skin is nicked during processing, leaving a perforation of a circular or oval shape. Attempts have occasionally been made to remedy this defect – as well as subsequent accidental tears – by sewing together the two rims of the hole (illus. 8). For example, on folios 3, 5, and 28 of MS. BNF arabe 6095 a thin membrane of parchment — an infill — has been stuck over holes that needed masking (see illus. 9).[82]

Such details aside, the manufacturing process itself is another factor that should be taken into account in assessing the quality of the end product, since craftsmen are known to have performed the tasks required with varying degrees of skill, care and energy. One salient feature of parchment is the pronounced difference between the two sides of the hide: the outer 'hair side' (illus. 10a), and the inner 'flesh side' (illus. 10b). Even after processing, parchment generally preserves some trace of this dissimilarity, just as it tends to roll up naturally around an axis formed by the animal's spine, the orientation of which determines what is termed the 'direction' of the skin.

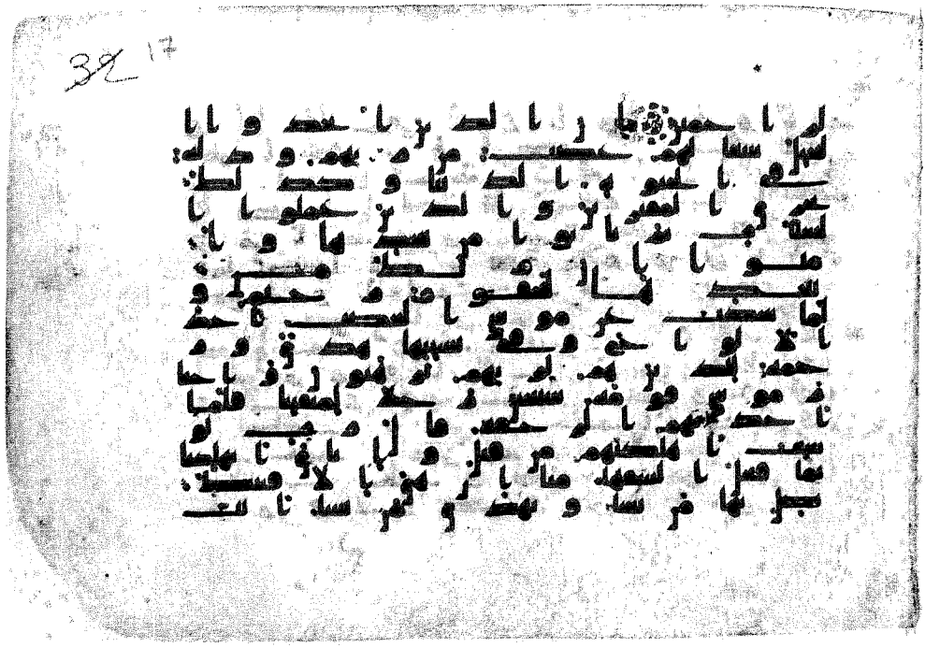
82 *FiMMOD* 16; also in MS. Paris BNF arabe 6499, f. 164(*FiMMOD* 65; see Chapter 'The Quires of a codex'). Transparent parchment also existed in mediaeval times: see Reed, op. cit., pp. 143-145, together with his observations on 'goldbeater's parchment', p. 131.



8. Torn parchment repaired with stitches. Istanbul, TIEM (Türk ve Islâm Eserleri Müzesi) ŞE 85, f. 6 (detail).



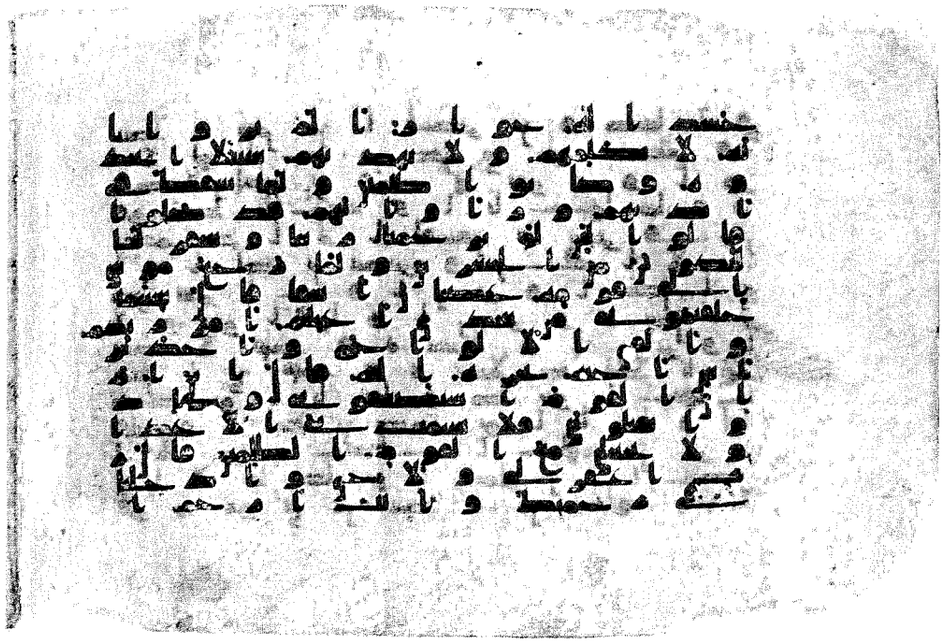
9. Repair to a defect in parchment, and marks made by scraping off the flesh. 472/1079. Paris, BnF arabe 6095, f. 3v° (detail).



10a. Hair side of parchment. Type B II Script, datable as 3rd/9th century. Paris, BNF arabe 6140, f. 17.

The process of depilating the hair side was not always totally effective. In some places, for instance around the circumference of the above-mentioned holes or close to the natural edges of a pelt, dehairing could be a delicate operation; but residual hairs are also found in areas that should be easier to deal with simply because the parchmenter did not perform the task with sufficient care. On several Maghribī manuscripts (such as MSS. Paris BNF arabe 5935[83] and 6090[84]), the roots of hairs remain in view protruding slightly above the surface of the parchment. The 'flesh' side will obviously bear no traces of hair, though the tool used for fleshing might leave striations on the skin. These various factors affecting parchment explain the considerable diversity observed among manuscripts copied on this type of writing material. Certain surviving parchments, for instance, are of poor quality, though others are remarkably well finished: in the MS. Nuruosmaniye 27 in Istanbul[85], the two sides of the

83 Déroche, *Cat.* I/2, pp. 34-35, no. 302 and pl. XIV a. 84 See note 81. 85 M. Lings, *The Qur'anic art of calligraphy and illumination*, pl. 3 and 4; Ülker, op. cit., pp. 105, 107; Déroche, *Abbasid tradition*, pp. 90-91, no. 41. All or part of the first volume of this Qur'ān seems to be the one in Princeton: see P. K. Hitti, N. A. Faris and B. 'Abd al-Malik, *Descriptive catalogue of the Garrett collection of Arabic manuscripts in the Princeton University Library* (Princeton N.J., 1938), p. 359, no. 1156 = 35 G.



10b. Flesh side of parchment. Type B II Script, datable as 3rd/9th century. Paris, BNF arabe 6140, f. 16v°.

parchment have been so carefully prepared that the difference between them is to all intents and purposes undetectable. In general, however, the makers do not seem to have overexerted themselves to try to eradicate the difference in appearance between the 'hair' and 'flesh' sides of the skin. It is not altogether impossible that other processes were introduced to lessen this contrast. Herein lies a possible explanation for the presence of chalk found spread over the parchment, as revealed by microscopic examination of leaves from Qur'āns written in *Ḥijāzī* style (and thus datable to the end of the first/seventh or beginning of the second/eighth century) and in others copied in the Maghrib in the seventh/thirteenth and eighth/fourteenth centuries.[86]

Palimpsests

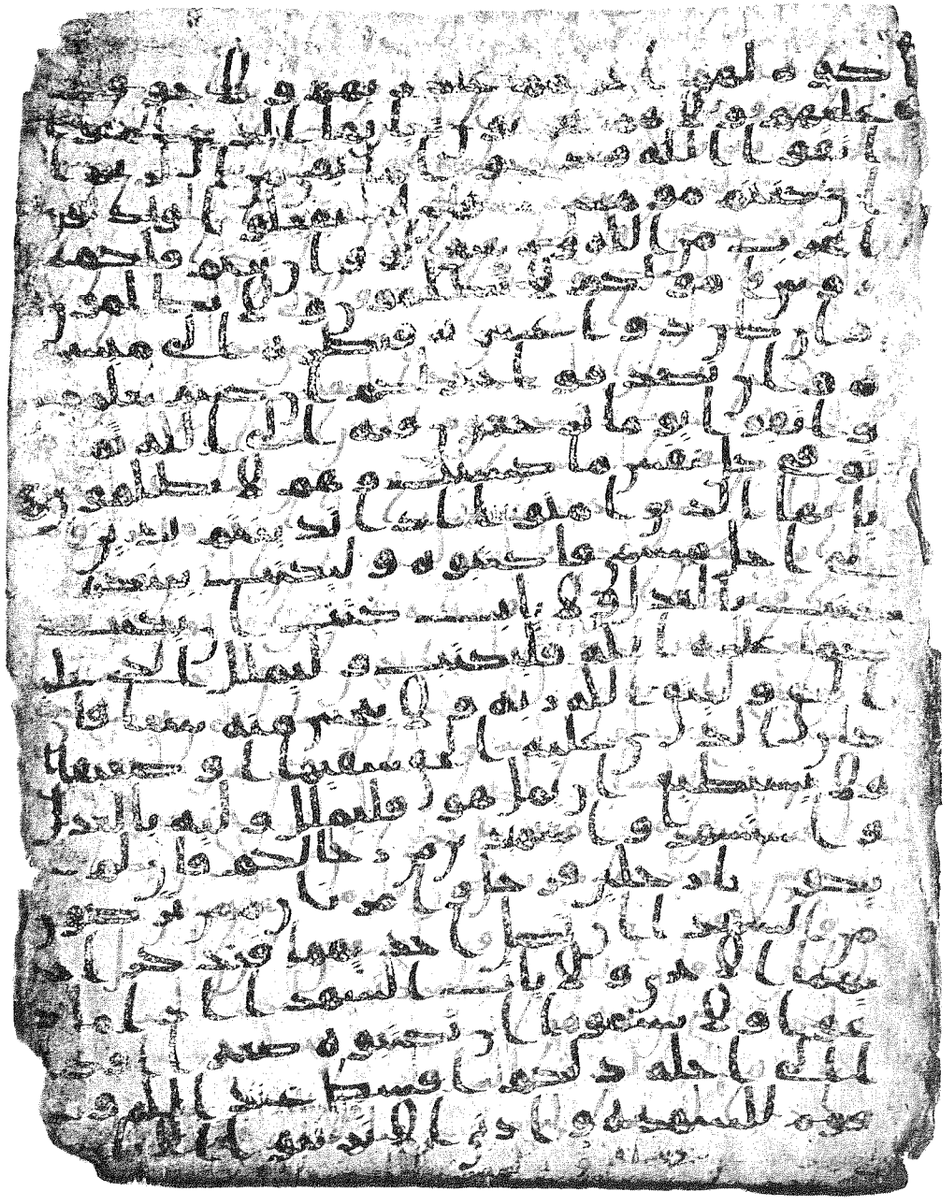
Another aspect of the use of parchment relates not only to the durability of the material and to the ease with which traces of prior use can be removed from its

86 Dreibholz, op. cit., p. 301. B. Guineau (see Chapter 'Instruments and preparations used in book production') has also detected on manuscripts he has studied light deposits of some white-coloured mineral, perhaps chalk or plaster.

surface more or less flawlessly, but also to its price having been high enough to make re-use an attractive proposition. In the *ḥisba* treatise edited by Lévi-Provençal mentioned above, he states that Ibn 'Abdūn's recommendation ('only scraped parchment should be prepared'),[87] 'seems to refer to new parchment scraped prior to sale as much as to parchment already covered by writing, then scraped to be used a second time - that is, to palimpsests.'[88] It is by no means certain that palimpsests are meant in this specific case, since it was surely superfluous to advocate scraping the writing off an old parchment with the intention of using it again. Washing and scraping were both well-established processes for re-using leaves already written on, and references to these methods abound in the literature. Special recipes designed to erase less extensive areas of text appear in Ibn Bādīs's treatise.[89]

In addition to such literary references, there survive several Arabic palimpsests confirming that this operation actually took place. One of the oldest examples could well be a Qur'ānic fragment sold at auction in London in 1992 (illus. 11).[90] While doubts may be voiced as to the very early date attributed to the leaf, it appears nevertheless that it was used sometime during the first/seventh century. Other leaves discovered in Yemen and noted by the German team responsible for restoring the Qur'ānic manuscripts from Ṣan'ā', might have come originally from the same Qur'ān.[91] In this case – and there are others – the re-use of parchment is limited to a single manuscript tradition and relates solely to Islamic texts in Arabic from different periods. Other palimpsests exist, however, in which Arabic script masks texts written in other languages.[92] The reverse situation is also met with: in the Lewis-Mingana palimpsests Christian texts in Arabic datable to the tenth or even eleventh century cover a page from the Septuagint in Greek, and some fragments in Syriac, together with three Qur'ānic passages in *Ḥijāzī* style.[93] That shows that the lapse of time between one text being copied and the next was not necessarily very long: indeed, a scribe, on noticing he had made a mistake, might use the same process to correct his own copy.[94]

87 Op. cit., p. 59 (Arabic text), and p. 133, no. 219 (translation). 88 Lévi-Provençal, op. cit., p. 160, n. *a*, referring to Dozy. The latter offers an exhaustive commentary on the expression *raqq mabshūr*, which he compares to *ṭirs makshūṭ*, in the sense of 'palimpsest' (*Lettre à M. Fleischer contenant des remarques critiques and explicatives sur le texte d'al-Makkari*, Leiden, 1871, pp. 78-81). Ibn al-Nadīm reports that the inhabitants of Baghdad, after erasing the ink, reused parchment from records purloined from government offices during a revolt (*Fihrist*, ed. Flügel, p. 21; ed. Tajaddud, p. 23; translation by Dodge, op. cit., p. 40). For the Arabic *ṭirs*, 'palimpsest', see Gacek, *AMT*, p. 91. 89 Levey, op. cit., pp. 36-37. 90 Sotheby's sale catalogue: October 22 1992, lot no. 551. 91 Kuwatt 1985, p. 14 and no. 6. 92 Grohmann notes two examples (*AP* I, p. 109 and n. 6). 93 A. Mingana and A. Lewis, *Leaves from three ancient Qurans possibly pre-'Othmanic, with a list of their variants* (Cambridge, 1914), pp. v-vi. 94 See e.g. H. Loebenstein, *Koranfragmente auf Pergament aus der Papyrussammlung der Österreichischen Nationalbibliothek* [Mitteilungen aus der Papyrussammlung der Österreichischen Nationalbibliothek (Papyrus Erzherzog Rainer), Neue Serie, XIV. F., Textbd.] (Vienna, 1982), pp. 24-25 (no. 1 = A Perg. 2). The Qur'ānic fragment cited above perhaps reflects a similar process.



11. Re-use of parchment:
a palimpsest of which the erased lower layer is datable to the 1st/7th century.
Sotheby's (London) auction sale of 22-23 October 1992: Lot 551.

Other types of parchment re-use

The way of re-employing parchment described above, though the best-known process, is far from being the only one encountered. The study of early bookbinding, for example, shows that binders were also in the habit of availing themselves of pre-used parchment. In the case of bindings laid on wooden boards, it appears that a leaf taken from some old manuscript would frequently be stuck over the interior face of the board like a doublure.[95] It is not uncommon to find sheets cut into strips and used either to reinforce the back of the block of gatherings[96] or to serve as 'body' for the type of casing characteristic of old Qur'ān bindings.[97] If dimensions allowed, a folio of parchment could also be converted into a binding.[98] It would be a mistake, however, to reduce the role of bookbinders to that of 'recyclers' of second-hand parchment. Bakr al-Ishbīlī mentions the material at several junctures in his treatise on binding, *Kitāb al-Taysīr fī ṣinā'at al-tasfīr*, and, although the author is not specific, it can be supposed that his remarks also apply to fresh, unused parchment.[99] He mentions the uses noted above as occurring in old bindings – such as inner lining ('doublure')[100] – as well as the practice of affixing a strip of parchment to the point (or hinge) where the wooden board joins the text block.[101] The existence of a type of covering known as *shidq* is also noted. This consisted in glueing two to three leaves of paper, followed by a sheet of parchment, onto a piece of leather, thereby forming a kind of multi-layered board.[102] Finally, the author recommends using a special adhesive for parchment.[103]

95 Marçais and Poinssot, *Objets* 1, pp. 16, 65-67, etc.; F. Déroche, 'Quelques reliures médiévales de provenance damascaine', *REI* 54 (1986) [L. Kalus (ed.), *Mélanges D. Sourdel*], p. 89. 96 This form of re-use should be carefully distinguished from that of the preservatives discussed in Chapter 'The Quires of a codex'. 97 Marçais and Poinssot, *Objets* 1, pp. 19 and 72; Déroche, 'Quelques reliures', p. 89. 98 The collection of manuscripts from the Great Mosque of Damascus now in Istanbul provides one example of just such a practice. Another, also from Damascus, is MS. Paris BNF suppl. turc 986 which takes the form of an anthology of short treatises in Arabic, each forming a gathering of its own, protected by a piece of parchment cut to the required dimensions from leftover sheets covered in script – in Arabic, Armenian, Greek and Latin: see G. Vajda, 'Trois manuscrits de la bibliothèque du savant damascain Yūsuf ibn 'Abd al-Hādī', *JA* 270 (1982), pp. 229-56. 99 Bakr ibn Ibrāhīm ibn al-Mujāhid al-Lakhmī al-Ishbīlī, 'Kitāb al-Taysīr fī ṣinā'at al-tasfīr', ed. 'A. A. Kannūn, *Revista del Instituto de estudios islámicos en Madrid* 7-8 (1959-1960), pp. 1-42 (Arabic text) and 197-99 (summary in Spanish); A. Gacek, 'Arabic bookmaking and terminology as portrayed by Bakr al-Ishbīlī in his *Kitāb al-Taysīr fī ṣinā'at al-tasfīr*', *MME* 5 (1990-1991), pp. 106-113. 100 Op. cit., p. 27; Gacek, op. cit., p. 107; idem, *AMT*, p. 75. 101 Op. cit., p. 17; Gacek, op. cit., p. 109. 102 Op. cit., p. 27; Gacek, ibid. This technique might be compared to that frequently used for case-bindings (see above), which consisted in glueing together pieces of parchment and leather. 103 Op. cit., p. 13; Gacek, op. cit., p. 107.

Physical examination of parchment

It is in theory possible to identify the animal from which a parchment has been made by observing the way the hairs remain implanted on the finished product, though often the treatment the hide receives – if even mildly vigorous – has eliminated every trace. The follicles, i.e. the organs located in a cavity in the epidermis that secrete the hair, the form of which is characteristic of each species,[104] can also be examined under the microscope. In the absence of any more precise identification, the word 'parchment' is used; the term 'vellum' should be reserved for parchment made from the skin of a very young or stillborn calf.

The hair and flesh sides of the parchment can be distinguished (see illus. 10a, 10b) by the fact that the flesh side is paler in colour than the hair side, which possesses a velvety texture that is more receptive to ink. This can be noted particularly on specimens of the Qur'ān copied in one or other of the old 'Abbasid scripts of larger size.[105] If one holds the manuscript open in such a manner as to make the margins of a number of consecutive leaves visible simultaneously, the distinction between the two sides of the skin normally appears quite clearly. In carrying out a thorough examination it is advisable to look very carefully for the various types of defect outlined above. The marginal areas occasionally bear tell-tale signs of the grain side: hairs remain affixed more often around the circumference of any eventual holes or near the edges (a prime example appears on f. 39 v° of MS. Paris BNF arabe 6095.[106] Whenever depilation has been imperfectly executed, fragments may even persist in more extensive areas. In several Maghribi manuscripts (such as MSS. Paris BNF arabe 5935[107] and 6090[108]), the hair roots are still conspicuous, appearing on the surface of the parchment in the form of minute black spots. As to the obverse, there the tool used for fleshing can also leave its mark, as for example on sheet 17 of a manuscript in Paris (BNF arabe 6095; illus. 7).[109] By the end of such an examination, not only the sequence of the sides of the parchment, but also its various other characteristics will have been accurately noted, data which will prove invaluable when it comes to examining the arrangement of gatherings. Further microscopic observations may add to our knowledge of the use of this writing material in the Islamic world. In this way, for instance, the presence, if any, of chalk, as well as the type of animal skin used to make the parchment (if that has proved impossible to establish in any other manner), may also be determined.

104 C. Federici, A. Di Majo and M. Palma, 'The determination of animal species used in medieval parchment making: non-destructive identification techniques', in J. Sharpe and G. Petherbridge (eds.), *Roger Powell: the compleat binder* (Turnhout, 1996), pp. 146-153. 105 Déroche, *Cat.* I/1, p. 20; Dreibholz, op. cit., p. 301. An important example appears in Déroche, *Abbasid tradition*, pp. 62-63, no. 15. 106 See note 82. 107 Déroche, *Cat.* I/2, pp. 34-35, no. 302 and pl. XIV a. 108 See note 81. 109 See note 82.

The Writing Surface: Paper

Paper, a material whose manufacturing processes are related to those of felt, had already been known in China for five centuries before the advent of Islam. In a civilisation where the customary form of the 'book' was the scroll, it was a widespread writing material. The pulp was generally a mixture of fibres from mulberry bark crushed in a mortar; sheets were made using a detachable mould made of a timber frame across which stretched cords or 'wires' made from a material of vegetable origin (bamboo fibre). These laid lines, or 'wire-lines', are easily discernible on the finished product, while the chain lines that connect them together are much less conspicuous. The paper size was made of rice starch.

Additionally, in keeping with the tradition of silk scrolls, as early as the seventh century sheets of paper for use in high-quality manuscripts were already sometimes tinted blue,[2] yellow, red and other colours. Buddhist texts transcribed and copied on paper were widely distributed wherever that religion gained a foothold. Moreover, it seems that the Sassanians had started using paper in conjunction with other writing materials, although no book or document on paper from that time has survived to the present day. It is true that since they had regular diplomatic and commercial relations with Central Asia and China, where paper was in common use, the Sassanians must have known of its existence. It could hardly have been anything other than a costly import, however, and its use was probably confined to official circles.

It should be noted in addition that while in Arabic paper is called *qirṭās*[3] or *waraq*,[4] the Persian term, *kāghaz* (found in Arabic as *kāghidh* or *kāghadh*), is a Soghdian loan word.[5] Among others, the Soghdians, through their contacts with Chinese Central Asia, propagated papermaking techniques, and it was even perhaps in Soghdiana that the earliest manuscripts on paper of the Christian scriptures were written.

Paper seems to have been used in Islamic manuscripts in a manner very similar to parchment. Several bifolia were prepared in advance and the gatherings sewn together into volume form; usually the leaves were cut from

1 The author of this chapter is F. Richard. 2 As with a Chinese scroll, MS. Paris BNF Pelliot chinois 3561, copied in 676 CE on a dark ochre-colored paper, and the fragment Pelliot chinois 4642, datable to the first half of the seventh century, where the calligraphy is inscribed on pale blue paper. 3 Gacek, *AMT*, p. 114. 4 Gacek, *AMT*, p. 149. 5 From the Persian it was transmitted through Uygur to Turkish (Ottoman *kāghiz*, modern *kağıt*).

the same sheet, although there exist composite gatherings comprising bifolia of diverse origins, as well as bifolia made up of two leaves guarded at the centre fold. Generally, all leaves in the gatherings of a given manuscript are laid in the same direction, either parallel or perpendicular to the sewing stations. There are naturally exceptions to this rule, and so it is advisable to carry out an exhaustive (some might say exhausting) examination of the whole volume, recording any visible anomalies that subsequently need to be explained. Such an investigation provides an opportunity to note changes in the paper used (often due to a repair made in the past), the composition of the quires (to be discussed in the following chapter), and other points.

In general the lapse of time between paper being produced and used was relatively brief, since its high price was a deterrent to stockpiling. This observation is important since, in the case of paper with a watermark, the paper itself may provide a clue as to a possible date of copying. Such assumptions may be corroborated or undermined by other findings. According to the specialists in watermarked papers – including Briquet – a ten- to fifteen-year gap may still intervene between manufacture and use, and perhaps this delay may have been longer still for paper used in remote parts of the Middle East.

Non-watermarked mediaeval paper[6]

The spread of paper in the Muslim world

By most accounts, it is the Muslim forces' victory in July 751 on the banks of the Talas in Central Asia (in what is now southern Kazakhstan) that marks the onset of a wholesale expansion in production and use of paper in the Islamic world. The event was indubitably of crucial importance, since Chinese craftsmen skilled in the art of papermaking were taken prisoner during the conflict, being dispatched to set up paper mills in Samarkand, a city already renowned for its many canals. There are also records of paper being manufactured at a Manichaean monastery in Samarkand. It was in the same city, it appears, that for the first time rag and not only vegetable pulp became an ingredient in paper pulp. The moulds used were in the main fitted with detachable mould-covers.

6 A thoroughly documented bibliography has been published in M.-T. Le Léannec-Bavavéas, *Les Papiers non filigranés médiévaux de la Perse à l'Espagne* (Paris, 1998). Readers are referred to that publication for supplementary information on the details. A more detailed account of the history of paper in the Islamic world is to be found in J.M. Bloom, *Paper before Print* (New Haven, 2001).

Apparently, improvements in techniques of beating or paddling pulp fibre were also devised: in the fourth/tenth century, al-Bīrūnī mentions the existence in Samarkand of a hydraulic power hammer similar to that used for de-husking rice.[7] Unfortunately, no text in Arabic script copied on paper from this time has survived from these regions. The introduction of paper to Baghdad followed shortly afterwards, the existence of a paper mill being attested at the 'Abbāsid capital in 794.[8]

This rapid rise in the use of paper was mirrored by a rapid decline in the papyrus and parchment which it supplanted, primarily owing to considerations of cost. Egypt was turning to paper by the third/ninth century, with papermills being built at a later date in Fusṭāṭ. The 'Abbāsid administration was clearly a heavy consumer and it is difficult to say exactly whether the demand for paper in book production was preceded by its adoption by the administration (as decreed by the Caliph in 808) or whether the two major uses for paper developed in parallel. In any case, the paper trade grew apace, and the custom arose of calling the various grades of produce by the names of the cities in or near which mills were set up (*Baghdādī*, *Samarqandī*, and so on), water quality being a notable influence on that of the paper produced. Paper from Baghdad, for example, enjoyed a reputation for fineness until the ninth/fifteenth century, though the adjective *Baghdādī* also simply designated a sheet of paper of large size. By the sixth/twelfth century Damascus too possessed its own papermaking industry; the quality of its output, considered superior to that of Egypt, then seems to have entered a decline. In the fourth/tenth century, paper was also being manufactured in North Africa, at Kairouan in what is now Tunisia.

Any descriptive analysis of papermaking, however, immediately encounters a terminological stumbling-block, since it is a field where equivalence can not always be established between traditional expressions – which vary with period and place – and the terms employed by contemporary specialists. This makes it difficult to obtain a clear view of the objects under study. Similarly, although precise translation of the earliest texts concerning paper is essential, it is an area fraught with difficulties.

The spread of 'Arab' paper throughout the Mediterranean Basin was, as we have seen, almost meteoric. The earliest manuscripts on paper produced in Armenia, where rag paper is found made solely from cotton fibre, date from 960. The Byzantine Empire had also become aware of paper by the tenth century, and the imperial chancellery introduced it in 1052; by the eleventh century paper was also in use in Sicily. In these cases, the paper was either imported from regions under Islamic control or manufactured locally following similar methods. As for Spain, by the twelfth century it possessed many paper mills in

7 P. Mohebbi, *Techniques et ressources en Iran du 7ème au 19ème siècle* [Bibliothèque iranienne, 46] (Tehran, 1996), pp. 182-188. 8 J. von Karabacek, *Arab Paper*, 1887, pp. 33; originally published as: 'Das arabische Papier', in *Mitteilungen aus der Sammlung der Papyrus Erzherzog Rainer*, 2/3 (Vienna, 1887).

its Moslem provinces: there was a mill at Játiva in 1056, and at Toledo in 1085. At the time of the Ottoman conquest, a paper mill was operative in 1453 at Kağıthane, near Istanbul, and at Bursa in around 1486.

Between 1166/1167 and 1360 there appeared in Spain and Morocco a highly distinctive type of paper known as 'zigzag' paper, a mould-made paper with its chain lines lying at regular intervals and of larger size than 'Eastern' papers; the middle of the sheet bears traces of a zigzag mark whose function – indicating a levy, perhaps, or a mark of origin, or else a trace of some process whose purpose has since been forgotten – is not yet known for certain. The same zigzag shape also occurs on watermarked papers of Italian provenance.[9]

The characteristics of non-watermarked paper

Identification of fibres

This area of research too remains underdeveloped. The information so far gathered from the very few analyses of the composition (fibre or rag) of paper pulp undertaken to date is not particularly helpful to our investigation. The question arises of the part if any played by hemp, linen (sometimes recycled, for instance from mummy tapes in Egypt), cotton, or other vegetable fibres.[10] Further investigation may perhaps reveal features instrumental in dating or establishing provenance. Finally, a certain amount of paper is said to have been produced from a pulp of silk fabric (*ḥarīrī* paper).

The delamination of folios is a phenomenon encountered occasionally in manuscripts: this means not the separation or unpeeling of two sheets stuck together, but a more complex process affecting the separation of the fibres, due in all probability to the presence of several layers of pulp.

Surface treatments

The traditional manner of finishing paper prevalent in the Muslim world makes it rather hard to learn much by examining its surface alone. After sizing with wheat, rice or maize starch, the sheet of paper is laid on a board to be scraped and smoothed with a tool made of glass, agate or other material designed to reduce roughness. This explains why parallel – most commonly diagonal – lines are often detectable over the entire surface. In many cases, the sheet was then hard-sized with a brush, since the paper, though it should not be totally transparent, had to be translucent as well as capable of receiving writing without soaking up the ink. In this connection, it is instructive to examine the paper produced in India still today using such traditional methods.[11] The sheets are

9 See MS. Paris BNF arabe 2291, wich has a goat's head watermark. 10 See A. Gacek, 'On the making of local paper. A thirteenth-century Yemeni recipe', *REMMM* 99-100 (2002), p. 79-93. 11 See particularly N. Premchand, *Off the deckle edge* (Bombay, 1995).

drained over bolts of fabric which may leave remnants of fibre on the pulp; they are then put to dry and whiten on pisé walls that can leave traces of their own. The dimensions of a mould are generally governed by the size that a papermaker can handle unaided.

In comparison to the Islamic West, craftsmen in Iran and the Ottoman Empire seem to have accorded exceptional importance to the preparation and outward appearance of paper. A sheet had to be translucent and was often, once scrupulously smoothed, brushed down with a primer (glair, gum-dragon or tragacanth) or coating, generally more liberally applied in the margins. In high-quality Ottoman manuscripts from the time of Mehmed II (*reg.* 1444–1446 and 1451–1481) and of Bayezid II (1481–1512) one often finds a very smooth and apparently generously finished cream paper. In other cases, it seems clear that the paper was simply painstakingly smoothed, without any coating, an option that rendered erasure or rewriting far more difficult.

Sheet formats and sizes

Sheets of paper were seldom used in their original uncut state save in the case of volumes of exceptional size (such as MS. Paris BNF arabe 2324 from the early eighth/fourteenth century, a folio volume whose bifolia measure 53 × 76 cm). As a rule, though, dimensions rarely exceed 45 × 65 cm.; this is probably because it would be difficult for a craftsman to operate a mould single-handed if were it any larger. In most folio volumes, the whole sheet measures at least 35 × 55 cm., according to the measurements of ninth/fifteenth-century Persian manuscripts made by this author.

In a folio volume the wire-lines lie perpendicular to the sewing stations; the same applies generally to octavo format, whereas in quarto volumes the laid-lines run parallel. Since bifolia were prepared in advance, occasional leaves with lines running in an apparently anomalous direction do appear. In the case of unusual volumes such as the so-called 'Baysunghur' Qur'ān the precise technique employed remains unknown; perhaps a fixed mould was used.[12] Mamluk Qur'āns, certain specimens of which can attain impressive dimensions – around a metre tall or even more – also call for examination from this point of view. Again there exist, especially in the Iranian world, oblong or 'landscape' format volumes (in Persian, *safīna*), whose utilisation recalls that of the roll. The sheet equally well could be deployed in either direction, the gatherings corresponding to the same formats. Sheets were often trimmed drastically and

12 On the MS., see *Islamic calligraphy/Calligraphie islamique* (Geneva, 1988), pp. 104-105; D. James, *After Timur* (London, 1992), pp. 104- 105; A. Soudavar, *Art of the Persian courts: selections from the Art and History Trust Collection* (New York, 1992), pp. 59-62; S. S. Blair, *A Compendium of Chronicles: Rashid al-Din's illustrated history of the World* [The N. D. Khalili Collection of Islamic Art, 27] (London/Oxford, 1995), p. 112, note 19. Concerning the technique of using fixed moulds, see J. Irigoin, 'Les papiers non filigranés: état présent des recherches et perspectives d'avenir', in M. Maniaci and P. Munafò (eds.), *Ancient and medieval book materials and techniques*, vol. I, pp. 265- 312.

so off-cuts could be put to use, as they were in Iran or India, for example, for drafting pharmaceutical prescriptions or writing various other documents (accounts, etc.), the paper being cut with a sharp blade.

The description of non-watermarked paper

Wire-lines

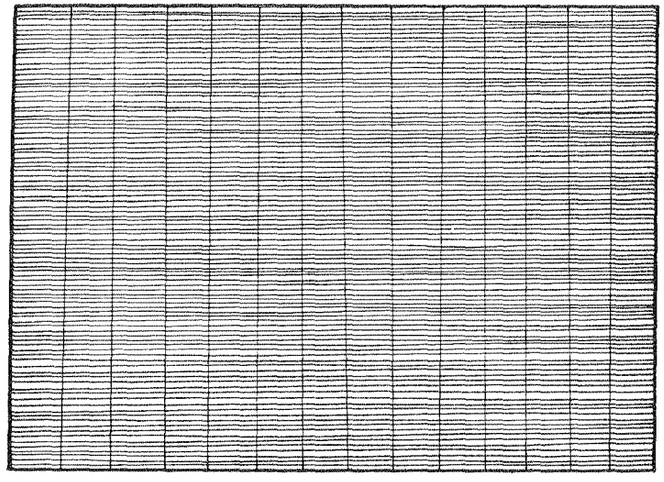
Paper can be classified in terms of the number of millimetres occupied by twenty wire-lines. As an example, in a manuscript copied at Andakan (Ferghana) in 1311 (MS. Paris BNF suppl. persan 69),[13] where the broad wire-lines of the beige paper run perpendicular to the sewing stations and the chain-lines are almost invisible, twenty wire-lines extend over approximately 40 mm. The dimensions of the whole sheet must have been at least 390 × 480 mm. The volume consists of gatherings of eight leaves – or quaternions – a system that will, as we shall see, became predominant in the Iranian world and universal in India in the eleventh-twelfth/seventeenth-eighteenth centuries, and competed with the quinion (gathering of ten leaves) in the Ottoman Empire until the end of the tenth/sixteenth century. In the Maghrib and in Spain, 'senions' or gatherings of twelve leaves also occur. Study of wire-line spacing can provide supplementary information. If carried out meticulously enough, it may even be possible to identify the variety of reed, bamboo or grass-stalk used to construct the mould. The best paper is most often that whose wire-lines lie closest together;[14] other criteria of quality include the regular consistency of the pulp and inconspicuous fibres.

The chain-lines

In general chain-lines are difficult to discern and appear occasionally as lines running perpendicular to the laid-lines (illus. 12). There are cases, however, on particular types of paper where they are sufficiently prominent for examination to be useful. A typological analysis[15] of unwatermarked 'Arab' papers whose chain-lines can be readily observed has been attempted by Geneviève Humbert for the period from the fifth/eleventh to the ninth/fifteenth century.[16] It relies on observation of the pattern made by the wire- and chain-lines when a specimen

13 *FiMMOD*, 158. The paper in this manuscript faintly resembles certain examples in Chinese manuscripts dating from before the eleventh century CE discovered at Dunhuang, a place not far away. 14 The question remains as to what exactly 'Samarkand paper' was. In a later period, the expression designates a certain quality of paper, whereas originally it must have denoted the much-praised paper actually manufactured in Samarkand and exported. In a fine manuscript (MS. Paris BNF arabe 5036) completed around 1440 in Samarkand, the ivory paper in which twenty wire-lines occupy from 22 to 24 mm. must have been cut from a sheet measuring at least 36 × 48 cm. Still, it is not known whether this is an example of genuine 'Samarkand paper'. 15 G. Humbert, 'Papiers non filigranés utilisés au Proche-Orient jusqu'en 1450: essai de typologie', *JA* 286 (1998), pp. 1- 54. 16 For Persian paper from the fifteenth century CE, see F. Richard, 'Le papier utilisé dans les manuscrits persans du 15e siècle de la Bibliothèque nationale de France', in M. Zerdoun Bat–Yehouda (ed.), *Le Papier au Moyen Âge* (Turnhout, 1999), pp. 31-40.

sheet is held up against the light. The chain-lines lie at relatively regular but sometimes protracted intervals (up to 80 mm.) and may be grouped in twos or threes. Humbert's classification notes six groups.



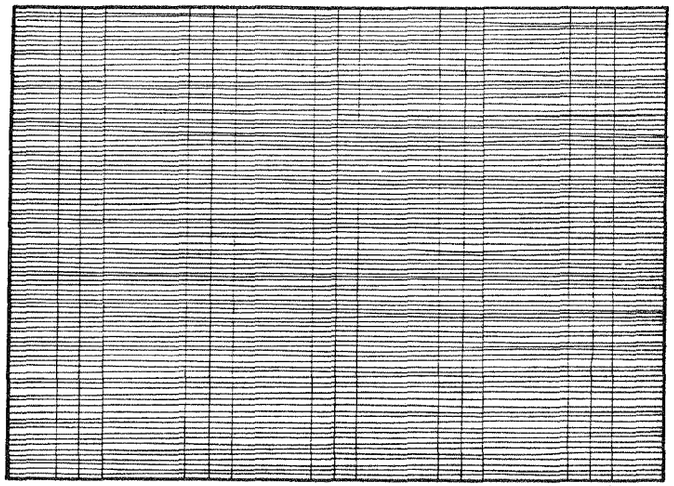
12. Non-watermarked Oriental paper with chain-lines spaced at regular intervals.

In the first category, covering paper with simple, not grouped, chain-lines (as for example in MS. Paris BNF arabe 6840, copied in 1108 at Isfahan and in part of BNF arabe 3423, copied in 1448-9), the gaps between the lines range from 12 to 25 mm. For some manuscripts produced in India in the tenth /sixteenth century, gaps of between 30 and 55 mm. are recorded; this is also the case with paper in high-quality manuscripts from eleventh/seventeenth- and twelfth/eighteenth-century Mughal India.[17] In Maghribī paper, the gaps, invariably greater than 30 mm., can even attain 80; in general, however, they lie somewhere between 40 and 50 mm. A series of Persian papers of the sixth/twelfth and seventh/thirteenth centuries present simple, double or triple chain-lines that alternate more or less regularly.

Humbert's second category presents chain-lines grouped in twos, threes or fours lying in uniform arrays over the whole sheet (illus. 13). Groups of double chain-lines are attested from at least the sixth/twelfth to the ninth/fifteenth century, particularly in Egypt, while chain-lines arranged in

17 It is difficult to be certain as to which are actually *ʿĀdilshāhī* papers from the Deccan, for example. The markedly different paper in MS. Paris BNF suppl. persan 140 C, copied at Fīrūzābād and probably, with its broad wire-lines, representative of a type of early sixteenth-century CE paper from the Sultanate of Delhi, should be noted.

threes are amply attested from the fifth/eleventh to the ninth/fifteenth centuries in Persia, Syria, Egypt, Asia Minor and even at Mecca. The place of manufacture of this type of paper remains mysterious, but it is known that its use expanded noticeably in the course of the eighth/fourteenth and more particularly in the ninth/fifteenth centuries.



13. Non-watermarked oriental paper with chain-lines in groups of three.

Without going into all the details, we may mention that other papers with chain-lines gathered in fives appeared between 1374 and 1420 at Baghdad and in southern Iran. Papers with regularly alternating groups of two and three chain-lines are less common; some are found in the seventh/thirteenth century in Syria and also in Egypt, as well as in Greek manuscripts from Cyprus. Papers in which such groups alternate irregularly have been documented from the beginning of the seventh/thirteenth to the ninth/fifteenth centuries. A large quantity appears in the Middle East and in Egypt and Syria, though such papers seem to have been rare in Persia. Beyond these general trends, it would, as things stand, be over-ambitious to try to link a type of paper categorised in this manner with the name of a mill or a location or even with an exact date. It is known besides that from the eighth/fourteenth to the ninth/fifteenth century the same types of mould were used in Syria and Egypt.

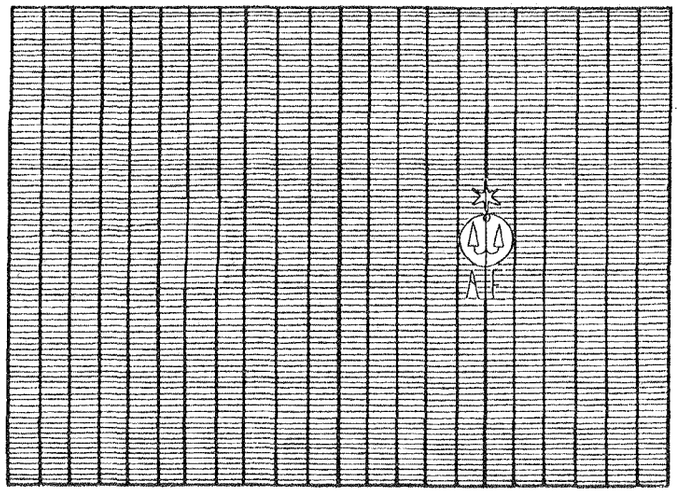
Watermarked papers

The development of production in the West

The technique developed from 1264 onwards at Fabriano in Italy ushered in a gradual revolution in the paper industry. Italy soon became a paper-exporting country and mills based on the Italian model sprung up in various European countries. Since the production costs involved were lower, such products spread quickly. The paper was characterised by the impression of a mark in the paper by a device made in metal wire and sewn to the mould (the 'watermark'; illus. 14) which allows the manufacturer to be identified. Visible on each sheet, the motifs of these new marks were often borrowed from heraldry and were sometimes accompanied by lettering. In Muslim Spain – whose mills were rendered redundant during the fourteenth century by paper exported from Italy – parchment seems to have remained comparatively inexpensive for long enough for some manuscripts to have been compiled in which bifolia of paper and parchment alternate, the latter consistently appearing at the beginning and in the centre of the book, though sometimes in other sections as well. In the Maghrib, European-made watermarked papers were used in manuscripts from the mid-eighth/fourteenth century, as shown by the example of MS. Rabat BGA D529 of 1349. Paper from Genoa is to be found in MS. Paris BNF suppl. persan 113, copied in 753/1352 at Sarāy-i Jadīd in the Crimea. In the Ottoman Empire,[18] watermarked paper of the ninth/fifteenth century is encountered relatively frequently – in conjunction with the other types of Eastern paper without watermarks, which remained largely predominant – and the number of forgeries offers proof positive of their enduring success. During the tenth/sixteenth century, European paper and non-watermarked paper coexisted in roughly equal proportions throughout the Ottoman Empire, exactly in the same manner as the concurrent quire formats of the quaternion and quinion, though no congruence has been demonstrated between the use of quinions and watermarked paper or of quaternions and unwatermarked paper. After 1550, non-watermark papers with chain-lines grouped in twos or threes are no longer found, and they seem to have succumbed to competition from watermarked papers, especially Venetian papers with the anchor watermark.[19]

By the eleventh/seventeenth centuries, in Turkey, Syria and Egypt, as in the Maghrib, the overwhelming majority of manuscripts were being copied on watermarked papers. From the end of the tenth/sixteenth century, and until approximately 1650, the most frequently encountered paper bore Venetian

18 Locally produced watermarked paper appeared at a later stage in the Maghrib (see P. S. Van Koningsveld and Q. al-Samarrai, *Localities and dates in Arabic manuscripts: descriptive catalogue of a collection of Arabic manuscripts in the possession of E. J. Brill* (Leiden, 1978), pp. 37, no. 56 A). 19 See V. Mosin, *Anchor watermarks*.



14. European paper with watermark in the form of an anchor.

anchor watermarks; by the second half of the twelfth/eighteenth century these in turn were supplanted by paper watermarked with three crescent moons (*trelune*), concurrently with certain French or imperial paper marks. Very little European paper survives from Iran and India from before the end of the twelfth/eighteenth century, or even prior to 1815; Iran then imported Russian, English or Austro-Hungarian paper, with a pronounced partiality for the blue-tinted kind). At best, leaves of a Hispanic paper can be seen in a manuscript copied c. 1550 in Kabul for the Mughal Emperor Humāyūn (MS. Paris BNF Smith-Lesouëf 216). But the fine-quality paper produced in the Deccan and perhaps elsewhere seems to have practically dominated the market in Mughal India (in parallel with a less sophisticated product that is often of a highly flocked appearance, some of which was perhaps laid from floating moulds). French, then English, papers make an occasional appearance only at the end of the twelfth/eighteenth century. Although the Muslim West adopted imported paper from Europe rather early on (eighth/fourteenth century), non-watermarked paper continued to be produced down to the beginning of the fourteenth/twentieth century in the East. Proof, if needed, is provided by the flourishing condition of the paper industry in Central Asia (Bukhara, Samarkand and Ferghana) until the Russian Revolution. In areas where manuscripts continued to be copied, paper made from mulberry bark fibres (in Ferghana) or rag (as in the Bukhara khanate) was favoured. For its part, India has kept alive a tradition of the craft of papermaking whose low production costs ensured its survival as a priceless repository of age-old techniques.

The examination of watermarked paper

A watermark allows the place and date of production of the paper bearing it and employed in the copying the manuscript to be identified.[20] To effect such an identification, a similar watermark to that on the specimen has to be referenced in an authoritative corpus.[21] If a reference can be consulted in conjunction with the item under investigation, direct comparison may be made with the original. One may, however, have to resort to making a diagram of the specimen, in which case several possible techniques exist. As freehand sketching, even on graph paper, is a haphazard affair, a more advisable course of action is to take a transfer drawing of the watermark concerned. After first checking that the institution concerned permits tracing, one places a light source behind the sheet with a ground glass plate above (to avoid damaging the specimen) on which tracing paper is laid; the watermark is then outlined with a sharp pencil. Contact photography and microfilm require more elaborate apparatus not always readily available on site; microfilm has the additional disadvantage of altering the dimensions of the original. Beta-radiography, which consists in placing the sheet of paper between a radioactive source (carbon-14) and a sensitive film, allows high-quality and faithful images to be taken,[22] but unfortunately it is not as yet a viable option in every library. From the sixteenth century onwards, papermaking moulds began to incorporate a countermark (initials, a small design, or suchlike) in the half opposite the one containing the watermark, allowing the manufacturer to be precisely identified; this, too, should be searched for carefully.

In order to study watermarks in a manuscript it is best to begin by locating a legible example. A meticulous record is then made of this mark, including its shape and size; the placing of the chain-lines should also be measured, together with the space occupied by twenty wire-lines. A survey of this kind will allow comparisons with published corpuses.[23] In this connection, however, it should be stressed that it is rare indeed to find a reference watermark equivalent in all respects to one observed in a manuscript. Finally, there is little doubt that future progress in information technology will hasten the development of new and more effective tools[24] for watermark identification.

20 This analytical method and procedure are described in J. Irigoin, 'La datation par les filigranes du papier', in A. Gruys and J. P. Gumbert (eds.), *Les Matériaux du livre manuscrit* [*Codicologica*, 5] (Leiden, 1980), pp. 9- 36. One example of how data derived from watermark examination can be put to advantage appears in an article by A. Brockett on two 'Sudanese' Qur'āns ('Aspects of the physical transmission of the Qur'an in nineteenth-century Sudan: script, decoration, binding and paper', *MME* 2 [1987], pp. 48- 51 and pl. 18- 24). **21** The reader is referred to the bibliography where the most useful corpuses of watermarks are listed. **22** A. de La Chapelle, 'La bétaradiographie et l'étude des papiers : beaucoup plus qu'une très belle image', *Gazette du livre médiéval* 34 (Spring 1999), pp. 13- 24. **23** See T. Gerardy, 'Die Techniken der Wasserzeichenuntersuchung', *Les Techniques de laboratoire dans l'étude des manuscripts* (Paris, 1974), pp. 143- 156. **24** C. Rauber, P. Tschudin and T. Pun describe DOCSCAN, a system for digitizing documents, 'DOCSCAN', together with KRYPICT, a database of watermarks, in 'Système d'archivage et de recherche de filigranes', *Gazette du livre médiéval* 31 (Autumn 1997), pp. 31-40.

Special papers

Among examples of the oldest surviving paper, the existence of certain specimens of a brownish hue and others of a creamy colour would seem to imply that concerted efforts were made to produce paper with the appearance of parchment. Texts record divers processes and recipes designed to bleach the pulp and so obtain the whitest and most homogeneous coloration possible. But coloured papers were certainly not unknown in the Muslim world, be they originally imitations of sumptuous Western tinted parchment or of Chinese coloured papers. No examples from the earliest times have been recorded, however, and although it is known that the practice already existed in the fifth/eleventh century, the history of the practice poses many questions.

Tinted papers

The use of coloured paper relates to the convention of using bifolia prepared in advance to assemble the gatherings. There exist, of course, manuscripts in which a given part was copied on coloured paper: for instance, MS. Paris BNF arabe 147, from Egypt, where folios 231 to 321 are pink paper. Nonetheless, the preference was for laying one, two or three coloured paper bifolia in a gathering to embellish the copy rather than making whole sections in any one colour (illus. 39). There even survive examples of manuscripts teeming with sheets of coloured paper, often distributed unevenly through the volume, from eighth/fourteenth-century Spain across to Jalāyirid Iran; leaves tinted in yellow, salmon and ochre (illus. 35) appear alternately in a manuscript of scripture (Ms. Paris BNF persan 3) copied at Solghat in 1374 in the Jalāyirid style. A bilingual manuscript copied in 1391 at Baghdad (MS. Paris BNF arabe 3365) contains a number of pink-coloured pages; in another, copied in 1413 at Baghdad (MS. BNF suppl. persan 1531), many pages are yellow.

The ninth/fifteenth century marked a golden age for coloured and decorated papers in Iran, and it was then that a number of special techniques reached their zenith. Throughout this century in Timurid and Turkmen states, manuscripts with differently coloured pages were actively sought after, most being collections or anthologies of poetry. Paper was at that time generally dyed on both sides and thus probably made by being plunged into a vat before a finish was applied; it was then often necessary to fix the colours with an acid treatment before rinsing and drying. There even survive sheets of tinted papers that have been deliberately flecked with a different colour. Examples are found in MS. Paris BNF suppl. persan 1473, datable to ca. 1470–1480: folios 82, 141, 146, 157 and 160 exhibit pink spots[25] visible on the verso as well as the recto;

25 Another example from the sixteenth century is MS. Paris BNF suppl. persan 800 (Qazvin, 1570-1575 CE).

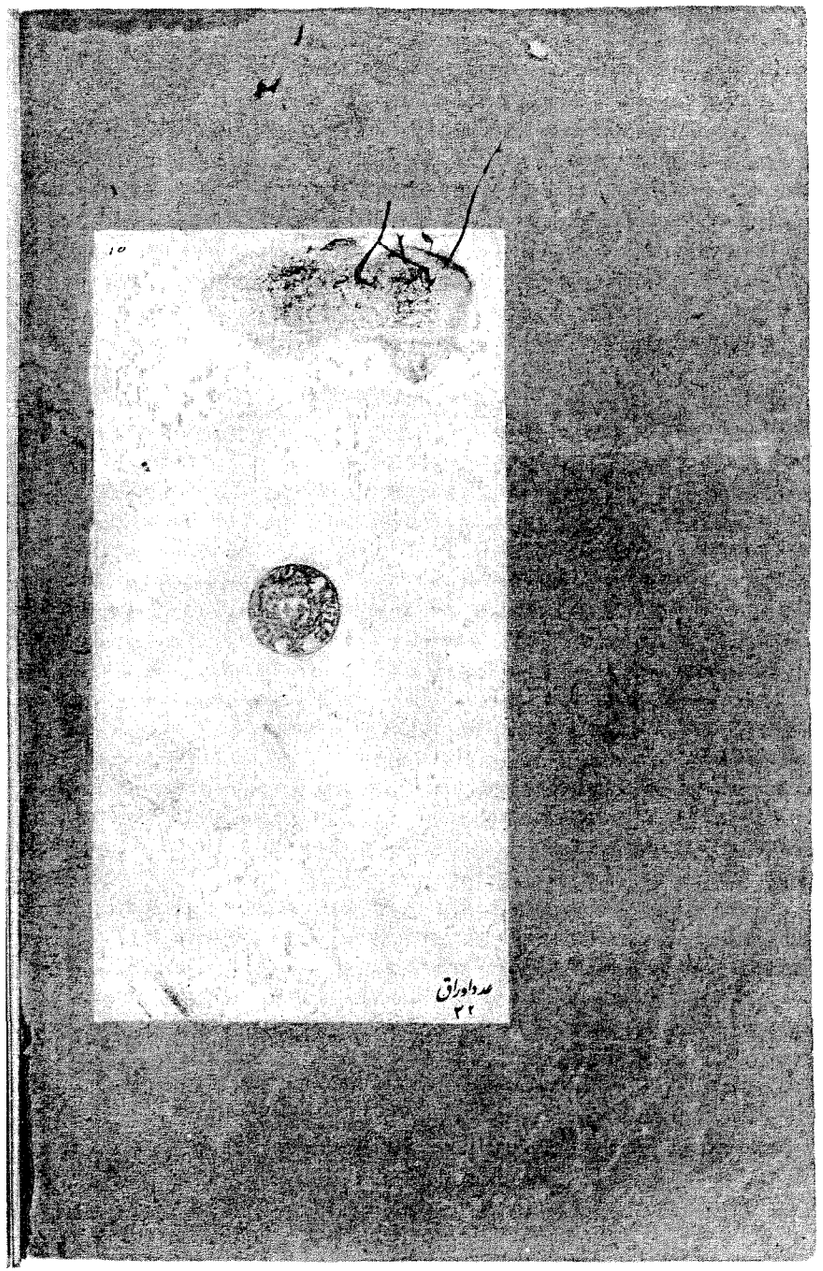
the sheet appears to have been tinted by impregnation. Sheets tinted on one side only are also to be found, though these are rarer; they received their finish prior to being floated on a mixture on the surface of a tank. Study of the recipes for obtaining the highly varied colours encountered especially in ninth/fifteenth- and tenth/sixteenth-century manuscripts (though in the early twelfth/eighteenth century, Mughal India too experienced its own vogue for coloured and decorated papers) has been based on surviving sources whose interpretation remains somewhat ticklish.[26] A huge range of instructions are recorded, some perhaps reflecting local practices; even the names of the products themselves are not always easily comprehensible,[27] though analyses of and comparisons with fabric dyestuffs would certainly be enlightening. In any case, not all the dyes were fixed in the same manner and some required doping with specific mordants, while others, such as some brown dyes, have long been held responsible for chemical reactions damaging the paper. In the ninth/fifteenth century, it seems that the use of coloured sheets became increasingly current in western Persia and in the Ottoman Empire, perhaps because the Āq Quyūnlū capital at Tabriz was an active centre in the production of coloured papers. In studying manuscripts incorporating paper of various colours, it is always instructive to observe whether all the coloured leaves are of the same type of paper or not and whether all are of the same origin. In general they are not, since some workshops surely specialised in producing technically demanding hues.

Silhouette paper, gold-speckled paper, marbled paper

Other paper-decorating techniques were also developed. 'Silhouette' (or 'shadowed') paper was produced by way of two different processes, one practised in ninth/fifteenth-century Persia and the other in the Ottoman world (illus. 45, 49) at the end of the tenth/sixteenth century and in the eleventh/seventeenth century; and gold-speckling or -sanding (illus. 48), which appeared in Persia around 1460. Marbling was one facet of the sustained effort observed in the Persian and Ottoman worlds to produce paper of varied appearance designed to fulfil a specific purpose (illus. 50), a tendency which will be treated at greater length in the chapter devoted to the ornamentation of the manuscript book.

Another highly successful device was to inlay one leaf in another leaf – often thicker and differently coloured – as in the *waṣṣālī* technique (illus. 15), wherein the arrangement of the frame masks the hairline join between the two

26 See Y. Porter, *Painters, paintings and books* (New Delhi, 1994), especially pp. 41- 60. The collection of practical treatises in Persian concerning the arts of the book published by Najīb Māyil Harawī, *Kitāb-ārā'ī dar tamaddun-i Islāmī* (Mashhad, 1372/1993), is also worth consulting. 27 See e.g. F. Richard, 'Une recette en persan pour colorer le papier', *REMMM* 99-100 (2002), p. 95-100.

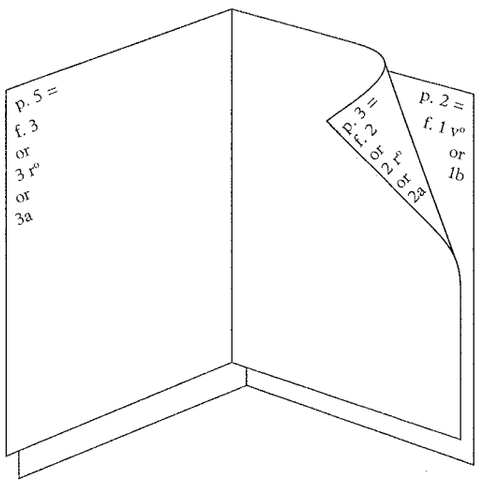


15. Paper margined using the technique known as *waṣṣālī*. Iran, mid-10th/16th century. Paris, BNF persan 243, f. 32v°.

sheets. Developed apparently at Herat at the end of the ninth/fifteenth century, this type of page layout enjoyed a surge in popularity during the tenth/sixteenth century in Persia, Turkey and India, and allows for the use of an extensive palette of colours in the margins without jeopardising the legibility of the text copied on the leaf of white paper in the window. The joins, however, can be exceedingly fragile. The care devoted to paper and its appearance, as well as to its decoration, was particularly marked in the Persian and Ottoman civilisations. Clearly the influence of Chinese models cannot be dismissed in this connection.

The Quires of a Codex

As a specific form of handwritten book, the codex is directly linked to the concept of 'gatherings', defined as 'group[s] of leaves or sheets brought together to form part of a book.'[1] More commonly used today is the term 'quire', which originally meant four sheets of folded parchment or paper but now refers to a gathering of any number of sheets, folded into leaves set one within another and sewn together. Other key terms that require definition here include 'bifolium', a rectangular piece of writing material folded down the middle so that it forms two leaves or 'folios' (abbreviated as 'f.' or 'fol.'; plural 'ff.' or 'foll.'), each folio having two sides, called 'pages' ('p.', plural 'pp.'). In order to distinguish the two sides of a folio, the first side to be read is called the 'recto' (abbreviated 'r', 'r°', or 'a') while the second is known as the 'verso' ('v', 'v°', or 'b') (illus. 16). Often, only 'verso' is explicitly indicated, the absence of specification meaning that the recto is intended; this is the system that will be followed in this book. Lastly, the term 'double page' refers to the verso of one folio opposite the recto of the next in a manuscript lying open. In manuscripts written in Arabic or other Semitic characters, the left hand page is the recto.



16. Bifolium, folio, and page.

1 *The New Shorter Oxford Dictionary* (Oxford: OUP, 1993).

Basic concepts

As mentioned above, a quire is composed of bifolia, that is to say rectangular sheets of parchment or paper folded in two, forming two leaves of equal size.[2] The folding operation represents a crucial stage in the making of bifolia, and can be performed on a single piece of writing material or on a stack of pieces cut to the same dimensions. In the Middle Ages, the West took this technique further, developing a method that was used frequently – though not exclusively – to produce quires from a single sheet of parchment or paper.[3]

Depending on the desired format, the sheet would be folded only once (folio format), or twice (quarto), or three times (octavo), and so on. The number of folds determined the format and number of leaves in the quire. With one fold, a gathering comprised just one pair of leaves; two folds produced two pairs (termed a binion); three folds produced four pairs (a quaternion); and so on. All comprised an even number of bifolia, since they were obtained by folding a single sheet. The paper or parchment had then to be cut in all those places – apart from the central fold – where two leaves remained attached to one another.

Types of quires

It is entirely possible to assemble quires containing two, four, or eight leaves, etc., in various formats, without employing the folding method on a sheet of parchment or paper; likewise, other types of quires exist which contain an odd number of bifolia. To clarify matters, the various combinations have been set out in the chart below, which includes the traditional names for the various types of fold. It is important, however, to note that such gatherings can also be produced by assembling several sheets.

2 A leaf is defined as one half of a bifolium, and should be distinguished from a page, which is one of the two sides of each leaf. 3 As M. Maniaci has pointed out, the model suggested by L. Gilissen (*Prolégomènes à la codicologie*) does not invariably apply to Byzantine manuscripts. Maniaci, 'L'art de ne pas couper les peaux en quatre: les techniques de découpage des bifeuillets dans les manuscrits byzantins', *Gazette du livre médiéval* 34 (Spring 1999), 1–12.

Number of bifolia	Type of fold	Name given to quire type	Number of folios
1	folio		2
2	quarto	binion	4
3		ternion	6
4	octavo	quaternion	8
5		quinion	10
6	duodecimo	senion	12
7		septenion	14
8	sextodecimo	octonion	16

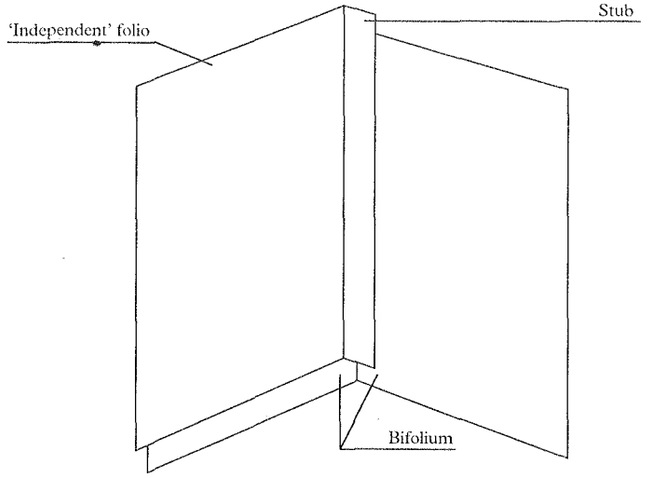
Beyond eight, we simply refer to gatherings of nine, ten, etc., bifolia. Some of the quires listed in the chart above cannot be obtained simply by folding – a point to be discussed later. On the other hand, all these quires can be called 'regular' because they are made up of complete bifolia.

Anomalies

It sometimes happens that a gathering has had one or several leaves added or removed, in such a way that these leaves have no counterpart and are therefore 'independent.'[4] To add a single leaf – or 'singleton' – to a quire, a scribe could employ one of two techniques. The first involved taking an independent leaf whose width was slightly greater than that of the other leaves in the quire, so that folding it down to the exact dimension left a narrow strip called the 'stub' (illus. 17). The leaf could then be added to the quire simply by sewing the overlapping stub into the gathering by the normal method, thus making it an integral part of the quire. Examination of the manuscript will reveal this overlapping tab, which is not the remnant of a leaf that has been torn out but the tab of a singleton: for example, in the second quire of a copy of the *Ǧāmiʿ al-fuṣulayn* (Paris BNF arabe 6905), folio 15 was glued by its stub to the bifolium of ff. 14–16.[5]

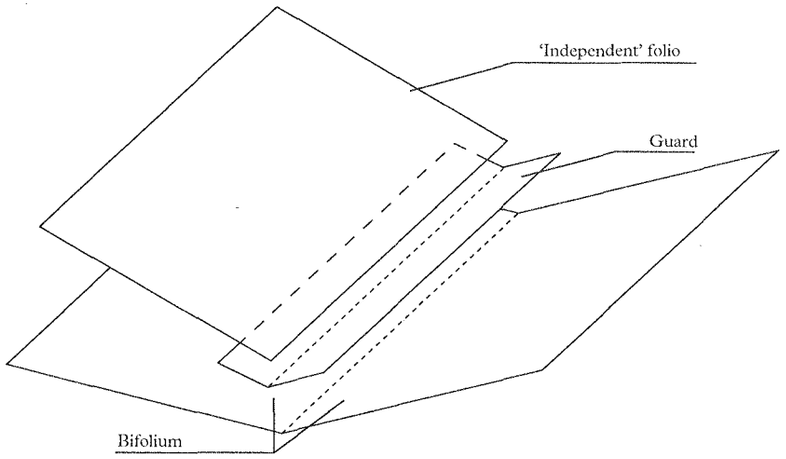
On occasion, several stubs appear side by side where a number of leaves have been added to a quire. Furthermore, one or several singletons can be stitched together into one complete gathering.[6] The use of parchment involved almost routine recourse to these techniques, as will be discussed later in greater detail.

4 Muzerelle, in *Vocabulaire*, p. 92, defines a *feuillet indépendant* as 'a folio lacking its conjugate pair, *i..e.*, the other half of the bifolium to which a given folio belongs.' But the hypothesis advanced here is that the presence of a singleton does not necessarily indicate the loss of half a bifolium, since the leaf may have been separate from the start. 5 *FiMMOD* 274. See the chapter 'The Writing Surface: Paper'. 6 See below.



17. Stub.

Another method for inserting an independent folio entailed use of a 'guard' (illus. 18). This term refers to a narrow strip of paper or parchment folded down the middle and slipped into a gathering, a separate leaf having been already glued to one (or both) wing(s) of the guard, thereby incorporating the leaf or leaves into the quire. Guards are also used to restore manuscripts when the gutter of a quire is badly damaged: the folios are attached to guards in order to reconstruct quires.



18. Guard.

When one leaf of a bifolium is removed (without being torn out), the survival of its conjugate leaf is threatened; for that reason a stub is left by cutting the leaf along the gutter margin near the spine-fold. Hence whenever a stub is detected in a manuscript, it is essential to make sure that the text contains no gaps. If a lacuna appears in the spot corresponding to the stub, it must be concluded that the stub is the vestige of a now-missing folio.

Quires within a manuscript

The number of quires making up a manuscript naturally varies considerably. In some cases there may be only one, often somewhat larger than an ordinary gathering.[7] The term 'monobible' might be applied to manuscripts of this type.[8] It is nevertheless extremely rare, in the field under discussion, to find single quires in which the number of folios greatly exceeds the norm. One manuscript, Berlin Staatsbibliothek (henceforth SB) Sprenger 517, datable to shortly before 459/1066–1067[9], comprises a single gathering of no fewer than forty folios; it may be of Indian provenance. This brings to mind the unusual case of 'monobibles' that seem to have been produced in northwestern India following contact with Islam; one manuscript dating from 1770, Munich Bayerische Staatsbibliothek, (henceforth BSB) cod. hind. 6, is composed of 280 bifolia in a single gathering.[10]

The fold constitutes a weak point in the architecture of a codex. Their concern to prevent it from tearing sometimes led makers of books to reinforce it by inserting a strip of paper or parchment in the fold of the quire either in the centre fold or around the spine – which was then stitched along with it. This strip is also called a 'guard'.[11] The above-mentioned MS. Sprenger 517 provides one of the few known examples of the use of this technique in an Islamic manuscript, perhaps explained by the thickness of the one and only quire composing it. Mourad Rammah mentioned to the present writer finding a quire that employs the same system in a juridical manuscript dated Jumādā II 404/ December 1013 (Museum of Islamic Art, Raqqada, Tunisia, MS. Rutbī 247).

7 An excellent example is provided by MS. Paris BNF suppl. turc 986, a miscellany of fascicles (*juz'*), each composed of a single gathering. As a rule, these quires are larger than those usually found in manuscripts composed of several gatherings: the second quire numbers twenty-two folios (ff. 19–41), not counting a bifolium of parchment that is in fact a cover. See G. Vajda, 'Trois manuscrits de la bibliothèque du savant damascain Yūsuf ibn 'Abd al-Hādī', *JA* 270 (1982), pp. 229–256 (reprinted in *La transmission du savoir en Islam*, 1983). See also P. S. Van Koningsveld, *The Latin-Arabic Glossary of the Leiden University Library* (Leiden, 1976) p. 69, note 89, which mentions Jerusalem manuscript JNUL Yahuda MS Ar. 409; a comment in this direction in *The Qur'an, Scholarship and the Islamic Arts of the Book* (London, [1999]), p. 36. 8 Muzerelle, *Vocabulaire*, p. 60, suggests *monobible* as the French term. 9 W. Ahlwardt, *Verzeichnis der arabischen Handschriften*, vol. II, pp. 249–250, no. 1557. 10 Munich 1982, p. 234 and fig. 48. 11 See the entry under 'guard' in Michelle Brown, *Understanding illuminated manuscripts: a guide to technical terms* (Malibu, CA/London, 1994). In French, this type of guard is known either as a *préservateur* (Lemaire, *Introduction*, p. 43) or *fond de cahier* (Muzerelle, *Vocabulaire*, p. 98).

Examining quires

Medieval scholars knew how important it was to observe closely the state of the gatherings in a manuscript.[12] When examining a manuscript, codicologists must inspect its composition meticulously. Any anomalies may indicate that text has been added, shuffled, or removed.[13] It is worth pointing out once again that this examination must be conducted with great care to avoid damaging the book, especially if a tight binding makes it impossible to inspect the centre folds.

If any irregularities are found – for example, a quire of four folios in a manuscript where all other quires are quinions, or a quire composed of an odd number of folios – the text must be checked for possible lacunae and/or transpositions of folios. An anomaly may also reflect a deliberate act on the part of the copyist. He may have noticed, when nearing completion of the task, that the remaining leaves of the quire on which he was working were insufficient to contain the rest of the text (which did not, however, call for an entire additional gathering); one or two leaves might therefore be inserted in the quire in order to gain the space required. Irregularities at the end of a manuscript often stem from situations of this kind.

The type of quire in a manuscript can be identified from the numbering, if any, to be found in it. Such indications, sometimes located on the recto of the first folio of each quire, will help determine whether the gatherings are quaternions or quinions, etc. When there are no such clues, the first task is to locate the stitches of the sewing, which are found in the fold of the central bifolium of each quire. Once the stitching for one quire has been located, the search should be extended to neighbouring quires. By counting the number of leaves between two contiguous sets of stitches, the number of folios in each quire can, in theory, be easily determined if the number remains constant across several intervals of this type. For example, if sewing is noted between ff. 36-37, 46-47, 56-57, 66-67 and 76-77, then there are ten leaves between each set of stitches: five belonging to the second half of the one gathering, and five to the first half of the next. If the binding permits, thorough verification of this pattern must always be done, examining *every quire* for the number of folios it contains. This process is essential to discovering manuscripts – admittedly rare – in which quires of different types alternate regularly. Mid-quire signatures can also be used as a guide to counting, along the same lines as stitching. In manuscripts that have been restored in the West, it sometimes happens that two sets of stitching are found within a single quire, as for example in Paris manuscript BNF arabe 1544 (between ff. 7 and 8, then again between 8 and 9, as well as between 16 and 17 and then again between 18 and 19).[14] Up to now, no other examples of this practice have been found in manuscripts handled by

12 F. Rosenthal, *The Technique and approach of Muslim scholarship* (Rome, 1947), p. 12.
13 An illustration of this effect on parchment manuscripts will be given below. 14 Sauvan and Guesdon, *Cat.* 5, p. 88.

Oriental binders of the early period. In manuscripts re-bound in the West, it is not unusual to find that the original structure has been entirely lost, the only remaining evidence being the old sewing holes.

When examining parchment manuscripts, there are additional details that must be noted, as will be explained in a later section.

Describing quires

There are simple formulas which make it possible to describe quires and to draw attention to significant details. In one formula,[15] which can be applied very widely, gatherings are described as a sequence of numbers: the first, in Arabic numerals, indicates the number of gatherings with a regular number of bifolia, the number of bifolia being indicated by a Roman numeral; these two numerals are followed by the number of the last folio of this homogeneous sequence, in parentheses. A volume of 100 folios comprising exclusively quinions will thus be described in the following way: 10 V (100). Another manuscript, composed of six quinions followed by a final quaternion, will be described as 6 V (60), IV (68); if a leaf is lacking, for example, from this last quire, it will be indicated as follows: 6 V (60), IV-1 (67). If, on the other hand, an addition has been made to that final quaternion, it will be indicated thus: 6 V (60), IV+1 (69). In the case of a sole quire, it is not necessary to put the number 1 before the Roman numeral.

Once again, when manuscripts are made of parchment, the specificity of the medium sometimes requires a more detailed description of quires, as will be explained in the next section.

Quires within parchment manuscripts

Examining quires of parchment

In addition to the examination procedures described above, in manuscripts written on parchment it is important to note the sequence of hair sides and flesh sides (see illus. 10a and 10b). The side that forms the recto of the first folio of a quire is known as the outermost side. If f. 1 r° of a parchment manuscript is the hair side – assuming it is indeed the original first folio – then the quire would be described as having the hair side outermost.

15 Witkam, *Cat.* 1, pp. 13–14.

Before taking a closer look at the way in which Islamic scribes composed quires of parchment, it may be useful to mention again, briefly, the folding technique used by Western scribes in the Middle Ages. To form a gathering, they generally folded the skin in half either once, twice, three, or four times, thereby producing quires of two (folio format), four (quarto), eight (octavo), or sixteen sheets (sextodecimo).[16] But this system of folding had another consequence, one defined by Gregory's Law, so called after a German scholar who was the first to notice that, within a given quire, two facing folios always displayed the same type of side, hair or flesh.[17] Thus, if folio *x* v° is the hair side of the parchment, the recto opposite that page (f. *x* + 1 r°) will also be the hair side.

The distinction between the two sides can be annotated in a simplified way according to the following system for describing gatherings of parchment folios. Quires are numbered in Roman numerals; the folios are given the number they bear in the manuscript in Arabic numerals, flanked by small capital letters 'H' (hair) and 'F' (flesh) – or conversely – to indicate the nature of the recto and verso sides. The middle of the gathering is marked by a slash (/), the presence of a stub by the letter S. Other letters may be used to provide additional information, such as L for a folio that is lacking. The description of the fifth quire of a manuscript might then be noted as follows:

V: H39F H40F H41F H42F S H43F/F44H F45H S F46H F47H F48H

If a manuscript is paginated, rather than foliated, this descriptive method need merely be adapted by using a hyphen, for example, to link the pages comprising the recto and verso of a folio, thus giving:

V: H77-78F H79-80F H81-82F H83-84F S H85-86F/F87-88H F89-90H S F91-92H F93-94H F95-96H

Early Qur'ān manuscripts

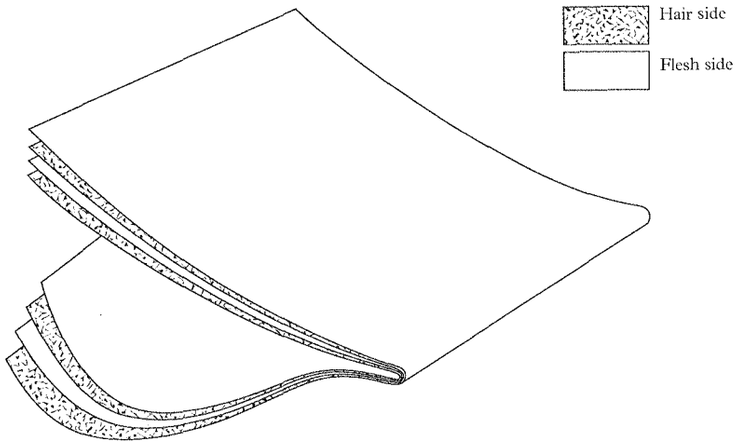
Copies from the first/seventh and second/eighth centuries

The oldest surviving Arabic manuscripts are Qur'āns, and date from the second half of the first/seventh century; most of them are fragments written in *Ḥijāzī*-style script, which provides the basis for the dating. Few of these copies contain continuous sequences of folios, which are essential to understanding how

16 Gilissen, op. cit., pp. 26–35; Lemaire, *Introduction*, pp. 69–94; see also the discussion in Maniaci, op. cit. The following comments partly reproduce a published article: François Déroche, 'L'emploi du parchemin dans les manuscrits islamiques: quelques remarques liminaires,' *Codicology*, pp. 27–40. 17 G. R. Gregory, 'Les cahiers des manuscrits grecs', *Comptes rendus des séances de l'Académie des inscriptions et belles-lettres* (1885), pp. 261–268.

parchment was used to make up quires in those early days. Qur'ānic fragment Paris BNF arabe 328a, apparently copied in the late first/seventh century,[18] nevertheless features several groups of leaves bearing uninterrupted text: folios 4 to 22, 23 to 40, and 41 to 48, to which might be added ff. 57 to 64: these latter form Fragment 328b, which is a distinct item from the palaeographic standpoint but may conceivably have been part of the same Qur'ān.[19] In the absence of extensive codicological examination, owing to the present physical condition of the manuscript, the following analysis is offered on a conditional basis: the fragment contains four quaternions, namely ff. 7–14, 24–31, 32–39, and 57–64, to which might be added the quire of ff. 42–48 (that is to say, seven leaves), from which the original last folio is missing. Folios 15–21, in contrast, simply represent an irregularity. The sequence of the sides of parchment is also interesting, as for example in ff. 7–14:

F7H H8F F9H H10F/F11H H12F F13H H14F (illus. 19)



19. Quire of parchment: quaternion as found in early Qur'āns.

18 M. Amari, 'Bibliographie primitive du Coran', H. Dérenbourg (ed.), in *Centenario della nascita di M. Amari* (Palermo, 1910), vol. 1, pp. 18–19; E. Tisserant, *Specimina codicum orientalium*, p. XXXII and pl. 41a; G. Bergsträsser and O. Pretzl, *Die Geschichte des Korantexts, GdQ*, vol. III (Leipzig, 1938), p. 255 and fig. 9; N. Abbott, *The Rise of the North Arabic script and its Kur'anic development*, p. 24; A. Grohmann, 'The problem of dating early Qur'ans', *Der Islam* 33 (1958), pp. 216, 222, 226 and n. 48; Grohmann, *AP I*, p. 42, n. 1; Déroche, *Cat.* I/1, pp. 59-60, n° 2; F. Déroche and S. Noja Noseda (eds.), *Le manuscrit Arabe 328 (a) de la Bibliothèque nationale de France* (Lesa, 1998). 19 Déroche, *Cat* I/1, p. 60, n° 3.

Since this arrangement occurs elsewhere, it might be thought that this manuscript represents an example of quires produced by the folding method. But two of the quaternions tend to refute this hypothesis: the bifolia of conjugate pairs 43–48 and 44–47, as well as those of 59–62 and 60–61, present flesh sides opposite hair sides, which constitutes a strong argument against folding. In any event, the flesh side is regularly used as the outermost side of the various gatherings.

It should not be assumed, however, that quaternions of this type were the only model followed at the time – another fragment in *Ḥijāzī* style, Paris BNF arabe 328c, is composed of quinions arranged in the normal way (that is to say, with the flesh side on the recto of all the folios in the first half). The general approach will only be understood once *Ḥijāzī* Qur'ān manuscripts are better known. For the moment, we can merely note the relative diversity in the use of parchment during this period, the late first/seventh and early second/eighth century. The number of folios per quire in no way seems unusual; in contrast, the use of the flesh side as outermost side would appear to deviate from the norm observed among the already published collections. It should nevertheless be noted that the flesh side is also outermost in quires in Greek manuscripts.[20]

From the early second/eighth century, a Qur'ānic fragment that displays palaeographic evolution from the *Ḥijāzī* style is noteworthy for its quires of ten bifolia, assuming that the reconstruction proposed here is accurate. The arrangement of the sides of the parchment is as follows:

H1F H2F H3F H4F H5F F6H F7H F8H F9H F10H/H11F F12H F13H F14H F15H F16H F17H F18H F19H F20H.

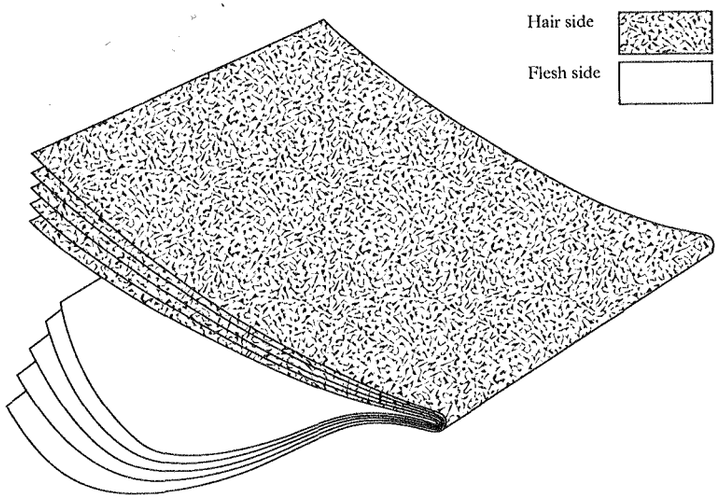
Qur'āns from the third/ninth century

Many more manuscripts from the third/ninth century have survived. Although they are often fragmentary, several contain continuous text sequences over a sufficient number of folios to provide useful information. A good example can be seen in the composition of Paris manuscript BNF Smith-Lesouëf 193.[21] Despite the loss of several leaves here and there (in quire II, for example), examination shows that the quires contain ten folios arranged in the following manner.

II: H11F H12F H13F H14F H15F/F16H F17H F18H F19H F20H (illus. 20)

This observation is confirmed by a survey of two large collections of Qur'ān manuscripts copied on parchment between the late first/seventh century

20 P. Ladner, *Lexicon des Mittelalters*, s. v. 'Pergament', vol. VI, col. 1886. 21 Déroche, *Cat.* I/1, p. 96, n° 110; the same structure is evident in BNF arabe 358b, datable prior to 300/913–14 (see *FiMMOD* 19).



20. Quire of parchment: classic type of quinion.

and the middle of the fourth/tenth century, namely those at the Bibliothèque Nationale de France and the Museum of Turkish and Islamic Art in Istanbul. The overwhelming majority of manuscripts in those collections are composed of quinions, that is to say quires of ten folios; and the immediate implication of this observation is that such quires cannot be obtained by simple folding, as subsequent analysis confirms. The way in which the parchment was used to form each quire shows a consistent approach on the part of those who made the book: the recto of f. 1 (outermost side) almost always shows the hair side of the parchment.[22] The hair side also appears on the rectos of the following leaves of the quire, that is to say ff. 2, 3, 4, and 5. When the manuscript is opened, a contrast is evident between the two halves of every double page,[23] except at the junction of two quires (where two hair sides face one another) and in the middle of each quire (where, logically, two flesh sides appear). It sometimes happens that this pattern is accidentally broken within a quire of a manuscript that otherwise strictly follows the normal arrangement. The obvious inference is that Muslim copyists, or the *warrāq*s, did not fold sheets of parchment, but rather cut them down to the dimensions selected for the manuscript. In so

22 By contrast, parchment 'papyri' use the flesh side first (see Grohmann, *AP* I, p. 111); according to M. Haran, Arab copyists proceeded in similar fashion with *raqq*, obtained by slicing through the thickness of the skin, whereas they preferred to use first the hair side of *qasht*. See Haran, 'Bible scrolls in Eastern and Western Jewish communities from Qumran to the High Middle Ages', *Hebrew Union College Annual* 56 (1985), p. 48. 23 Muzerelle, *Vocabulaire*, p. 92, defines a 'double page' as a set of two facing pages comprising the verso of one folio and the recto of the next.

doing a skin could if necessary be used for different quires, indeed different manuscripts.[24] Subsequently, sheets of the same size, usually five in number, were stacked in the same position and folded down the middle to compose a quire.[25]

A hypothesis on the arrangement of the sides of parchment

This arrangement differed from the method commonly used in the West, as reflected in Gregory's Law, which, as mentioned above, states that the flesh sides of the leaves of a parchment quire will face one another, as will the hair sides. The question then arises as to whether Islamic craftsmen innovated, or whether they were respecting another tradition. The study of papyrus codices may provide an answer here. In fact, it has been observed that in making quires from papyrus the original roll was cut into sheets of identical dimensions, which were then stacked with the horizontal fibres facing upward; once the desired number of sheets was reached, the stock would be folded in half down the middle, thereby producing a quire in which a page with vertical fibres always fell opposite a page with horizontal fibres, the exception obviously being the double page in the middle of the quire.[26] It is therefore tempting to explain the arrangement of hair sides within parchment quires as a consequence of the stacking of papyrus bifolia when a roll was cut.[27] As to the systematic use of quinions, sometimes also encountered in papyrus gatherings, it may be explained by the convenience it offered from the standpoint of counting.[28] Finally, it should be noted that this method of composing quires seems to have been employed in the most ancient Syriac manuscripts.[29]

24 See BNF arabe 5935, discussed below. 25 A quire obtained in this way is known in French as 'composite' (*composé*, made from several leaves folded separately or simultaneously; see Muzerelle, *Vocabulaire*, p. 95), as distinct from 'homogeneous' quires in which all the bifolia are obtained by folding one single sheet. 26 See, for example, J. Robinson, 'Codicological analysis of Nag Hammadi Codices V and VI and Papyrus Berolinensis 8502', *Nag Hammadi Studies*, vol. X (Leiden, 1979), pp. 14–15; A. Wouters, 'From papyrus roll to papyrus codex: some technical aspects of the ancient book fabrication', *MME* 5 (1990–1991), p. 12. 27 There are nevertheless quires of papyrus that also conform, in terms of fibre direction, to a transposition of Gregory's Law. See V. Martin, *Papyrus Bodmer*, vol. II, *Évangile de Jean ch. i-xiv* [Bibliotheca Bodmeriana, 5] (Cologny/Geneva), 1956. 28 It is far from certain that papyrus rolls were standardized; the number of twenty sheets glued end to end is sometimes mentioned, citing Pliny, but this did not constitute a rule. The origin of quinions does not seem to reside here, because in any case the cutting of rolls was done independently of the joins (Greek κόλλησις, *kollèsis*, in the singular) that connected the sheets (Greek κόλλημα, *kollèma*, in the singular). 29 For example, MS. Paris BNF syriaque 27, datable as prior to 720. Quires of eight or ten folios coexisted before as well as after 640. See W. H. P. Hatch, *An Album of dated Syriac manuscripts* (Boston, 1946), p. 23; M. Mundell Mango, 'The production of Syriac manuscripts, 400–700 AD', in G. Cavallo, G. de Gregorio and M. Maniaci (eds.), *Scrittura, libri e testi nelle aree provinciali di Bisanzio*, vol. I [Biblioteca del Centro per il colegamento degli studi medievali e umanistici nell'Università di Perugia, 5] (Spoleto, 1991), p. 163.

Bifolia and singletons

The arrangement of hair and flesh sides in parchment quinions is not the only original feature of Qur'ānic manuscripts in these two collections. The way the skins were used is also highly individual: an examination of the quires reveals the fairly regular presence of stubs, beginning at a very early date (one *Ḥijāzī*-style fragment, Paris BNF arabe 328a, contains a separate leaf with a stub, f. 17). Research shows that the presence of stubs does not always indicate gaps in the text, but sometimes reflects an extremely common practice that involved a 'substitute' for bifolia in the form of pairs of separate leaves – or singletons – inserted symmetrically in relation to the central stitching. Within a quinion, the number of singletons varies from two to eight or even ten. Closer study of a series of apparently homogeneous manuscripts (from the standpoints of both palaeography and codicology) has demonstrated that only a quarter of the quinions were composed of five bifolia proper. In the remaining cases, singletons inserted in symmetrical fashion in the quire replaced the bifolium or bifolia that would normally have been found there.[30] In total, forty percent of the quinions studied included a symmetrical insertion of two singletons in varying position among the bifolia, the most common approach being to place them as ff. 3 and 8 within the quire (as occurs in approximately twenty-five percent of the cases). To return to the example of quire II of MS. Paris BNF Smith-Lesouëf 193, this phenomenon can be observed once more despite an Ottoman restoration that partly altered the original arrangement (illus. 21):

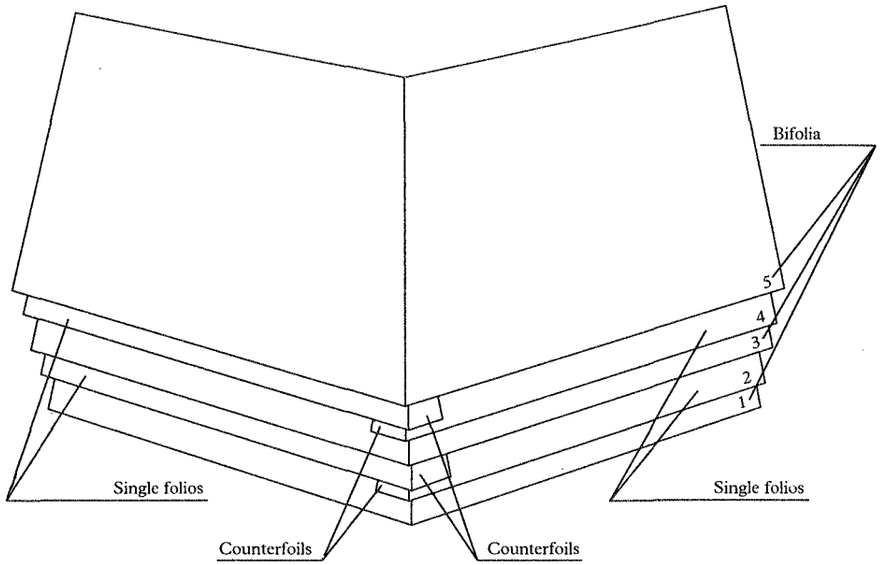
II: H11F S H12F H13F S H14F H15F/F16H S F17H F18H S F19H F20H

Another relatively common case, occurring approximately ten percent of the time, involved six singletons placed between two bifolia. It would seem that as far as possible the craftsmen making the book were careful not to undermine the sturdiness of the quire, and therefore of the manuscript.[31] It should be added that there are exceptions to this procedure: the total number of leaves in a quire may, exceptionally, be either fewer or greater than ten (nine or eleven, for example) without any lacuna in the text. Somewhat more frequently, it may happen that the singletons are not arranged symmetrically. Hence they might be found at ff. 3 and 7 in the quire, rather than at ff. 3 and 8, but an equal distribution across the two halves of the quire is always maintained, and the usual arrangement of hair and flesh sides is always adhered to.

Other ways of composing quires of parchment folios occasionally arise. Quaternions were sometimes used in oblong manuscripts in the third/ninth century which, strangely, had no impact on the arrangement of hair and flesh sides, the first folio displaying the flesh side outermost in conformity with the

30 F. Déroche, 'À propos d'une série de manuscrits coraniques anciens', *MSS du MO*, pp. 107–108. 31 It would be useful to know whether the inclusion of a greater or lesser number of singletons had an impact on the cost of a manuscript. This question is a difficult one and is likely to remain so owing to the lack of reliable data.

description above. There are nevertheless a few disconcerting cases: Istanbul manuscripts TIEM 552 and 553 (third/ninth century) are composed of quaternions in which the rectos of ff. 1, 2, and 4 employ the hair side, whereas the recto of f. 3 is backwards, showing the flesh side. Another fragmentary manuscript from the same collection, SE 148, seems to be made up of quinions that tend to respect Gregory's Law, yet whose outermost side is sometimes hair, sometimes flesh; furthermore, bifolia 2 and/or 4 frequently display 'irregularities'.



21. Quire (quinion) comprising three bifolia and four single folios symmetrically arranged.

Examples from the Maghrib

In the western reaches of the Islamic world – the part of North Africa known as the Maghrib – parchment long remained in use, especially for copying the Qur'ān. It was employed alongside paper until the eighth/fourteenth century, even as late as the ninth/fifteenth. This conservatism did not mean, however, that parchment was used in the ways described above; on the contrary, it is clear that the arrangement of hair and flesh sides generally follows Gregory's Law, and that there was no marked preference, strictly speaking, for one type of quire or another. Quinions were not unknown – two manuscripts in the Paris collection, BNF arabe 6090[32] and 6499,[33] are composed of quinions – but they

32 E. Blochet, *Catalogue des manuscrits arabes des nouvelles acquisitions, 1884–1924* (Paris, 1925), p. 184; *FiMMOD* 68. **33** *FiMMOD* 65; see also the section on mixed quires, below.

were not the only type found. On occasion, gatherings of parchment might be large, for those in MS. Paris BNF 6905 contain as many as fourteen folios.[34] Copyists also used quaternions, for example in MSS. Paris BNF arabe 385[35] and Vatican BAV Arab. 881.[36] As Paola Orsatti has pointed out, ternions seem to have been a Maghribī speciality when it came to parchment manuscripts.[37] This represents a notable departure from the practices observed in Qur'āns of the early period. In copies of the Qur'ān on parchment made in the Maghrib, ternions are common: eight of the Qur'ānic manuscripts held in the Bibliothèque Nationale de France are composed of ternions, either exclusively or extensively.[38] At the Vatican Library, two non-Qur'ānic manuscripts on parchment are composed of this type of quire, as are six of the seven Qur'āns in the collection.[39] In all these manuscripts, from both the Bibliothèque Nationale de France and the Vatican Library, Gregory's Law is respected, as can be seen, for example, in Qur'ān BNF 395, where ternions are combined with binions yet where both types of quire show the hair side outermost (illus. 22).[40] In this Qur'ān, the usual arrangement is: H-F, F-H, H-F. Quire IV, however, is composed as follows:

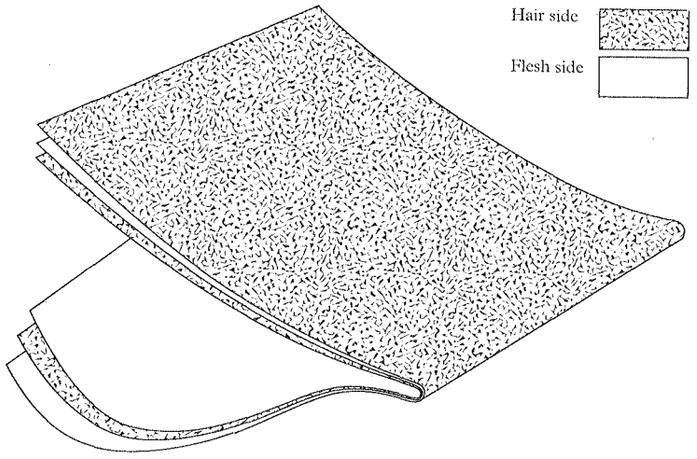
IV: H19F H20F F21H/H22F F23H F24H

The reason for this anomaly quickly becomes apparent: bifolia 20-23 and 21-22 were inverted during binding. An examination of the binions of this same manuscript reveals that quire X is regular and complete, while quire XIII was originally a ternion whose second bifolium has been lost, as is immediately suggested by the way the parchment is arranged:

XIII: H69F H70F/F71H F72H (Qur'ān XIV, 33–48, 65–77/77–89, 102–116, respectively)

This example shows how attentive study of the composition of gatherings can help point to lacunae in the text.

34 *FiMMOD* 16; each *juz'* is composed of two quires, the first always containing fourteen leaves, while the second has from eight to twelve. **35** E. Blochet, *Les Enluminures des manuscrits orientaux de la Bibliothèque Nationale* (Paris, 1926), pp. 62–64; PARIS 1938, pp. 172–173, n° 109; G. Vajda, *Album de paléographie arabe* (Paris, 1958), pl. 46; PARIS 1972, p. 64, no. 172; M. Lings, *The Quranic Art of Calligraphy and Illumination*, p. 205 and pl. 104–105; LONDON 1976, p. 40, no. 48 and pl. VI; PARIS 1977, p. 118, no. 212 and fig.; Déroche, *Cat.* I/2, pp. 31–32, pl. XIVb. **36** P. Orsatti, 'Le manuscrit islamique: caractéristiques matérielles et typologie', in M. Maniaci and P. F. Munafò (eds.), *Ancient and Medieval Book Materials and Techniques*, vol. II, p. 297. **37** Op. cit., p. 298. A similar observation was mooted in Déroche, *Cat.* I/2, p. 14. On this point there seems to be a similarity of structure with Spanish Hebrew manuscripts; according to M. Beit-Arié, *Hebrew codicology*, p. 43, eight manuscripts copied between 1197 and 1300, mostly in Toledo, were composed of ternions. **38** MSS. Paris BNF arabe 386, 388, 395, 423, 5935; Smith-Lesouëf 194 and 202 **39** MSS. Vatican BAV Vat. arab. 310 and Barb. or. 46, as well as Qur'āns Vat. arab. 210, 211, 212, 213, 215 and Borg. arab. 51 (see Orsatti, op. cit., pp. 297–298). **40** Déroche, *Cat.* I/2, pp. 32–33, no. 298.



22. Quire of parchment: one type of ternion as used in the Maghrib.

Another, much more regular Paris manuscript, BNF arabe 5935, displays the same features.[41] Its only anomaly concerns the final quire, a quinion, in which the arrangement of hair and flesh side nevertheless conforms to Gregory's Law. This peculiarity does not seem to be the result of a later innovation, for it is attested as early as the fourth/tenth century, as seen in Vatican manuscript BAV Vat. arab. 310.[42]

The quinions in the other two manuscripts of the Paris collection, BNF arabe 6090[43] and 6499,[44] both copied in Andalusia, generally respect this rule and usually display double pages in which the same type of sides face one another. This does not mean, however, that the quires were made by the folding method used in the West, as described above. 'Irregularities' suggest that they were not produced by folding (notably the two first bifolia of quire I of BNF arabe 6090 and the beginning of quire XIII (ff. 130–32) of BNF arabe 6499). This would seem to be confirmed by the heterogeneous nature of the bifolia composing a single quire. As was mentioned in the chapter on parchment, the roots of hair remain visible on a number of leaves in MSS. Paris BNF arabe 5395 and 6909: and the erratic distribution of these leaves, together with the impossibility of finding two bifolia made from the same skin, support the theory that the parchment was pre-cut and that the resulting sheets were stacked to form quires, irrespective of the origin of those sheets.[45]

41 Déroche, *Cat.* I/2, pp. 34–35, no. 302 and pl. XIVa. 42 G. Levi della Vida, *Elenco dei manoscritti arabi islamici della Biblioteca Vaticana, Vaticani-Barberiani-Borgiani-Rossiani* [Studi e testi, 67] (Vatican City, 1935), p. 26; Orsatti, op. cit., p. 297. 43 See note 32. 44 See note 33 and below. 45 It is unfortunate that manuscripts on parchment from Kairouan, especially those of a legal nature, have not yet been subjected to codicological study, which might perhaps shed light on any regional characteristics.

Mixed quires

Parchment and paper combinations

Several clues combine to suggest that the resilience of parchment was highly appreciated. In the days when parchment co-existed with papyrus, the craftsmen who made books occasionally combined the two materials in order to reinforce the durability of the papyrus. That period produced the first examples of 'mixed quires' in which the outer bifolium (and sometimes also the middle one) would be of parchment in order to protect the papyrus bifolia.[46] Once paper began to offer serious competition to the two traditional writing materials, two strategies were followed by scribes (and patrons) who wished to ensure the durability of their manuscripts. The first involved deciding which texts should be copied onto parchment, a material that was, in all probability, comparatively more expensive; this privilege was most often accorded to the Qur'ān. The other strategy involved combining paper and parchment, as had previously been done with papyrus. Thus the sturdiness of parchment was exploited where it was most useful, while the lower cost of paper could be enjoyed where the text was least vulnerable. This solution led to mixed quires of paper *and* parchment.

Before we look at two manuscripts in which paper and parchment are used in combination, it should be recalled that one practice described above, that of inserting a 'guard' of parchment between the stitches of the binding and the middle bifolium, was also designed to prevent tearing.[47] An example of this practice in an Islamic manuscript can be seen in MS. Berlin SB Sprenger 517.[48]

Two examples

Mixed quires increased the sturdiness of manuscripts even as they lowered costs, thanks to the use of paper.[49] A remarkable illustration of this approach can be found in MS. Paris BNF arabe 6499, which was written in Andalusia, perhaps Seville, in 562/1166 by the grammarian 'Alī ibn Muḥammad Ibn

46 B. Bischoff, *La paléographie de l'Antiquité romaine et du Moyen Âge occidental* (Paris, 1985), p. 15. 47 R. Reed fleetingly refers to this technique in *Ancient skins, parchments and leathers*, p. 5; an example can be found in V. Scheil, *Deux traités de Philon* [Mémoires publiés par les membres de la mission archéologique française au Caire, IX/2] (Paris, 1893), p. 7. 48 See above and note 9. An older example is MS. Raqqada, Museum of Islamic Art, Rutbī 247, dated 404/1013. 49 As already mentioned, unfortunately we possess no information regarding the actual cost of making manuscripts; it would be useful to know, in particular, whether the impact of the use of paper was significant or marginal in terms of costs. That said, a similar combination of parchment with papyrus is attested from an early date.

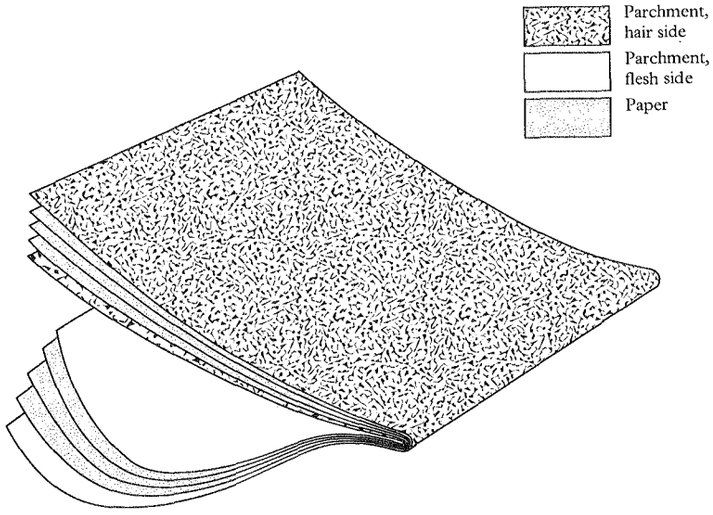
Ḥarūf.[50] It represents one of the earliest attested uses of paper and parchment together, in which the concern for sturdiness took two directions: the three first quires of the manuscript (ff. 1–25), along with the last three (ff. 130–165) are composed of parchment because they are located in the most vulnerable part of the book. The other gatherings are composed of a bifolium of parchment on the outside, with three or four bifolia of paper, on top of which is a last bifolium of parchment (which thus occupies the central position). Thus quires bound between ff. 26 and 129 are protected in two ways: first by the parchment quires of ff. 1–25 and 130–165, then by the two bifolia above and below each group of paper leaves (illus. 23).[51]

Another manuscript containing quires of both parchment and paper is MS. Paris BNF arabe 2547, a compilation of brief texts on astronomy, mostly copied in 980/1572–73 at Damascus.[52] In the nineteenth century, this manuscript was given a Western binding with the monogram of the French king, Louis-Philippe. The quires are primarily quinions, five of them including leaves of parchment combined with leaves of paper that are occasionally tinted. The first of these quires (XII, ff. 92–99) is irregular and incomplete, for it includes two singletons of parchment (ff. 97 and 99) inserted in the second half of the quire in a similar fashion, both rectos showing the hair side. The second quire (XIII, ff. 100–115) includes four leaves of parchment (ff. 104, 106, 109 and 111), namely two bifolia arranged differently (the hair side was used for the recto on f. 104 whereas the flesh side was used for the recto of f. 106). The third quire (XV, ff. 128–134) has been mutilated and includes three leaves of parchment, the first of which is a singleton (f. 128; hair side on recto) whereas the two others form the 'central' bifolium (ff. 133–134), the outermost recto

50 See *FiMMOD* 65; G. Humbert, 'Remarques sur les éditions du *Kitâb* de Sîbawayhi et leur base manuscrite', in K. Versteegh and M. G. Carter (eds.), *Studies in the history of Arabic grammar* [Studies in the history of the language sciences, 56] (Amsterdam/Philadelphia, 1990), vol. II, p. 185. For Hebrew manuscripts, the oldest attested quire of this type dates from 1212 CE. This method was used primarily in the Iberian peninsula, Italy, and the Byzantine Empire (Beit-Arié, op. cit., pp. 37–39). Significant examples of this practice in Spain during the same period can be found in the *Leiden Glossary* (MS. Leiden BRU Or. 231) and the *Silos Glossary* (MS. Paris BNF NAL 1296, dating from the fifth/eleventh century); see van Koningsveld, op. cit., pp. 22–25. J. Vezin has also pointed out another example, a breviary, MS. Silos 6 (E); see I. Fernandez de la Cuesta, 'El "Breviarium gothicum" de Silos', *Hispania sacra* 17 (1964), pp. 393–494. 51 Irregularities exist near the end: quire XI (ff. 106–115) is composed entirely of parchment, while XII has two bifolia of parchment in the central position (ff. 121–124). Mourad Rammah has drawn attention to the use of mixed quires in Kairouan from the early fifth/eleventh century (Raqqada, Museum of Islamic Art, MS. Rutbī 247, dated 404/1013). 52 W. de Slane, *Catalogue des manuscrits arabes*, pp. 457–458. Some of the brief texts were copied slightly earlier: Muḥarram 977/June–July 1569 (f. 183); and Shawwāl 979/February–March 1572 (f. 12). A late use of parchment has been noted in another manuscript (London, N. D. Khalili Collection of Islamic Art, MS. 312), namely a pious text in circular form containing the Most Beautiful Names of Allah, a *Hilye*, etc., produced in an Ottoman milieu, perhaps in the eleventh/seventeenth century - although it does not appear to be a codex (see Rogers, GENEVA 1995, p. 252, no. 178).

showing the flesh side. The fourth of these five quires (XXI, ff. 187–196) is regular, the outer bifolium being of parchment, with the hair side outermost. The final quire (XXIII, ff. 207–216) is composed entirely of parchment, the arrangement of rectos being as follows:

XXIII: H207F H208F F209H F210H H211F/F212H H213F H214F F215H F216H



23. Mixed quire (paper and parchment).

As is readily apparent, the above quiring lacks consistency. Except in quires XXI and perhaps XV (in its original state), parchment was not used as outer protection, and, despite what may appear to be a slight tendency to employ the hair side on the recto, the arrangement seems haphazard. The parchment itself is of very different quality from that in general use in earlier times, which was generally thicker. Where this parchment was made, and whether it was re-used here, remains unknown. Whatever the case, this manuscript does not represent an instance of mixed quires of the type found in MS. Paris BNF arabe 6499, for it is in fact an amalgam. It belongs to the realm of curiosities: the scribe used parchment because it was a rarity (like the tinted papers he also prized), not because he hoped to turn parchment's superior robustness to his advantage. In the absence of further discoveries, BNF arabe 2547 remains one of the last Islamic manuscripts to employ parchment, along with the above-mentioned examples from India.

The quires of manuscripts written on paper [53]

The steady growth in the use of paper for manuscripts did not radically change copyists' working methods. As regards manuscripts written in Arabic script, some of the special features already discussed in terms of parchment quires also recur in paper gatherings, and the descriptive method explained above can easily be applied to the latter.

General comments

The type of quire most commonly encountered in manuscripts on paper is the quinion, but a variety of other forms were also used. Quires composing the manuscripts should be examined carefully. In some cases, the same type of gathering is used consistently from start to finish (which may possibly be evidence of a method peculiar to a given region), while in other cases irregularities may be noted. Such irregularities may occur more than once without this necessarily entailing lacunae, or else they may be occasional, reflecting some mishap or simply fulfilling a specific need. This latter possibility will be discussed first.

Often, quires at the beginning or end of a manuscript are either of a 'rare' type (ternion, binion, or single bifolium) or irregular (an odd number of leaves). Nor was it unusual to add a folio to a quire of paper, or indeed to make a bifolium from two independent leaves, as had already been done with parchment. When no lacuna is found, the irregularity often reflects the decision of a copyist who sought to fulfil the specific requirements of the work in hand or simply to save paper.

Even in manuscripts where the same formula seems to be followed with a certain rigour, it is not unusual to encounter an 'eccentric' quire, such as a quinion among quaternions. Sometimes, different types of quires alternate within the same manuscript. This relatively rare approach has been noted in the *Kashf al-asrār fī sharḥ Uṣūl al-Pazdawī* of 727/1327 (MS. Tashkent IOB 3106[54]), where quaternions and quinions alternate, and in part of MS. Liège BU 5086,[55] from 696/1297, composed of binions and ternions. Although copyists generally tended to stick with a single type of quire – apart from minor

53 In the following section, the data on Persian manuscripts in the Bibliothèque nationale de France was supplied by Francis Richard, as published by F. Déroche and F. Richard, 'Du parchemin au papier: remarques sur quelques manuscrits du Proche-Orient', in Ph. Hoffmann (ed.), *Recherches de codicologie comparée* (Paris, 1998), pp. 192–197. 54 *FiMMOD* 253. Quaternions and quinions also alternate in MS. Paris BNF persan 12 (Richard, *Cat.* I, pp. 39–40). 55 *FiMMOD* 69.

variations dictated by circumstance – there exist manuscripts whose quires seem to eschew all coherence. Examples include MSS. Bologna BU 3147,[56] dated 622/1225, Geneva B. Bodmer 522,[57] perhaps copied at Shiraz in 888/1483, Istanbul Süleymaniye Laleli 803,[58] dated 737/1337, Paris BNF arabe 2947[59] dating from 547/1152, Paris BNF arabe 3841,[60] completed at Mosul in 596/1200, Paris BNF arabe 5923[61] dated 575/1180, and Paris BNF suppl. persan 113,[62] copied in the Crimea in 753/1352.

Making quires of paper

The composition of quires reveals how sheets of paper were used: bifolia were cut to the desired dimension in advance, then gathered, usually in groups of four or five, and folded in half. From as early as the seventh/thirteenth century, certain de luxe manuscripts began to feature tinted papers, so that one pink-tinted bifolium, for example, might be found in a quinion. In the ninth/fifteenth and tenth/sixteenth centuries, leaves of white, tinted, marbled, or decorated paper sometimes alternate. This naturally implied the preliminary cutting of sheets and the *ad hoc* assembly of these bifolia by the copyist. These observations can sometimes be confirmed by examining the direction of the laid-lines. The remnants of paper left over from trimming provided the thin strips traditionally used to keep accounts, to note pharmaceutical formulas, to mark pages, and so on.

Types of quires and their use: historical background

Quinions are by far the most common type of quire found in Arab and Islamic manuscripts: some 70% of manuscripts published up to 2001 in *FiMMOD* are primarily made up of gatherings of ten folios.[63] Quinions seem to have been the rule for Syrian and Soghdian manuscripts of Central Asia at the time of the Muslim conquest. Various other types of quire have been noted, although unequal in frequency. Senions are relatively numerous; some thirteen have been recorded from between the fourth/tenth century (Paris BNF arabe 2457,[64] ff. 1–191, written at Shiraz in 358/969) and the late ninth/fifteenth century (Oxford Bodleian Pococke 270,[65] written at Damascus in 886/1482). These senions originate from very diverse places, when known or established:

56 *FiMMOD* 221. 57 *FiMMOD* 177. 58 *FiMMOD* 137. 59 *FiMMOD* 24. 60 *FiMMOD* 147. 61 *FiMMOD* 29. 62 *FiMMOD* 116. 63 Quinions seem to have been the rule for Syriac and Soghdian manuscripts from Central Asia of the period of the Muslim conquest. 64 *FiMMOD* 12. 65 *FiMMOD* 228.

Samarkand,[66] Shiraz,[67] Damascus,[68] perhaps Iran,[69] Mecca,[70] and Yemen.[71] Nine of the manuscripts date from the sixth/twelfth and seventh/thirteenth centuries.[72]

On occasion, gatherings of a greater number of leaves were used: fourteen folios (in MSS. Geneva B. Bodmer 527[73] and 523[74]) as well as sixteen folios, these octonions appearing in two manuscripts of the sixth/twelfth century[75] as well as in a later one.[76] Finally, it is worth mentioning two other manuscripts in which a total of twenty folios per quire was employed; one is the earliest manuscript copied on paper, MS. Leiden BRU Or. 298 dated 252/866, and the other is Paris BNF arabe 5044, copied at Harran in 450/1058.[77]

Quaternions are relatively common, or at any rate sufficiently numerous to reveal various tendencies. Manuscripts from Iran and the Persian-speaking world, for example, show a preference for this formula. An overview of manuscripts written in Persian[78] – some of which were copied in Asia Minor, India, or Central Asia – reveals a number of noteworthy trends for the period from the seventh/thirteenth to the tenth/sixteenth centuries. In the previous era, quires of eight folios had been used, as demonstrated by several manuscripts from the fifth/eleventh and sixth/twelfth centuries,[79] some of which may have been produced in Iran, MSS. London BL Add. 7214[80] and Berlin SB or. oct.

66 MSS. Tashkent IOB 3907/I, dated 544/1149, and 3102, dated 663/1265 (*FiMMOD* 249 and 247). **67** MS. Paris BNF arabe 1499 (*FiMMOD* 12). **68** MS. Oxford Bodleian Pococke 270 (*FiMMOD* 228). **69** MS. Vatican BAV Vat. arab. 1023, dated 565/1170 (*FiMMOD* 87), to which should be added two Persian manuscripts, Paris BNF persan 139 and BNF suppl. persan 1793, to be discussed below. **70** MS. Istanbul Süleymaniye Şehit Ali Paşa 1876, completed in 808/1406 (*FiMMOD* 138). **71** MSS. Vatican BAV Vat. arab. 1071, dated 537/1143, Vat. arab. 1025, dated 611/1214, and Vat. arab. 1026, dated 625/1228 (*FiMMOD* 88, 83 and 81). **72** To these should be added four manuscripts of unknown geographical origin, one of which dates from the fifth/eleventh century: Leiden, BRU Or. 704, dated 404/1014. Also Paris BNF arabe 3958, dated 533/1138, Berlin SB Sprenger 432, dated 536/1142, and Bologna BU 3014, dated 663/1265 (*FiMMOD* 213, 22, 190 and 220). Not included, however, is the special case of the *juz'* or monobibles in the miscellany MS. Paris BNF suppl. turc 986 (see above and, on the question of dating, Vajda, op. cit.) nor the manuscript mentioned by van Koningsveld; see note 7 above. **73** Copied in 661/1262, perhaps in Konya (*FiMMOD* 174). **74** Copied in 889/1484, perhaps at Shiraz (*FiMMOD* 178). **75** MSS. Tashkent IOB 3156, dated 536/1141, and Vatican BAV Vat. arab. 1165, copied in the Yemen in 564/1168 (*FiMMOD* 248 and 90). **76** MS. Paris BNF arabe 646, Jabal Ašbatan (Maghrib) 877/1473 (*FiMMOD* 197 and 198). **77** *FiMMOD* 217 and 15, respectively. **78** The overview in question concerns the 389 items in the *ancien fonds* (old collection) of Persian manuscripts at the Bibliothèque Nationale de France (see Richard, *Cat.* I) together with a few manuscripts from the *Supplément persan* collection (Déroche and Richard, op. cit.). **79** Quaternions have been noted in the following manuscripts described in *FiMMOD* (their numbers therein being cited first). From the fifth/eleventh century: *FiMMOD* 144 (MS. Istanbul TKS HS 89, copied in 412/1021) and 189 (MS. Berlin SB or.oct. 2676 dated 438/1047). From the sixth/twelfth century: *FiMMOD* 186 (MS. Berlin SB Sprenger 1184, dated 501/1108), 8 (MS. Paris BNF arabe 709, ff. 1–271, dated 522/1128), 187 (MS. Berlin SB Glaser 101, perhaps copied in Yemen in 544/1150), 52 (MS. Paris BNF arabe 6019, dated 569/1174), 103 (MS. Paris, BNF arabe 1246, dated 580/1184) and 56 (MS. Paris BNF arabe 5883, ff. 3–117 and 128–157, dated 592/1196). **80** Copied in 427/1036 (*FiMMOD* 163).

3538 being examples.[81] Quinions and quaternions are both present in a group of sixteen manuscripts dated or datable to the latter half of the seventh/thirteenth century, without the choice of one type or the other being explained by the format of the manuscript. Ten manuscripts employ quaternions,[82] five have quinions,[83] and one uses ternions[84]; furthermore, two older manuscripts (one from the sixth/twelfth century,[85] the other from the early seventh/thirteenth century[86]) are also composed of quaternions. Quires of this kind are also found in several Arabic manuscripts produced in Anatolia, Iran, and Central Asia.[87]

Twenty-two eighth/fourteenth century Persian manuscripts out of thirty in the collection of the Bibliothèque nationale de France are composed of quaternions.[88] Their provenances are highly diverse: Shiraz,[89] Andakan near Ferghana,[90] Samarkand,[91] Konya,[92] the Crimea,[93] and India.[94] The same goes for manuscripts partly or wholly comprising quinions, which come from places such as Hamadān,[95] Damascus,[96] Kirmān and Kamākh.[97] So it would seem that both types of quire, quaternion and quinion, existed side by side in the Persian-speaking Islamic world. Among Arabic manuscripts of the same period, on the other hand, quires of eight folios are comparatively rare in the sample provided by *FiMMOD* – of five examples, one alone comes from Bukhara (MS. Tashkent IOB 3109/I).[98]

In the ninth/fifteenth century, quaternions predominate among a sample of eighty manuscripts,[99] being used in forty-six of them, some of whose

81 *FiMMOD* 191, ff. 1–71, dated 488/1095. **82** MSS. Paris BNF persan 75, 82, 87, 121, 133, 136, 380, 384–IV (Richard, *Cat.* I, passim), plus MSS. BNF suppl. persan 415, 1108 and 1771. In MS. BNF persan 12, quaternions and quinions alternate (Richard, *Cat.* I, pp. 39–40). **83** MSS. Paris BNF persan 51, 148, 163, 375, 376 (Richard, *Cat.* I, pp. 84, 168, 179–180, 377–380). **84** MS. Paris BNF persan 174, copied in Asia Minor (Aksaray and Kayseri; Richard, *Cat.* I, pp. 191–195). **85** MS. Paris BNF suppl. persan 1740, geographical origin unknown, datable to the twelfth century. **86** MS. Paris BNF suppl. persan 1610, copied in Azerbaijan. **87** Of eleven Arabic manuscripts in *FiMMOD*, the geographical origin of four has been established, two with certainty (MSS. Paris BNF arabe 1696, from Kırşehir, and Tashkent IOB 3105, copied at Bukhara; *FiMMOD* 45 and 250), two by deduction (MSS. Paris BNF arabe 3280, perhaps transcribed in Anatolia, and Vatican BAV Sbath 266, copied in Iran; *FiMMOD* 142 and 79). **88** Twenty-six manuscripts from the *ancien fonds* (Richard, *Cat.* I, passim) and MSS. suppl. persan 69 (*FiMMOD* 158), 120, 1120, 1433, 1564 and 1794. **89** MS. Paris BNF persan 377 (Richard, *Cat.* I, pp. 380–382). **90** MS. Paris BNF persan 69 (*FiMMOD* 158). **91** MS. Paris BNF persan 126 (Richard, *Cat.* I, pp. 141–142). **92** MS. Paris BNF persan 1794. **93** MS. Paris BNF persan 3 (Richard, *Cat.* I, pp. 29–30; *FiMMOD* 169). **94** MS. Paris BNF persan 36 (Richard, *Cat.* I, p. 62). **95** MS. Paris BNF persan 173 (Richard, *Cat.* I, pp. 190–191). **96** MS. Paris BNF persan 286 (Richard, *Cat.* I, pp. 299-300). **97** MS. Paris BNF persan 147 (Richard, *Cat.* I, p. 167). **98** *FiMMOD* 255. The other manuscripts described in *FiMMOD* are 161 (Paris BNF arabe 6796, copied in the Yemen in 726/1326), 160 (Paris BNF arabe 6791, dated 727/1327), 108 (Istanbul Süleymaniye Bağdatlı Vehbi 1383, dated 742/1341) and 230 (Oxford Bodleian Arab. d. 19, copied at Damascus in 743/1342). **99** Fifty-eight manuscripts from Paris BNF *ancien fonds* (Richard, *Cat.* I, passim); also suppl. persan 68, 124, 335, 519, 582, 663, 727, 742, 1102, 1115, 1380, 1393, 1394, 1395, 1407, 1448, 1470, 1776, 1793, 1811, 1825 and 1833.

geographical origins have been identified (Herat,[100] Shiraz,[101] Isfahan,[102] Tabriz,[103] Derbend,[104] Aleppo,[105] Istanbul,[106] and Asia Minor or the Ottoman Empire[107]). In twenty-one instances, quinions were used, including manuscripts originating from Bursa,[108] Abarqūh,[109] Konya,[110] and Asia Minor.[111] In some manuscripts, quinions and quaternions alternate.[112] Finally, rarer forms exist, such as ternions (four examples, including one from Herat[113] and another from Shiraz[114]) and senions (two examples).[115] As for Arabic manuscripts, the sample represented by *FiMMOD* gives the same impression of the rarity of quaternions. Only two manuscripts can be cited: one produced at Ṣūfi-ābād,[116] the other perhaps in Mecca.[117]

Over one hundred manuscripts in the sample date from the tenth/sixteenth century. In Iran itself, the type of quire generally used during this period was the quaternion, or sometimes, in a small number of manuscripts with paintings, the ternion.[118] By contrast, in the Ottoman Empire quaternions and quinions co-existed, the former apparently being preferred for manuscripts based on Iranian models. These trends intensified in the following century, with quaternions dominating almost exclusively in the Iranian world and India, where only very rare exceptions can be found, while in the Ottoman Empire quinions won out – only a few eastern outposts of the empire ignored this rule.

Manuscripts from West Africa[119]

Manuscripts originating from West Africa – where they continued to be produced into the early twentieth century – often take the form of separate single leaves. When quires or bifolia do appear, they bear no trace of stitching.[120] In instances where a watermark makes it possible to reconstitute

100 MS. Paris BNF persan 357 (Richard, *Cat.* I, pp. 360–361). 101 MS. Paris BNF suppl. persan 1833. 102 MS. Paris BNF suppl. persan 519. 103 MSS. Paris BNF persan 310 (Richard, *Cat.* I, p. 315) and BNF suppl. persan 68. 104 MS. Paris BNF persan 41 (Richard, *Cat.* I, p. 75). 105 MS. Paris BNF persan 280 (Richard, *Cat.* I, pp. 290–291). 106 MS. Paris BNF suppl. persan 1380. 107 MSS. Paris BNF persan 50 and 220–I (Richard, *Cat.* I, pp. 83–84 and 228–229) and BNF suppl. persan 1394. 108 MS. Paris BNF persan 266 (Richard, *Cat.* I, p. 277) and BNF suppl. persan 335. 109 MS. Paris BNF persan 71 (Richard, *Cat.* I, pp. 99–100). 110 MS. Paris BNF persan 138 (Richard, *Cat.* I, p. 160). 111 MSS. Paris BNF persan 47, 86, 156, 191, 260 (Richard, *Cat.* I, pp. 81–82, 111–112, 174, 207–208, and 271–272) and BNF suppl. persan 124, 1395 and 1470. 112 MSS. Paris BNF persan 13, 256 and 349 (Richard, *Cat.* I, pp. 40–41, 267–268 and 349–351); also persan 145, produced at Shamakhā (Shemakhi) in the Caucasus. 113 MS. Paris BNF suppl. persan 1776. 114 MS. Paris BNF suppl. persan 271 (Richard, *Cat.* I, pp. 281-282); the other two are Paris BNF persan 259 and 162 (Richard, *Cat.* I, pp. 270–271 and 178–179). 115 MSS. Paris BNF persan 139 (Richard, *Cat.* I, pp. 160–161) and BNF suppl. persan 1793. 116 MS. Paris BNF arabe 6967 (*FiMMOD* 167). 117 MS. Istanbul Süleymaniye Şehit Ali 1876 (*FiMMOD* 138). 118 For example, MSS. Paris BNF suppl. persan 1328 and 1513. 119 The information in the following paragraph was supplied by Marie-Geneviève Guesdon. 120 MS. Paris BNF arabe 7226 is composed of quires of ten folios, relatively well preserved.

bifolia that have fallen apart through wear or folding, it has been found that a wide variety of quire formats was used, ranging from two to twelve folios per quire, with a relatively high incidence of four and eight leaves.[121] Some manuscripts are composed of bifolia produced by folding a single sheet in four.[122] In one Paris manuscript (BNF arabe 7219), folding yields both bifolia and quires of four folios.[123]

We cannot, however, exclude the possibility that copyists used individual leaves: MS. Paris BNF arabe 7141 includes quires of seven folios (three bifolia with a singleton in the middle[124]), while BNF arabe 7149 is composed of quinions in which one of the middle leaves was clearly copied after having been cut (the three crescents in the watermark point upward in f. 158, downward in f. 159). Nothing in the writing suggests that this was a case of restoration. It would therefore seem that the making of manuscripts in Sudan entailed specific features not found in the central Islamic world.

Systems to indicate the order of folios[125]

Arabic manuscripts often include foliation – that is to say, the numbering of each folio – on the recto. Such foliation, however, was not usually written by the original scribe but added at a later point in the history of the manuscript. Although foliation appears to us today to be the simplest method of indicating the order of folios, it only emerged relatively late on. Occasionally, a manuscript will be found to have been paginated like a printed book; this was sometimes sometimes done by a European collector. A book was regarded primarily as a series not of leaves but of quires composed of stacked and folded leaves. The earliest marks indicating order provided information on the ordering of quires, then on the order of folios within those quires.

121 MSS. Paris BNF arabe 7151 (1129/1717): (10–1), 8, 8, 4, 8, 10, 8.... BNF arabe 7137 (1215/1800): 10, 10, 12, 8, 4, 2, 2, 12, 8, 8.... BNF arabe 7137 (after 1792): most quires are of four folios. BNF arabe 7219 (after 1815): bifolia and quires of 4 folios. 122 See A. Brockett, 'Aspects of the physical transmission of the Qur'an in 19th-century Sudan: script, decoration, binding and paper', *MME* 4 (1989), p. 48, concerning MS. Leeds Arabic 301. 123 A non-parallel fold on the edges of two successive bifolia of MS. Paris BNF arabe 7219 (ff. 13–16) suggests that they were made from the same folded sheet. Folios 17, 18 and 19 of this manuscript remained attached, and when unfolded originally formed a single sheet that lacked its upper right quarter. Although they are no longer attached as a single piece, owing to wear, this unity shows that the manuscript was copied onto an uncut sheet. 124 Found in section ff. 341–360, dated 1249/1833. The dated section of this manuscript also includes quires of eight folios, now independent. However, two singletons in two different quires (for example ff. 125–132) display horizontal laid-lines, unlike the rest of the manuscript, and cannot be reconstituted as a bifolium. 125 This section was written by Marie-Geneviève Guesdon.

Several types of mark exist: the numbering of quires, sometimes accompanied by the numbering of leaves within the quire; foliation; catchwords or their variant, the repeated word; or a symbol indicating the middle of a quire.

Practices differed between the Maghrib and the Near East, and between the Islamic milieus and certain Christian circles within the Near East itself.

Studies of such marks have been undertaken on limited samples of dated manuscripts. Although the geographical origin of those manuscripts has rarely been established, most of them belong to the Bibliothèque nationale de France, which holds manuscripts from a wide variety of provenances.[126] Other research has focused on homogeneous groups, but has so far been confined to Christian manuscripts from Egypt (specifically from Sinai[127] and the monastery of St. Macarius[128]). As regards the Maghrib, Paola Orsatti has conducted a codicological examination of the manuscripts in the Vatican Library.[129]

Studying such marks presents a serious difficulty. If a quire number is spelled out, it is possible to determine, with minimal risk of error, whether the hand is the same as that of the scribe or annotator, or belongs to some other person; but when only a number or letter is used, it is harder to be certain. A few clues are nevertheless provided by the colour of the ink, the thickness of strokes, and the type of figures used.

Numbering quires

The symbols used to number quires are sometimes called 'signatures.' One must distinguish between 'leaf signatures', which indicate the order of leaves within a quire, and 'quire signatures', which indicate the binding order of a series of gatherings.

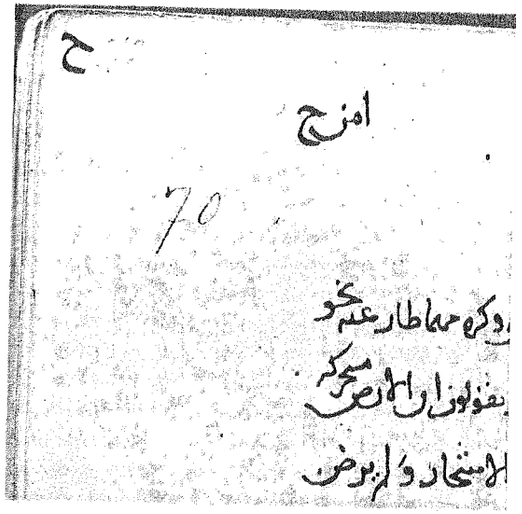
Several rules concerning the numbering of quires have been established. For instance, Qur'āns copied onto parchment in early scripts never include quire numbers.[130] In manuscripts that are not specifically Christian, the quire number is always found on the recto of the first folio of the quire, in the upper margin (illus. 24). As with every rule, however, exceptions exist. In a Berlin manuscript, for instance (SB Or. oct. 3162,[131] copied in 464/1071), the quire signature appears in the middle of the gathering. In another, undated, manuscript, the number is placed at the start of the quire, in the top, outer corner, as well as at the end, in the bottom, inner corner.[132] At an earlier date,

126 M.-G. Guesdon, 'Les réclames dans les manuscrits arabes datés antérieurs à 1450', *Scribes*, pp. 66–75. **127** J. Grand'Henry, 'Les signatures dans les manuscrits arabes chrétiens du Sinaï: un premier sondage', in Hoffmann (ed.), *Recherches de codicologie comparée*, pp. 199–204. **128** U. Zanetti, 'Les manuscrits de Saint-Macaire: observations codicologiques', Hoffmann (ed.), op. cit., pp. 171–182. **129** Orsatti, op. cit. **130** François Déroche has not found a single example in the Paris collection; see *Cat.* I/1. **131** *FiMMOD* 188. **132** Manuscript sold at the Drouot sale rooms, Paris, June 7, 1999, lot H.

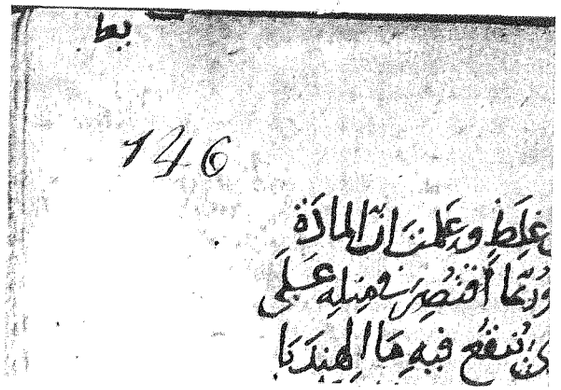
the top, inner corner, near the stitching, seems to have been used, as witnessed in manuscripts dating from between 324/936 and 582/1186.[133] In still other manuscripts, dated between 528/1134 and 695/1295, the quire number occupies various positions in the upper margin.[134] There is also one instance (Paris BNF arabe 2458, dated 539/1144) in which the number is in the middle. Starting in the fifth/eleventh century, quires were numbered in the outer corner of the upper margin, a position that became the norm by the second half of the sixth/twelfth century and was subsequently almost the only one used, despite a few exceptions, from the seventh/thirteenth century onwards. Early quire numbers used the *abjad* system, which assigns numerical values to the Arabic letters (see chart on page 96); this type of numbering was employed until the late sixth/twelfth century[135] (illus. 25). By the second half of the fifth/eleventh century, however, numbers were beginning to be spelled out, and that soon became the most common method (illus. 26). The numbers were given in ordinal form – *al-awwal, al-thānī*, etc. – sometimes accompanied by the noun they implicitly qualify *al-kurrās* (quire).[136] Copyists sought to vary presentation and provide some originality, especially in the eighth/fourteenth century, by using red ink, overlining, and small characters. Numerals seem to have been used in a purely occasional manner in the fifth/eleventh and sixth/twelfth centuries; they then appear regularly, if not very frequently, in the seventh/thirteenth century (illus. 27). Like *abjad* letters, they were often overlined, and might be written in red ink. It should be noted that the *abjad* system and numerals appeared more frequently in scientific texts than in religious ones.

The number of the quire usually appears alone, but in several manuscripts produced between 544/1149 and 691/1292, it is accompanied by the number of the bifolium within the quire, also placed in the top outer corner of the recto (illus. 24). Sometimes the number of the volume, or the name of the title or author of the work, might also be added.[137] When quire numbers were spelled out, they might be written horizontally (illus. 26), diagonally downward or, more rarely, diagonally upward (illus. 28), sometimes following a virtual line from the corner of the written text to the corner of the leaf. Numbering thus became an artistic feature of the page. In at least one case (Paris BNF arabe 820, dated 617/1221[138]), the quire number is written vertically.

133 See, for example, MSS. Paris BNF arabe 5902, dated 325/937, and 2882, written in 582/1186 (FiMMOD 9 and 61). **134** MSS. Paris BNF arabe 4247, dated 5[2]8/1134 (*FiMMOD* 20) and 6880, ff. 101–133. **135** See MS. Paris BNF arabe 5976 (*FiMMOD* 172). **136** The word *juz'* is used in the Drouot manuscript mentioned above (sale of June 7, 1999, lot H), as well as in MS. Paris BNF arabe 3481 (see *FiMMOD* 147). One undated, sixteenth-century manuscript (Paris BNF arabe 1648) reads *al-QRD*. **137** For example, the title appears in MSS. Vatican BAV Vat. arab. 372 and Paris BNF arabe 4088 (*FiMMOD* 43 and 226); elsewhere, the quire number is followed by *juz'* (MS. Paris BNF arabe 3291; *FiMMOD* 54) or volume number (BNF arabe 6883; *FiMMOD* 260). **138** Vajda and Sauvan, *Cat.* II, p. 159; *FiMMOD* 97.



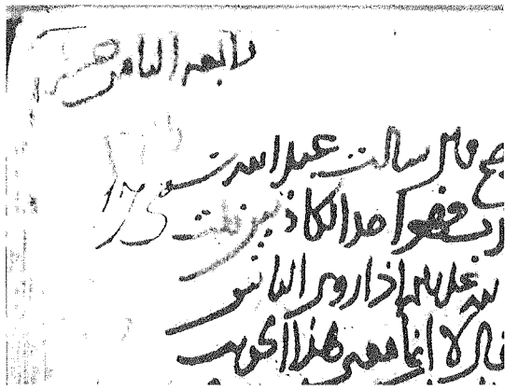
24. Quire numbering in *abjad* (right) together with numbering of the bifolium within the quire in *abjad* (left). Text copied in 554/1159. Paris, BNF arabe 6080, f. 70 (detail).



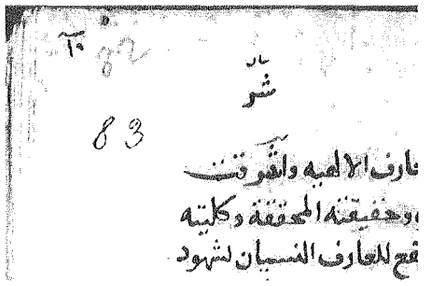
25. Quire number in *abjad*. Text copied in 522/1128. Paris, BNF arabe 2903, f. 146 (detail).

The numbering of quires seems to have been less common in the Maghrib than elsewhere. Orsatti, who studied thirty-seven non-Qur'ānic manuscripts in *Maghribī* script at the Vatican Library, found quire numbers in only one of them, an undated manuscript produced in the ninth/fifteenth century; the numbers are given in *abjad* form.[139]

139 Orsatti, op. cit.



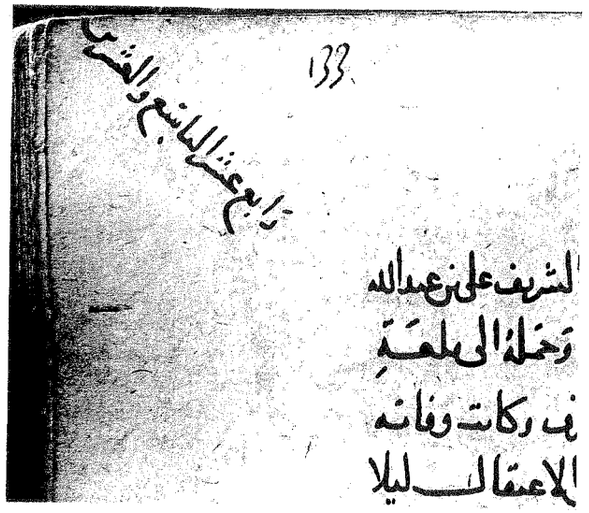
26. Quire number written out in words. Text copied in 547/1153. Paris, BNF arabe 709, f. 175 (detail).



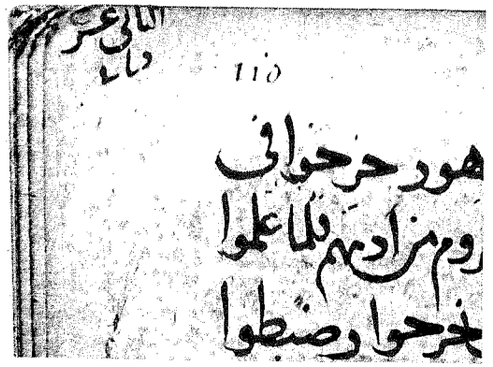
27. Quire number written in numerals. Text copied in 890/1485. Paris, BNF arabe 1903, f. 83 (detail).

Whatever their content, manuscripts produced by the Christian community sometimes – though not always – display special features from the standpoint of numbering. In the Arabic collection of the Bibliothèque Nationale de France, many manuscripts have the quire numbers spelled out in Arabic letters, accompanied by foliation in Coptic numerals, both being placed at the top outer corner of the first verso of the quire. Occasionally, though much more rarely, a manuscript will have only folio numbers in Coptic numerals, or only quire numbers in Coptic numerals, or both folio and quire numbers in Coptic numerals.

Quire numbering has been systematically studied in two groups of manuscripts produced in Egypt, one from the Sinai and the other from the monastery of St. Macarius. Jacques Grand'Henry has studied this feature in the Sinai manuscripts, copied over a period extending from the ninth to eighteenth centuries. Most have the quire numbers written in Arabic letters and Coptic numerals (illus. 29). Some of the earliest manuscripts have Coptic numerals only, whereas some of the most recent have Arabic lettering only.



28. Quire number in words, written diagonally. Text copied in 726/1326. Paris, BNF arabe 1579, f. 133 (detail).



29. Quire number in words with foliation in Coptic numerals. Copied in Egypt in year of the martyrs 1057/1341 CE. Paris, BNF arabe 1906, f. 110 (detail).

The numbers are sometimes found only at the beginning of quires, but often at the end as well. In the first instance, numbers are placed at the top left of the first recto; in the latter instance, at the lower left of the last verso.

Ugo Zanetti's study of manuscripts at the Egyptian monastery of St. Macarius included Arabic, Coptic and Coptic-Arabic texts. Manuscripts written solely in Arabic spell out quire numbers in the upper left corner of the first recto, which also contains foliation in Coptic numerals. Although this group includes a few special cases, in general the St. Macarius manuscripts display the features found in Christian manuscripts with Coptic numerals held by the Bibliothèque Nationale de France.

Arabic manuscripts which use Coptic numerals employ a different system from the one generally used in manuscripts written in the Coptic language itself. Such manuscripts, like bilingual Coptic-Arabic manuscripts, bear quire numbers on the first and last page of gatherings, in the lower margin.

Quire numbers indicated in Syriac letter-numerals can also be found in Christian Arabic manuscripts. They are used in the same way as Syriac manuscripts, where they are displayed in the middle of the lower margin of the first and last pages of each quire, occasionally ornamented. In the case of Christian Arabic manuscripts, however, the numbers are not placed at the centre but in the inner corner of the lower margin of the first and last leaves of the quire.

In one Christian manuscript (Paris BNF arabe 269), the quires are numbered in Greek numerals, placed in the top outer corner of the first folio of the quire. This manuscript contains the *Story of Barlaam and Josaphat*, copied in the year 6729 of the Adamic era (1221 CE), probably in Syria[140]; the same practice recurs in a Strasbourg manuscript (BNU 4226[141]), dating from 272/886. Note also that in Christian manuscripts the end of the quires is often indicated by a *qūbila*, or collation mark (illus. 158).

One volume of Avicenna's *Canon of Medicine* (Paris BNF arabe 2906[142]) includes quire numbers and foliation in Hebrew characters. Copied in 524/1130, it displays simultaneously two ways of ordering leaves in Hebrew letters with numerical values: quire numbers appear in the lower left of the five first leaves of a quire, while folio numbers are placed in the upper left. This method does not resemble the quire numbering systems usually employed in Hebrew manuscripts.[143]

Foliation[144]

Original foliation in the hand of the copyist rarely appears in the earliest manuscripts. It is nevertheless found, in *abjad* form, in a manuscript containing mathematical treatises, dated 358/969 (Paris BNF arabe 2457[145]). The foliation marks are found in the same place as the quire numbers, which usually means the upper left corner of the rectos. In another notable case, from the eighth/fourteenth century, the Oriental *abjad* numerals of the foliation follow a line rising from the upper left corner of the written text to the corner of the page, as is sometimes seen when quire numbers are spelled out.[146]

140 G. Troupeau, *Catalogue des manuscrits arabes. I^e partie: manuscrits chrétiens* (Paris, 1972), vol. I, pp. 237–238. **141** *FiMMOD* 278. **142** *FiMMOD* 211. **143** M. Beit-Arié, 'Les procédés qui garantissent l'ordre des cahiers, des bifeuillets et des feuillets dans les codices hébreux', in Hoffmann (ed.), *Recherches de codicologie comparée*, pp. 137–151. **144** 'Foliation' is defined in the *Shorter Oxford English Dictionary* as 'the consecutive numbering of the leaves in a book or manuscript.' **145** *FiMMOD* 13. **146** MS. Paris BNF arabe 1970.

NUMERICAL VALUES OF ARABIC LETTERS (*ABJAD*)

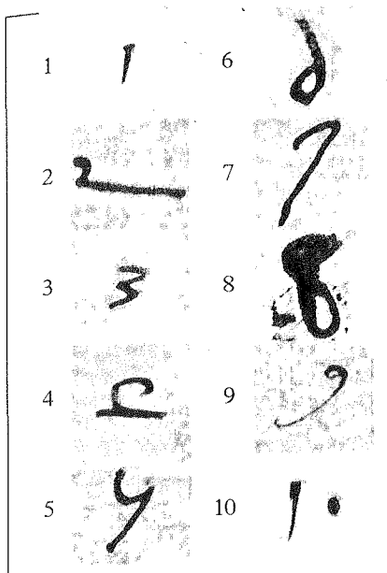
East	Maghrib		East	Maghrib	
1	1	ا	800	90	ض
2	2	ب	9	9	ط
400	400	ت	900	800	ظ
500	500	ث	70	70	ع
3	3	ج	1000	900	غ
8	8	ح	80	80	ف
600	600	خ	100	100	ق
4	4	د	20	20	ك
700	700	ذ	30	30	ل
200	200	ر	40	40	م
7	7	ز	50	50	ن
60	300	س	5	5	ه
300	1000	ش	6	6	و
90	60	ص	10	10	ي

In the mid-ninth/fifteenth century, quire numbers were still the most common way of indicating the order of leaves; foliation remained very rare in Islamic manuscripts from the Near East. Apparently it did not become widespread until the tenth/sixteenth century, although no systematic study of this question has yet been undertaken.

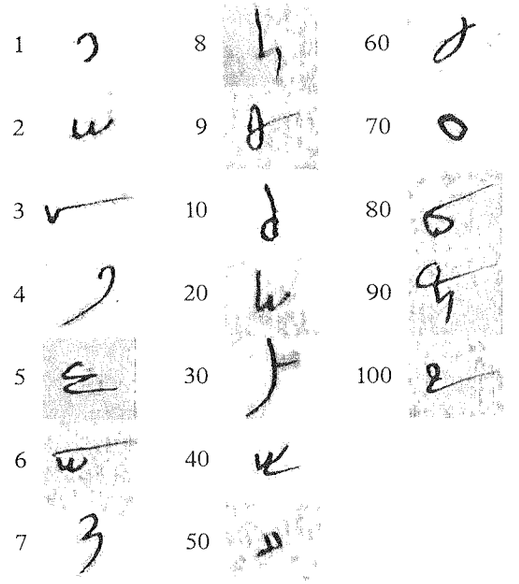
In Christian manuscripts, foliation using Coptic numerals in the top outer corner of the leaves – usually accompanied by quire numbers, spelled out – occurred earlier and more frequently. From time to time, only bifolia are numbered. Zanetti noted numerous instances of this in three thirteenth-century manuscripts at St. Macarius; another example of this method is to be found in a Paris manuscript (BNF arabe 68, dated 1339).[147]

In Maghribī manuscripts too, foliation appeared relatively late on the scene, although a few cases have been noted from the eighth/fourteenth century. Two series of numerals are used: *ghubār* numerals (illus. 30) and *rūmī* numerals (illus. 31). Useful documentation on this subject, although based on notarial documents and papers of a private nature rather than manuscripts, has been published by Ana Labarta and Carmen Barcelo.[148]

147 Troupeau, op. cit., pp. 45–48. 148 A. Labarta and C. Barcelo, *Números y cifras en los documentos arábigohispanos* (Cordoba, 1988). A more general presentation of numerals used in the Arab world can be found in R. Lemay, s.v. 'Arabic numerals', *Dictionary of the Middle Ages* (1982), vol. I, pp. 382–398.



30. *Ghubār* numerals. Text copied at Barcelona in 562/1166. Paris, BNF arabe 2960 (details).

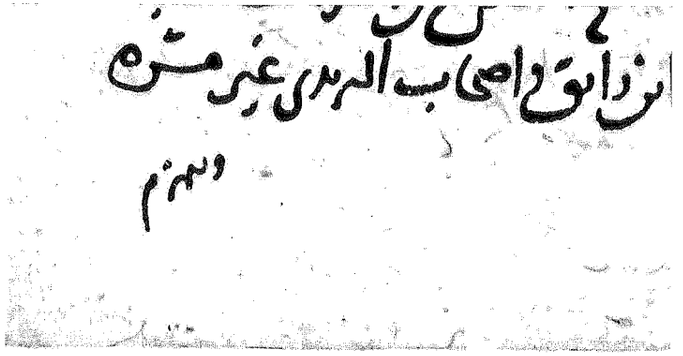


31. *Rūmī* numerals. Text copied in 522/1128. Paris, BNF arabe 2903 (details).

Catchwords

The catchword is a word (or phrase) written at the bottom of a page that repeats the first word(s) or phrase(s) of the following page. In Arabic, it is usually called *ta'qīb* or *ta'qība*,[149] although other terms are sometimes used: *ka'b*[150] ('stub'), *waṣla*[151] ('link'), or even *raqqāṣ*[152] ('dancer'). The catchword is usually placed below the bottom line of the text, often written at a diagonal that almost always angles downward (illus. 32). In a few manuscripts from the late eighth/fourteenth century, the catchwords run diagonally upward. A catchword might also be written horizontally, quite close to the last line of text, itself slightly raised to leave a space for the catchword within the frame of the written area. Horizontal catchwords close to the line of text seem to have been favoured by Maghribī copyists, at least until the late ninth/fifteenth century.

149 Gacek, *AMT*, p. 100, gives only the second form, *ta'qība*. 150 Gacek, *AMT*, p. 126, does not attribute the meaning of 'catchword' to this term. 151 Gacek, *AMT*, p. 151. 152 Gacek, *AMT*, p. 57.



32. Catchword. Text copied in Syria in 756/1355. Paris, BNF arabe 1584, f. 128v° (detail).

Catchwords were not usually subjected to special decorative treatment or ornamentation in Arabic manuscripts, except in rare cases in which they were overlined or accompanied by an inverted comma in red ink.

In some manuscripts that do not have catchwords, the last word of the preceding verso is repeated on the following recto (a system sometimes called 'repeated words'), as notably found in Maghribī codices of the eighth/fourteenth century.[153]

The initial role of catchwords seems to have been to guarantee the correct order of the quires, and they are usually found on the last folio of each quire or, more rarely, on the first and last folios, or even on the middle bifolium and last folio. In manuscripts from the Maghrib, this type of distribution of catchwords first appears during the second half of the ninth/fifteenth century. A catchword might also indicate not only the order of quires but also that of the leaves within a quire. Catchwords are therefore found in the first half of a quire as well as on its last folio. In a quinion, for example, that would mean ff. 1 to 5 and 10, or perhaps ff. 1 to 4 and 10; in this latter case, the copyist perhaps felt either that the middle bifolium needed no catchword since it was inserted between the verso and recto that followed, or else that the absence of any mark was itself sufficient identification. Also, in a few isolated cases, sometimes only ff. 1 to 4, or even ff. 5 to 10, were given catchwords. The most common method, which became more widespread as time went on, involved writing a catchword on every folio.

In Christian manuscripts, where catchwords remained rare even though they appeared as early as the first half of the thirteenth century, such internal-quire systems are only encountered occasionally. As for the Sinai manuscripts, catchwords appeared in the late fourteenth century, and in one manuscript dated 1479 they are placed at the end of the quires.[154]

153 In French, Muzerelle calls this practice *contre-réclame*; see *Vocabulaire*, p. 113. Beit-Arié, in *Hebrew codicology* (Paris, 1976), p. 51, uses the term 'repeated words' when describing this same system. **154** Grand'Henry, op. cit., p. 201.

Catchwords appeared in Maghribī manuscripts in the second half of the eighth/fourteenth century, and were generally written horizontally, although in the tenth/sixteenth century writing a diagonal catchword on every folio became the rule.

Catchwords were rare in non-Christian Near Eastern manuscripts until the second half of the seventh/thirteenth century. No example prior to the beginning of that century had been noted as of 1997, but since then two examples copied in the latter half of the sixth/twelfth century have turned up,[155] to which may be added – if it transpires that the catchwords are indeed in the hand of the copyist – a manuscript produced in 536/1142[156] and another, even older, dating from 404/1014.[157] By the second half of the seventh/thirteenth century, catchwords were relatively frequent, and in the first quarter of the eighth/fourteenth century over half the manuscripts studied employ them. In the ninth/fifteenth century, a catchword on every folio became the most common system, whereas those affecting only one part of the quire became increasingly rare.

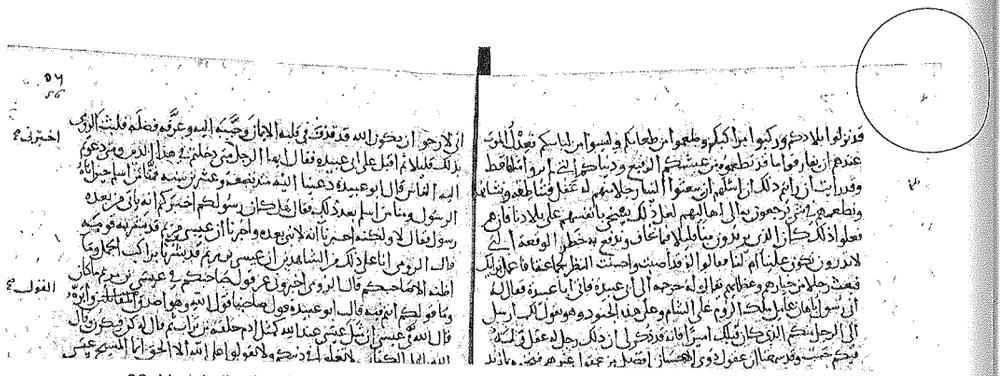
The development of catchwords in Arabic manuscripts apparently parallels that of Persian manuscripts, where they began to appear in the eighth/fourteenth century and became widespread in the tenth/sixteenth.[158]

Mid-quire notation

Position and use

On opening the central bifolium of certain manuscripts, sometimes one finds notations placed in the top outer corner of the right-hand leaf, as well as in the bottom outer corner of the left-hand leaf (illus. 33). This diagonal pattern also occurs in the opposite direction: bottom outer corner on the right and top outer corner on the left. Sometimes, only one of these notations is found. In all instances, they are found only in the middle of the quire, and were probably designed to indicate its proper place to the binder. They seem to have been used above all from the late fifth/eleventh century to the middle of the eighth/fourteenth. After a period when they apparently fell into disuse, binders began to use them again, although at a much later date, since they are found in manuscripts dating from the eighteenth century, written in a hand that is probably not the copyist's and is usually in pale grey ink.

155 MSS. Paris BNF arabe 6042 and 6440 (*FiMMOD* 57 and 171). **156** MS. Berlin SB Sprenger 432 (*FiMMOD* 190). **157** MS. Leiden BRU Or. 704 (*FiMMOD* 213). **158** Richard and Déroche, op. cit., pp. 195–196.



33. Mark indicating the centre of a quire (circled). Text copied at Jerusalem in 613/1217. Paris, BNF arabe 664, f. 55v°-56.

Types of mark

Mid-quire notation could take various forms:

The *rūmī* numeral 5.

This form appears in the earliest examples of the practice, such as MSS. Paris BNF arabe 6095,[159] dated 472/1079–80 (though the notations are not in the copyist's hand) and BNF arabe 4007,[160] a Maghribī copy dating from 502/1109 (with notations in the copyist's hand). The mark is usually found in the top outer corner of the right leaf of the open middle bifolium, as well as in the bottom outer corner of the left leaf of that bifolium. It sometimes happens, however, that only one of these figures appears. In 1619, the Maghribī binder al-Sufyānī advised his colleagues to write a *ghubārī* 5 in the middle of each quire.[161] This form of numeral in fact features regularly in Maghribī manuscripts now preserved at the Bibliothèque nationale de France, starting in the early sixth/twelfth century and continuing into the eleventh/seventeenth or twelfth/eighteenth century (as found in MSS. Paris BNF arabe 689[162] and 1525[163]). In the Near East, on the other hand, from the eighth/fourteenth century onward the notation disappeared from manuscripts.

• Dashes.

This type of notation is found, for instance, in MS. Paris BNF arabe 1498, dated 628/1268.[164]

159 *FiMMOD* 16. 160 *FiMMOD* 18. 161 Abou al-'Abbas Ahmed ben Mohammed Es-Sofiani, *Art de la reliure et de la dorure*, ed. P. Ricard (Paris, 1925), p. 9. The meaning of this passage is misconstrued in M. Levey, *Medieval Arabic bookmaking and its relation to early chemistry and pharmacology*, p. 52. 162 Vajda and Sauvan, *Cat.* 2, pp. 69–70. 163 Sauvan and Balty-Guesdon, *Cat.* 5, p. 73. 164 Sauvan and Balty-Guesdon, *Cat.* 5, pp. 48–49; *FiMMOD* 72.

• Bars.

Paris manuscripts BNF arabe 1595 (ff. 155–164 v°)[165], dated 675/1276 and BNF arabe 881, dated 766/1365, use this symbol to mark the middle of a quire. Similar long bars were also used much later, for example in manuscripts copied or re-bound in India from the late eleventh/seventeenth to the twelfth/eighteenth centuries.

• Dots.

These very small marks are noticeable only when used at regular intervals.

• Other marks.

Other forms also appear: an Oriental numeral 2 extended downward and drawn in red ink; or the letter *mīm;* also occasionally encountered are groups of three dots, or small circles, in the middle of the outer margin.

All these marks were apparently designed to aid accurate collation of the folios, except for the mid-quire notations which were seemingly intended for the binder, and were perhaps written by the binders themselves. Catchwords and signatures played no role in the reading process when they were present only in part of a quire (or at the end), although they were designed to maintain the leaves in correct order whether the manuscript was to be bound or not. These notations were steadily integrated into the appearance of the page, and it is possible that certain practices – such as spelling out the number or using a catchword on every leaf – were widely adopted for aesthetic reasons.

165 Sauvan and Balty-Guesdon, *Cat.* 5, p. 141; *FiMMOD* 121.

Instruments and Preparations used in Book Production

Information provided by Eastern sources concerning the instruments employed historically by craftsmen involved in book production is very uneven. Copyists and calligraphers devoted much time to the reed-pen, or calamus, and to inks, on which subjects the surviving literature is relatively abundant; but along with their often very precise instructions on how to create such or such a preparation one finds recipes that are manifestly fanciful. In addition, information on other specific matters is much scarcer, and in some cases non-existent.

Instruments used by scribes, painters and illuminators

The reed pen

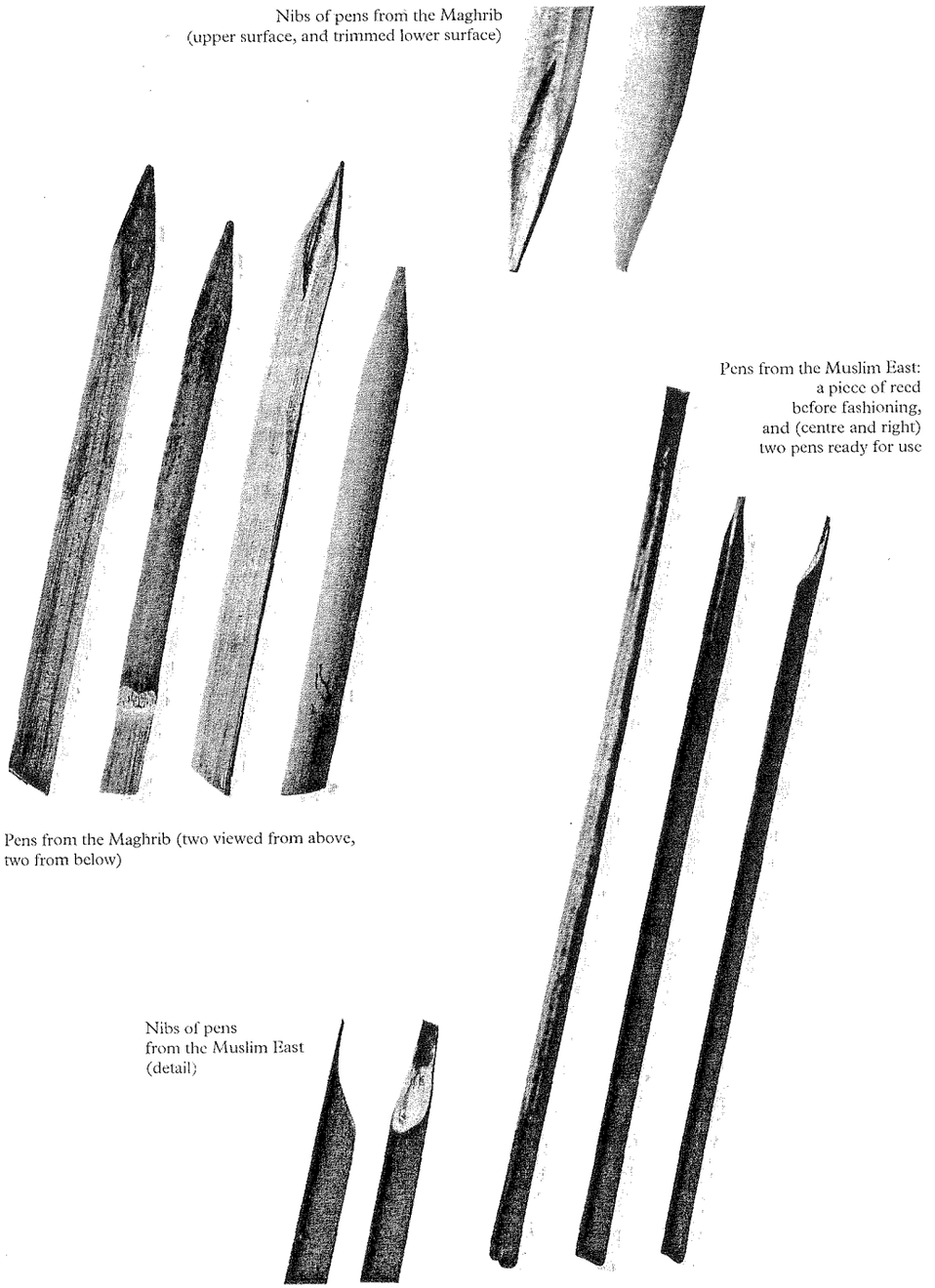
No object related to the production of handwritten books occupied a more important place in the culture of copyists, scribes and calligraphers than the reed pen or calamus. The name calamus (Arabic *qalam*[1]) is derived from the Greek *kalamos*, κάλαμος; it appears in the text of the Qur'ān, in particular in Sura LXVIII, which opens with the words: '*Nūn*. By the pen and what they write!'[2] Though speculations of a theological or philosophical nature on the implement are legion and remain valuable aids to understanding the culture of scribes and calligraphers in the Islamic world, they lie outside the scope of codicology.[3]

1 Gacek, *AMT*, p. 118. 2 *The Koran*, translated by N.J. Dawood (Harmondsworth, 1980), p. 61; the pen is also mentioned in XXI: 27 and XCVI: 4. 3 A characteristic development in this regard occurs at the start of Qādī Aḥmad's treatise, *Calligraphers and painters* (Washington, DC, 1959), pp. 48-52. The comments of A. Schimmel, *Calligraphy and Islamic culture* (New York/London, 1984), especially pp. 77-80, are particularly enlightening. In discussing writing instruments, we have deliberately kept references to a minimum; because these implements were employed by penmen, numerous works devoted to calligraphy dedicate varying amounts of space to such technical questions. There are countless texts on how to pare a reed-pen, the proportions of the two parts of the nib and the cutting angle: see for example Ibn Bādīs, "Umdat al-kuttāb wa-'uddat dhawī al-albāb'; ed. 'A. S. al-Ḥalwajī and 'A. M. Zakī, *RIMA* 17 (1391/1971) p. 71; translation in Levey, *Medieval Arabic bookmaking and its relation to early chemistry and pharmacology* (Philadelphia, 1962), pp. 13-15.

The *qalam* was cut from a reed whose selection is the subject of very precise recommendations on the part of many authors. Firstly, the different varieties of reed have to be distinguished (Adolf Grohmann cites '*juncus arabicus maritimus, phragmites communis, calamus Rotemg*' and '*saccharum biflorum*')[4] as well as their various origins.[5] A late source advises that the pen should be of a diameter intermediate between that of the index finger and the little finger and this clearly represents an average value. Certain authors were of the opinion that a reed could not be used without first being prepared in some way before its user trimmed it. It was recommended first to soak the reed in water until the required appearance was obtained.[6] At this stage, the reed could be trimmed. This procedure was something of a ritual among calligraphers – so much so that some scribes and copyists kept their methods of cutting reeds a secret, al-Daḥḥāk hiding while he performed the operation, while a certain al-Anṣarī snapped off the tips of his reeds after use.[7] Using a razor-sharp blade, the scribe first cut a piece to the required length and then proceeded to shape the end used for writing.[8] He began by paring the sides and the lower section so as to free the point. The calligrapher finally employed a board or rest (*miqaṭṭ, miqaṭṭa* – in Ottoman Turkish *makta'*; see below) to hold the shaft in place as he sliced the tip at a slant whose precise angle was the object of much deliberation on the part of penmen. In fact, each calligraphic style called for a particular type of cut and an exact thickness of nib. Lastly, the scribe would split the tip into two along the grain of the fibres.

In the Maghrib, penmen used a *qalam* of a very different form. According to Octave Houdas, it was cut from a reed (*arundo donax*), the stem being sliced downwards into strips[9]: its cross-section was therefore an arc of a circle. The upper surface was left in its natural state, while the inner curve was somewhat flattened in the middle, the two edges being chamfered to make the pen more comfortable to hold. The intended writing end was then trimmed to a point whose two flanges formed an angle of 25 to 30°, the tip being cut very close to the apex. The underside was then hollowed out in a relatively broad, diamond-shaped depression almost four centimetres in length (see illus. 34). Once the reed pen was ready, the user made a split in the tip a few millimetres long. Houdas notes that 'the edges of a Maghribī stroke are, as it were, blurred,

4 Grohmann, *AP* I, p. 119. 5 See Grohmann, ibid. 6 According to U. Derman, 'Hat', in *Sabancı Koleksiyonu* (Istanbul, 1995), p. 17, the reeds should be stored in manure before trimming. 7 Al-Zabīdī, *Ḥikmat al-ishrāq ilā kuttāb al-āfāq*, ed. 'A. Hārūn (Cairo, 1373/1954), p. 78 (French translation in N. Abouricha, 'Recherches autour de l'opuscule *Ḥikmat al-išrāq ilā kuttāb al-āfāq* de Murtaḍâ al-Zabîdî'; unpublished thesis, Paris, 2000). The existence of a 'reed-cutters' guild' in Istanbul has been advanced (F. Hitzel, 'Manuscrits, livres et culture livresque à Istanbul', *REMMM* 87-88 [1999], p. 21). This notion, however, results from misunderstanding the word *kalemtraşçılar*, which in fact designates 'makers of pen-knives'- that is, knives for paring reed-pens. 8 M. B. Yazır, *Medeniyet âleminde yazı ve islâm medeniyetinde kalem güzeli* (2nd. ed., Ankara, 1981), pp. 141-144, pls. 125 and 126. 9 O. Houdas, 'Essai sur l'écriture maghrébine', *Nouveaux mélanges orientaux* (Paris, 1886), p. 98.



34. Reed-pens of Eastern and Western Islamic types.

instead of the crisp, clear edges found in Naskhī [. . .] moreover, the width of a Maghribī stroke, though not wholly uniform, does not swell and contract into the tapering lines that give Naskhī script such a virile appearance'.[10] For Houdas, the particular type of reed pen used in this part of the Islamic world is responsible for the dissimilarity; the Islamic West kept faith with the time-honoured manner of cutting the pen, while Ibn Muqla's reform brought with it the increased use of a calamus with 'a flat and bevel trimmed tip'.[11] It would be instructive to examine more closely how the point of a Maghribī reed pen actually behaves: the 'blurred' lines to which Houdas refers might be explained by the fact that the instrument in some ways resembled a paintbrush. Split pens were used to copy texts on both parchment and paper. On the other hand, quite different instruments might be used to write on papyrus, as will be seen below.

The question of how copyists executed the early Qur'ānic scripts (second/eighth–fourth/tenth centuries) is a thorny one. Some scripts, such as that of fragment MS. Paris BNF arabe 324 c, are so thick that the use of some special implement may be postulated.[12] In the absence of studies focusing on the question and of subsidiary information from ancient literary sources, it is impossible to draw any firm conclusions. On the other hand, it is known that in recent times the copyist also had at his disposal reed pens that allowed him to execute scripts with thicker lines. Contemporary calligraphy manuals illustrate models cut in bamboo and even in wood; in this latter case the instrument may be made from a single piece, or else the writing end is fitted to a shaft.[13] These techniques do not strictly speaking concern the reed pen, since they are instruments that have evolved to meet the needs of modern penmanship.
For relatively lengthy texts, Turkish authors refer to the use of plants originating in Java.[14] Illustrations seem to imply that they were of similar size to those used for traditional reed pens. Writing in gold (chrysography) will be discussed below. In manuscripts written in Arabic, gilding is applied to the parchment or paper and then edged with ink; it is not inconceivable that the instrument used might differ from a copyist's reed and perhaps be some separate illuminator's tool.

Other implements employed in writing

Metal writing implements were also known, although none seem to have survived. Grohmann believed he had found a reference to a metal pen[15] in a treatise by Ibn Bādīs, while the *Thousand and One Nights* contains an allusion

10 Op. cit., p. 105. 11 Op. cit., p. 96. 12 Houdas (op. cit., p. 96) writes: 'It is known that Kufic is written with a pointed *qalam*, whereas Naskhī can only be written with a reed with a sharp-edged tip of rectilinear section trimmed to a bevel.' 13 Yazır, op. cit., p. 139 and pls. 124, a and b; see also Derman, ibid. 14 Yazır, op. cit., pls. 124, h and i; see also Derman, ibid. 15 *AP* I, p. 122, referring to MS. Berlin, SB Landsberg 637, f. 19.

– this time to brass[16] – that seems to confirm this finding. Metal pens were apparently used in a similar way to reed pens, although it may be supposed that the nib appeared rather differently in this case. Another metal implement, known only from a famous text by Qāḍī al-Nu'mān, differs radically from the two aforementioned examples.[17] The Fāṭimid ruler al-Mu'izz allegedly designed a fountain pen and had a craftsman fashion it in gold. After adjustments, the ink released by the reservoir flowed evenly down to the nib and the instrument might be turned in any direction without the ink leaking.

Reeds were also used for copying texts onto papyrus, but the instrument seems sometimes to have resembled a brush rather than the *qalam* described above; the thick lines that sometimes appear on protocols, for example, were by all accounts produced in that way.[18] It is also possible that they were of the same shape as *qalam*s from the Maghrib, which would fit in well with Houdas' observation cited above. In the light of recent research, there also arises the question whether a special type was used for each major type of ink. In Ptolemaic Egypt, brushes were apparently used for writing with carbon-based ink, whereas a calamus would have been used for iron-gall ink.[19]

It should be noted that calligraphers obtained special effects by writing relatively short passages in relief without ink. Although this is generally termed 'fingernail writing' (Persian *khaṭṭ-i nākhunī*), the precision and elegance of most known examples make it seem probable that the writing was often executed using a pen or stylus of some kind.[20]

Other tools used by copyists

Information on the equipment used by copyists derives largely from authors associated with the milieus of secretaries or calligraphers.[21] This means that some specific tools used generally for the copying of manuscripts receive no

16 Cited in *AP* I, p. 122, after the fifty-eighth night in E. Littmann's German translation, *Die Erzählungen aus den Tausend und Ein Nächten*, vol. I (1934), p. 642. A copper calamus dating from 1284/1867-88 is preserved at Fez at the Musée des Arts et Traditions Dâr Bathâ'; see M. Manūnī, *Ta'rīkh al-wirāqat al-Maghribiyya* (Rabat, 1991), p. 232. 17 *Kitāb al-Majālis wa-l-musāyarāt*, ed. H. Feki, I. Chabbouh and M. Yalaoui (Beirut, 1997), pp. 289-290. 18 G. Khan, 'Arabic papyri', *Codicology*, p. 15. 19 E. Delange, M. Grange, B. Kusko and E. Menei, 'Apparition de l'encre métallogallique en Égypte à partir de la collection de papyrus du Louvre', *Revue d'égyptologie* 41 (1990), p. 215. The term 'metalo-gallic' covers all combinations of iron, copper and other metals with gall. 20 D. Haldane, *Bookbindings*, p. 185, no. 172 (MS. London Victoria & Albert Museum I.D., no call number; copied in Awadh, India, in 1265/1848-9) and p. 187, no. 173 (MS. London Victoria & Albert Museum, 4625; transcribed in Kashmir in 1283/1866-7). 21 A print reproduced in J. Pedersen, *The Arabic Book* (Princeton, NJ, 1984), as illus. 6, 'Typical book and writing utensils of nineteenth-century Egypt', in E. W. Lane, *The Manners and customs of the modern Egyptians* (London, 1908) provides a general view of a copyist's instruments: in addition to the calamus, there appear a knife, a paring board, a *miṣṭara*, a board on which to lay the page for writing, a writing-desk complete with inkwell, scissors; the *Qāmūs* under its case at the rear is an accessory less directly associated with transcribing manuscripts.

mention, whereas others peculiar to secretaries are listed, such as the clip (*milzama*) used to hold down a scroll of paper.[22] Furthermore, the existence of items of furniture used specifically by manuscript copyists is not mentioned in this literature. A document from the Cairo Genizah, probably dating from the thirteenth century, nevertheless provides useful information on this point, even though it concerns Jewish copyists.[23]

The penknife (*sikkīn, sikkīna*[24]) used to sharpen a substance as tough as reed had to be fitted with a steel blade of the finest quality. It also had to be extremely sharp, so much so that it could potentially constitute a danger.[25] To avoid dulling the edge, the reed was in general sharpened against a rest (*miqaṭṭ, miqaṭṭa*[26] – *makta'* in Ottoman) of wood[27], ivory, mother-of pearl or bone; metal, which can seldom have been used, appears in the above-mentioned inventory (*miqaṭṭ nuḥās*).[28] This rest was normally just a small board[29], although more sophisticated versions also existed. In the Ottoman world, the most elaborate *maqṭa'* (Turkish *makta'*) were frequently carved out of ivory, mother-of-pearl or bone; the surface included a protuberance hollowed out at the top, designed to hold the reed steady during the operation.[30]

The inkwell (*miḥbara*)[31] was fitted with a wool or cotton wick (*līqa*) to control the quantity of ink taken up by the calamus[32]. In addition, copyists might use a little stick (*milwāq*) to ensure that the mixture remained homogeneous and prevent a deposit from forming at the bottom of the well. In his *Ḥikmat al-ishrāq ilā kuttāb al-āfāq*, al-Zabīdī recommends as follows: 'The inkwell should never in any circumstances be square in shape; for when it is, the ink thickens, whereas when it is round, its form is better suited to keeping the ink fresh, it is perfectly adapted for dipping [the pen], and it helps moreover to both improve and conserve it.'[33]

22 Grohmann, *AP* I, p. 126. 23 J. Sadan, 'Nouveaux documents sur scribes et copistes', *REI* 45 (1977), pp. 41-56. An Ottoman *makta'* comprises a metal base and a section in ivory on which the end of the reed-pen may be laid and pared (Yazır, op. cit., pl. 130 a). 24 Gacek, *AMT*, p. 70 (*sikkīn* only). 25 Yazır, op. cit., pp. 145-147 and pl. 127 (*kalemtraş*). Ibn Bādīs (op. cit., pp. 14-15) refers to two knives. 26 Gacek, *AMT*, pp. 116-117. 27 Al-'Almawī, in his *Mu'īd fī adab al-mufīd wa-l-mustafīd* (tr. Rosenthal, *The Technique and approach of Muslim scholarship* [Rome, 1947], p. 13), recommends ebony; Ibn Bādīs advocates a hard wood (op. cit., p. 15); see also al-Qalqashandī, *Ṣubḥ al-a'shā fī ṣinā'at al-inshā'* II (Cairo, n. d.), p. 468. 28 Sadan, op. cit., p. 54. 29 See for example the illustration in A. F. Herbin, *Développemens de la langue arabe moderne, suivis* [...] *d'un essai de calligraphie orientale* (Paris, 1807), pl. I, as well as Yazır, op. cit., pp. 147-148; Derman, op. cit., p. 19. 30 Pedersen, op. cit., illus. 6 and 27; Yazır, op. cit., pl. 130; A. Grohmann, *AP* I, pl. XXII/1; Derman, op. cit., p. 19; Rogers, Geneva 1995, pp. 102-103, nos. 55-58, 231, nos. 159, 247, no. 172; Versailles 1999, p. 169, no. 123. In Turkey, the protuberance designed for the reed is known as *kalem yuvası* ('reed-pen nest'). 31 Gacek, *AMT*, p. 28. This type of inkwell is placed on a flat surface, whereas the other variety (*dawāt*, Turkish *divit*) is portable; both occur in the Genizah inventory, implying that the *miḥbara* (or *maḥbara*) was no more exclusive to manuscript copyists than the other variety (Sadan, op. cit., p. 54, note 68). 32 Yazır, op. cit., pp. 150-151 and pl. 136; Derman, op. cit., p. 23. 33 Op. cit., p. 73 (tr. N. Abouricha).

One of the copyist's main tools was the burnisher, an implement that existed in two types corresponding to two principal functions. The first and more widespread type is associated with the meticulous polishing to which the paper was subjected after coating with a starch-based preparation. Adequate results could be attained by the use of a smooth, fairly large glass or stone object, or a shell.[34] Burnishing areas of gilding (whether of script or illumination), however, was a task performed more effectively with the use of smaller implements which often took the form of a hard stone mounted on a shaft.[35]

As Joseph Sadan has noted, the same word (*miṣṭar, miṣṭara*[36]) designates both straight-edge and ruling frame, and a manuscript copyist might employ both instruments. It is true that the latter was a later development, since its use seems to have been connected with the introduction of paper and appears to have been less widely adopted in regions such as the Maghrib (a subject discussed below).[37] In rare cases, lists of implements used by calligraphers include the compass that may have been used to lay out the writing surface. This implement – the *birkār* – is mentioned by Ibn al-Ṣā'igh, who states for his part that it was used by *warrāqs*[38], and for whose existence the estate inventory from Cairo perhaps provides evidence.[39]

The use of writing stands and book rests is attested by miniatures, while the inventory of the Cairo Genizah mentions two implements that may have been used as a stand or cradle for books and perhaps used while copying: *kursī* and *mirfa'a*.[40] Both pieces of furniture open into an X-shape, the book being laid on the upper fork. The copyist is traditionally shown writing in a crouching position with the paper resting on his thigh. There exist miniatures in the Ottoman world depicting low tables on which the scribe would place the open book he was copying.[41] A number of fine examples survive, some of them made of fine wood and richly inlaid. The preceding observation, which might equally well extend to India[42], is perhaps partially confirmed by a few pieces of furniture of this type that have actually survived.[43]

34 Yazır, op. cit., pp. 168-169, pls. 153-155; Derman, op. cit., p. 20. 35 Yazır, op. cit., pp. 169-170, pl. 156; Rogers, Geneva 1995, p. 243, no. 169; Versailles 1999, p. 170, no. 124. See also below. 36 Gacek, *AMT*, p. 68 (*miṣṭara* only). 37 See Chapter on 'Ruling and page layout'. 38 Ibn al-Ṣā'igh, *Tuḥfat ūlī l-albāb ilā ṣinā'at al-khaṭṭ wa-l-kitāb*, (ed.) H. Nājī (Tunis, 1967), p. 105. The compass next to the ruler also appears in a list of equipment for bookbinding given by Ibn Bādīs (op. cit., p. 153; tr. Levey, op. cit., p. 41). 39 Sadan, op. cit., p. 49 and note 49. One set of instructions on how to lay out a page quoted below (Chapter 'Ruling and page layout') calls for the use of compasses. 40 Gacek, *AMT*, pp. 124 and 57; also *raḥl* (ibid., p. 54) and *milzama* (ibid., p. 128). 41 Versailles 1999, p. 165, no. 115 (MS. Istanbul TKS H. 2169, f. 51 v°, late 16th cent.); Copenhagen 1996, p. 137, fig. 46 (MS. Istanbul TKS H. 1609, f. 74, c. 1596). The scene takes place among calligraphers and nothing implies that the situation it shows can be safely generalised. 42 See the famous illustration in a margin of the Jahāngīr Album (Washington D.C. Freer Gallery 54.116; c. 1010-20/1600-10; reproduced in Pedersen, op. cit., illus. 29). 43 Versailles 1999, p. 167, no. 117 (Paris, Louvre, section isl. MAO 871) and Copenhagen 1996, p. 152-153, no. 115 (The David Collection, 19/1985).

Painters' and illuminators' tools[44]

A number of implements were common to scribes and artists responsible for decorations, and these have been discussed above. For burnishing gold leaf after its application craftsmen used a tool consisting of a polished stone in a shape of an elongated tooth fitted with a handle. Each part of the tool had its own distinct use: the point was for pressing the gold leaf into corners and burnishing them; the fore-part for general burnishing: the bend for cross-burnishing in alternate strokes; the edge for light and gentle burnishing. The operation required meticulous care and began with a phase where the pressure exerted was light before it was gradually increased in strength.

The brush, sometimes dubbed *qalam* for reasons of piety[45], was the basic instrument for both painters and manuscript illuminators. This was normally made of animal hair, but it was possible for a reed to be employed as a brush.[46] Stencil sets, or pounces, were sometimes used by miniaturists and bookbinders, as well as by manuscript illuminators, to reproduce stock designs. The design would be drawn in ink upon a thin membrane[47], in which a series of pinprick holes were picked out at regular intervals following the outline of the motif. By drawing over it with a substance such as charcoal, the artist could transfer the design on the paper beneath as black or grey lines to which the decoration was added. A number of examples from Ottoman Turkey are preserved at the Victoria & Albert Museum, London.[48] As a rule, traces of the original process are impossible to detect in the completed illumination and one cannot tell when they were applied. In any case, from the ninth/fifteenth century onwards in the Ottoman Empire and Transoxiana the use of stencilled ornaments in plain colour or colours, in large panels or occupying the entire margin area, became quite common, and in these cases the stencil is normally quite evident. More often, the outlines of the illuminated design were drawn in charcoal or a similar medium, as is shown in examples of pages to which the illumination was never added.

44 By M. I. Waley. Information concerning bookbinders' tools appears in Haldane, *Bookbindings*, in Chicago 1981 and in articles by A. Gacek (see Chapter 'Bookbinding', note 4). 45 Qāḍī Aḥmad, op. cit., pp. 23-24 and 50. 46 See above. 47 'It is best to gather [...] the drawings together [...] and stick them with a glue paste to a thin piece of gazelle skin that can be found in large quantities in gold- and silver-beaters' suppliers' (C. Huart, *Les Calligraphes et les miniaturistes de l'Orient musulman* [Paris, 1908], p. 18). 48 Chicago, 1981, p. 73, fig. 14 and Haldane, *Bookbindings*, p. 10-12.

Black inks

Together with the reed-pen itself, inks enjoy a special place in the traditional culture of the 'people of the pen'. Recipes for making ink are preserved in many sources. Sometimes they appear in isolation, as in a *qaṣīda* whose author may have been the great calligrapher Ibn al-Bawwāb[49]; others were collected into veritable specialised treatises, such as the one planned by al-Marrākushī.[50] If study is limited to the ingredients employed, the compositions of these inks appear to differ widely; the principles on which the preparations rely, however, allow three major groups to be distinguished. To our knowledge, the surviving texts make no mention of sepia and it is true that this substance may not have been utilised at all.[51]

The copyists and their ink

Ink occupied a central place in the calligraphic culture of medieval Islam. Calligraphers evinced little interest in technical questions but they were fulsome in their praise of the merits of the reed-pen and offered a plethora of instructions for ink-making. One aphorism already cited in the works of al-Baghdādī (third/ninth century) has it that one-third of penmanship worthy of the name depends on the ink used.[52] A short time later, al-Tawḥīdī explained that 'writing with gall ink has a negative impact on the script,'[53] while the poet al-Māwardī endorsed the pre-eminence of ink by affirming that it 'is the perfume of men.'[54] Beside these assertions, which seem to stem from *adab*, authors from various periods noted down recipes that survive to the present day. Appearing separately in verse formulae as well as in collections of a technical character, these provide the ingredients of various types of ink.[55] The

49 D. James, 'The commentaries of Ibn al-Baṣīṣ and Ibn al-Waḥīd on Ibn al-Bawwāb's 'Ode on the art of calligraphy' (*rā'iyyah fī l-khaṭ*)', in K. J. Cathcart and J. F. Healey (eds.), *Back to the Sources* (Dublin, 1989), pp. 164-191. 50 I. Chabbouh, 'Two new sources on the art of mixing ink', in *Codicology*, pp. 59-76. 51 A. Grohmann (*CPR* III, I/1, p. 65) assumes that sepia was employed for copying protocol texts. Concerning *midād*, D. Sourdel ('Le "Livre des secrétaires" de 'Abdallāh al-Baghdādī', *BEO* 14 [1952-1954], p. 130, note 9) mentions 'sepia', but nothing in fact indicates that al-Baghdādī means anything else than one or other of the two main families of ink. 52 Sourdel, op. cit., p. 130. The expression recurs, sometimes in a modified form; the proportion is occasionally reduced to a quarter (see al-Qalqashandī, op. cit., vol. II, p. 473). 53 F. Rosenthal, 'Abū Ḥaiyān al-Tawḥīdī on penmanship', *Ars Islamica* 13-14 (1948), p. 7; against this, al-'Almawī (tr. Rosenthal, op. cit., p. 13) maintains that gall ink is superior to one based on soot black for transcribing manuscripts. 54 F. Rosenthal, 'Significant uses of Arabic writing', *Ars Orientalis* 4 (1961), p. 18. 55 A recipe for ink features in Ibn al-Bawwāb's verse epistle, cited by Ibn Khaldūn, *Muqaddima* I/2, E. Quatremère (ed.), (Paris, 1858), p. 347; later, in the eighth/thirteenth century, al-Marrakūshī began an entire treatise on the making of ink (see Chabbouh, op. cit., pp. 63-69).

terms often allude to the name of the place where they were supposedly first concocted[56] and sometimes even to some famous figure from the past presumed to have made use of them.[57]

In the Islamic world two major types of black ink were known: the carbon-based inks on one side, and, on the other, those based on a combination of a tannin component and a metallic salt; a third group can be constituted from a combination of these two. Traditionally, those containing carbon are called *midād*, the other type being known as *ḥibr*.[58] In practice, the distinction of usage is less rigid (even within accounts given by a single author), and in more recent times the two terms have often been treated as interchangeable, particularly outside Arabic-speaking zones.[59]

A treatise composed in Spain in the seventh/thirteenth century suggests another way of envisaging the use and composition of ink. This text is a collection of recipes classified according to whether they are suited to paper, parchment, or to both equally.[60] It remains to be seen to what extent, in local practice at the time, particular inks were actually used on a specific writing material. As with other materials widely used in book production in the pre-Islamic period, Muslim copyists continued to resort to processes for making ink (maceration, decoction, drying, pulverisation, etc.) that had long been tried and tested by their predecessors. Observance of Islamic law, however, certainly led to forbidden ingredients being abandoned. In listing substances used in ink manufacture, for example, Monique Zerdoun mentions wine, a liquid that apparently offered some notable advantages: 'It allows the active products to be extracted better when added during decoction or maceration . . . , it decreases the drying time of the script . . . , it increases the [ink's] corrosive properties and fixes it more readily to the writing surface.'[61] As might be expected, wine never appears in formulae for inks compiled by Muslim authors, though it is quite conceivable that this was because they had qualms about publicising recipes including such an illicit product. An anecdote related by Ibn Ḥajar al-'Asqalānī may well indicate that its use was not unknown among copyists: the Mamlūk period calligrapher Ibn al-Waḥīd is alleged to have employed an ink containing wine and even to have copied a Qur'ān using such a preparation.[62] The emphasis in the narrative is on the impious nature of Ibn al-Waḥīd's behaviour, but that could perhaps reflect a hard-line view. The use of vinegar, on the other hand, is noted by both Ibn Bādīs and Ibn al-Bawwāb.[63]

56 Ibn Bādīs' treatise (op. cit., pp. 15–17) mentions, more or less at random, China, Fez, India, Kūfa, Persia, Iraq, etc. 57 Chabbouh, op. cit., p. 66. 58 G. Endress, 'Handschriftenkunde', *GAP* I, p. 276; J. J. Witkam, *EI²* VI, p. 1024, s. v. 'midād'; Gacek, *AMT*, pp. 133 and 27. 59 Chabbouh (op. cit., pp. 68-69) questions whether the distinction is based on the ingredients involved and argues that it is more a question of usage. As regards Turkish regions, a modern lexicon shows the extent to which these different terms have become interchangeable; M. Özgen, *Yazma kitap sanatları sözlüğü* (Istanbul, 1985), s. v. 'hibr', 'midad', 'mürekkeb'. 60 Chabbouh, op. cit., p. 74. 61 M. Zerdoun, *Les Encres noires au Moyen Âge* (Paris, 1983), p. 174-175. 62 James, op. cit., p. 181, note 7. 63 Op. cit., p. 173.

In al-Qalalūsī's treatise, a section in a chapter describing methods of erasing ink and removing dye from fabrics does indeed make reference to wine.[64]

Carbon-based inks

Inks incorporating carbon had been known from time immemorial and Muslim copyists doubtless adopted many of these widely available preparations. To judge by some of the names Ibn Bādīs gives to several recipes he records, the East played a significant role in the development of such products.[65] Whatever the origin of a given type, the starting point must have remained the same, since these inks were always based on carbonised material. On the other hand, the substances used and their methods of carbonisation vary widely. For the most part, a product of vegetable origin was used: the sources cite – to quote a random selection – wheat flour, fir wood, gourds, walnuts, and oils prepared from various plants. An Indian ink described by Ibn Bādīs was prepared from a mixture of vegetable and animal fat.[66] Less frequently, the carbon base used in the ink preparation was a mineral: Grohmann[67] and Chabbouh[68] both quote sources recommending the use of petroleum in black inks. Finally, several lists of instructions call for raw materials of animal origin: in addition to grease, quoted above, both horn and wool were utilised.[69] The transformation of these organic or mineral substances into carbon is ensured by more or less sophisticated methods. Sometimes, after simple burning, the residue is collected and reduced to a powder by purely mechanical action of some kind;[70] one recipe, for instance, prescribes burning wool taken from the breast of a ram in a cauldron and crushing the cinders.[71] In order to refine the raw material, the carbonised product was often sifted.[72] From this point of view, vaporisation led to more satisfactory results: an object, for example a cup, was placed above the seat of the fire to collect the soot or lampblack that the combustion of a substance rich in carbon naturally releases.[73]

At the Süleymaniye Mosque in Istanbul, one can still see where deposits accumulating above the lamps were harvested to make ink. The most widespread additive used to bind the ink was gum arabic, but Ibn Bādīs also records – in a recipe presumably of Iraqi origin – the use of egg white.[74] According to Martin Levey, the addition of vinegar or yoghurt to certain preparations was intended to reduce the rate at which deposits were formed.[75]

64 Chabbouh, op. cit., p. 72. 65 See above, note 56. 66 Ibn Bādīs, op. cit., p. 80; Levey, op. cit., pp. 1-16 (a mix of butter and vegetable oil). 67 *AP* I, pp. 127-128. 68 Chabbouh, op. cit., p. 67. 69 N. Abouricha, 'L'encre au Maghreb', *NMMO* III/1 (1993), pp. 3-4. 70 See e.g. Ibn Bādīs, op. cit., p. 81; Levey, op. cit., p. 16. 71 Abouricha, ibid. 72 Ibn Bādīs, op. cit., pp. 81 and 83; Levey, op. cit., p. 17. 73 Ibn Bādīs, op. cit., p. 80; Levey, op. cit., p. 16; al-Qalqashandī, op. cit., p. 464; Grohmann, *AP* I, p. 128. 74 Ibn Bādīs, op. cit., p. 83; Levey, op. cit., p. 17. Oddly, the use of skin glue, common enough in the Far East, seems to have been unknown in the region. 75 Levey, op. cit., p. 7.

Metalo-gallic inks

Known from ancient times,[76] these preparations rely on a chemical reaction between two constituents.[77] The tannin element derives from the gall-nut[78], an excrescence on the leaves of certain trees – such as oaks – caused by an insect boring a tiny hole through which it deposits its eggs. The leaf then puckers into a 'pad', which according to some authors is richer in tannic acid if the larva has not yet pierced the envelope and emerged. Levey maintains that Ibn Bādīs' treatise recommends the use of gall-nut from the turpentine or tamarisk tree, although the term the author employs is commonly generic.[79] Arabic and Islamic sources mention other plants reputedly rich in tannin: myrobalans[80] (the name of the dried fruit from various species of exotic tree), pomegranate rind,[81] and decoctions of fresh myrtle,[82] for example. Generally the metallic salt is a vitriol, for example ferrous sulphate (of green colour) or copper sulphate (blue).[83] Recipes for inks that perhaps reflect Persian practices include alum (the double sulphate of potassium and aluminium)[84] as their vitriol. According to the sources, these basic ingredients were rarely used alone. Gum arabic was generally added, but Chabbouh points out that al-Marrakūshī in a treatise composed in 649/1241 records three recipes attributed respectively to Muslim ibn al-Walīd, al-Jāḥiẓ and al-Bukhārī in which only gall-nut and vitriol appear.[85] The colour of iron-gall inks is often unstable and alters over time. In addition, the materials required in its preparation can damage the writing surface. Ink has actively corroded a number of Qur'ānic fragments copied on parchment, several of which can be dated to the mid-second/eighth century;[86] in the most serious cases, the areas containing text have totally disintegrated. Such alterations were familiar to mediaeval authors such al-Marrakūshī, who observed of an ink containing vitriol that 'it burns paper because of its high vitriol content, and eats away at the areas which have been written on'.[87]

76 E. Delange, M. Grange, B. Kusko and E. Menei conclude (op. cit., p. 213) that the principles of its manufacture were known by the third century BCE. **77** This recipe is thought to have originally been used by leather workers; when parchment first came into use, the need for an ink that could adhere to such a support - carbon-based inks not being suitable - led to this type of composition being borrowed. It was known to the Islamic world at an early stage: the ink in two manuscripts, one from the end of the first/seventh century (Paris BNF arabe 330 c) and another from the beginning of the second/eighth (Paris BNF arabe 324 c), both contain iron, implying that the ink used was indeed ferro-gallic; for the results of the analyses performed by B. Guineau, see below. **78** In Arabic, *'afṣ*. **79** Levey, op. cit., p. 7. **80** Ibn Bādīs, op. cit., p. 94; Levey, op. cit., p. 19. **81** Ibn Bādīs, op. cit., pp. 81, 99; Levey, op. cit., pp. 16, 21; Chabbouh, op. cit., p. 67. **82** Ibn Bādīs, op. cit., pp. 80, 96, 101; Levey, op. cit., pp. 16, 20, 21; Chabbouh, ibid. **83** Levey, op. cit., p. 16. **84** Y. Porter, *Painters, paintings and books* (New Delhi, 1994), p. 67, where the data is taken from a treatise compiled in India, probably during the second half of the sixteenth century, by 'Abd Allāh Kuzdahī. **85** Chabbouh, op. cit., p. 67. **86** E.g. Paris BNF arabe 324 c (q. v. Déroche, *Cat.* I/1, pp. 75-77, no. 45; for a more detailed bibliography on this Qur'ān, see 'Introduction', note 10). **87** Chabbouh, op. cit., p. 69.

Compound inks

Many recipes preserved in Arabic and Islamic sources are 'mixed' (or 'compound') in the sense that they contain all the ingredients necessary to produce an ink of one of the two groups referred to above, yet incorporate in addition one or more elements from the other category. Thus lampblack is added to ferro-gallic inks with the aim perhaps of sustaining the jet-black appearance of a variety of ink that tends to deteriorate over time. According to a Persian source of the tenth/sixteenth century, the addition of this ingredient is associated with the great calligrapher Ibn Muqla.[88]

The usefulness of other ingredients, such as perfumes (ambergris, musk and camphor),[89] is less obvious: they might add extra value to the preparation or perhaps act as a repellent to parasitic insects.[90]

Coloured ink

Even before the emergence of Islam, red ink was used in copying manuscripts to highlight certain elements of a text, such as titles, for example. Inherited from the Classical world, this practice long endured in Arab and Islamic regions. Examples can be found in: various manuscripts dating from the first centuries of the *Hijra*, but for the oldest of all, the Qur'āns in *Ḥijāzī* style, the evidence is not altogether conclusive, since the rubricated headings appearing at the beginning of the suras may have been added at a later stage.[91] Soon, though, other uses were found for the colour red to meet the exigencies of Islamic manuscript transmission. Palaeographic evidence suggests that in copies of the Qur'an now assigned to the end of the first/seventh century, elements of the text itself were written in red to mark the beginning of a sura[92]; at a later date, early vocalisation systems were indicated in red, to be refined subsequently by the use of green and yellow dots.[93]

88 'Abd Allāh Kuzdahī, quoted by Porter (op. cit., p. 66). **89** Ibn Bādīs had no knowledge of such mixtures, which seem to be associated with calligraphic culture: Iranian recipes include ingredients such as musk, rosewater, amber and coral (see Qāḍī Aḥmad, op. cit., p. 200; Porter, op. cit., p. 70). **90** Another method of preventing damage by parasites is mentioned by A. Gacek ('The use of '*kabîkaj*' in Arabic manuscripts', *MME* 1 [1986], pp. 49-53). **91** See MS. London Or. 2165 (W. Wright, *Facsimiles of Manuscripts and Inscriptions* [London, 1875-1883], pl. LIX). **92** An example of this type (fragment, Istanbul TIEM, unpublished) has been reproduced in *Le Monde de la Bible*, no. 115 (Oct.-Dec. 1998), p. 35, no. 5. **93** See Chapter 'Scripts'. The practice long endured in the Maghrib; at the outset, modern orthoepic signs in Qur'āns were first indicated in colour according to the same rules as in the old system.

The use of coloured inks[94]

Recourse to coloured ink or to gilding essentially reflected the desire to stress given elements of the text (illus. 37), including significant words and organisational features.[95] Such colours could be employed in various ways: sometimes in the text itself (for a word or a group of words), sometimes in additional signs, for instance to indicate punctuation or to highlight parts of the text for emphasis. It therefore comes as no surprise that copying and rubrication (*taḥmīr* or *ḥumra*[96]) could be two quite disparate operations, as shown for instance in MS. Montreal McGill ISL 7, where a month elapsed between the two stages.[97]

Coloured inks, however, were also used for quite different purposes, in some cases relating to page layout. On certain pages of a fragment in Istanbul (TIEM SE 362; end of the first/seventh century or beginning of the second/eighth), the copyist has made use of three alternating colours – brown, red and green – to compose geometrical patterns that rely on the contrasting colours of the inks.[98] In a distinct but related field, and at the same time or slightly later, papyrus protocols also played on changes in colour (from red and green to yellow), though in a less systematic manner since here the changes correspond to lines of text. In the tenth/sixteenth century, the copyists of certain Iranian Qur'āns (or of Qur'āns inspired by Iranian models) employed two or three colours in copying the body of the text itself. This use of coloured inks, whose aim clearly cannot have been to highlight particular passages, is connected to a specific type of *mise-en-page*, though it must be admitted that the effect is less impressive than the ancient fragment referred to above.[99] In the twelfth/eighteenth and thirteenth/nineteenth centuries, Ottoman copyists of Qur'ān manuscripts (or other scribes influenced by Ottoman examples) transcribed certain words in red laid out symmetrically over a double page[100] (illus. 40). The implications of this arrangement, however, remain obscure for the time being.

In the same period, the Maghrib saw a tremendous vogue for texts copied in coloured inks, which were presumably imported.[101] That the role of colour was not necessarily solely decorative is demonstrated by a manuscript in Tunis (Bibliothèque Nationale 12320), in which red and green are deployed here and there to emphasise certain elements of the text.

94 On the materials employed, see X. Delamare and B. Guineau, *Les Matériaux de la couleur* (Paris, 1999). 95 Al-'Almawī made a number of recommendations about the use of red ink; see Rosenthal, op. cit. [1947], p. 18. 96 Gacek, *AMT*, p. 36. 97 A. Gacek, *McGill*, p. 152, no. 164. 98 F. Déroche, 'Coran, couleur et calligraphie', *I primi sessanta anni di scuola: studi dedicati dagli amici a S. Noja Noseda nello 65° compleanno*, July 7 1996 (Lesa, 2004), p. 131-154. 99 Instances are legion, and reproductions appear in London 1976, pp. 80-81, nos. 138 and 140; James, *Q. and B.*, pp. 79-80, nos. 60 and 61; Déroche, *Cat.* I/2, p. 127, no. 533 and pl. XXVI B. 100 F. Déroche, 'The Ottoman Roots of a Tunisian Calligrapher's "tour de force"', Z. Yasa-Yaman (ed.), *Sanatta etkileşim/Interactions in art*, p. 106-109. 101 Witkam, loc. cit.

The composition of coloured inks

The substances used in the manufacture of coloured ink in the Arab-Islamic world have become known in two ways. The first method relies on the study of texts containing instructions that have survived to the present day.[102] This enables one to compile lists of known ingredients, but sometimes encounters the kinds of stumbling-blocks inherent in this type of source - chiefly problems of transmission and difficulties in lexicography. The second approach depends on physical and chemical analysis performed on pigments used in manuscripts.[103] Since the turn of the twentieth century, such tests have proved increasingly fruitful, although for manuscripts in Arabic script the results obtained so far are limited in number and have concentrated for the most part on paintings.[104] The results, published below, of an analysis of a representative sample of Maghribi manuscripts together with a control group comprising a number of Eastern specimens offer the prospect of further research;[105] comparisons between the data obtained and mediaeval literary sources in particular need to be deepened and extended. In his treatise Ibn Bādīs grouped the recipes for coloured inks he had collected into three families: red, yellow and green,[106] and in fact his instructions concern inks or dyes rather than paints in the strict sense of the term.

102 Quite apart from compositions described in the aforementioned Arabic texts by Ibn Bādīs, al-Marrakūshī, al-Qalalūsī and al-Qalqashandī (qv. above), isolated recipes for coloured inks also occur; similar literature appears in Persian (see Porter, op. cit., pp. 78-95). 103 Initial trials in this area seem to date back to the beginning of the century, with Eilner's research. Since then the techniques employed have made great strides in accuracy as well as in minimizing damage to the manuscripts studied. These techniques now rarely necessitate the removal of material, and if a sample for analysis is required it is scarcely more than an infinitesimal fragment, invisible to the naked eye. The results enumerated below were obtained by spectrophotometric analysis, described in B. Guineau, L. Dulin, J. Vezin and M.-T. Gousset, 'Analyse, à l'aide de méthodes spectrophotométriques, des couleurs de deux manuscrits du XV^e siècle enluminés par Francesco Antonio del Chierico', in M. Maniaci and P. F. Munafò (eds.), *Ancient and Medieval Book Materials and Techniques*, vol. II (Vatican City, 1993), pp. 121-155. The apparatus is transportable and can be installed wherever the material to be analysed is kept. A further analytical method relies on X-rays; a number of papers in the aforementioned volume record findings obtained by this technique (P. Del Carmine, M. Grange, F. Lucarelli, and P. A. Mandò, 'Particle-induced X-ray emission with an external beam: a non-destructive technique for material analysis in the study of ancient manuscripts', op. cit., pp. 7-27; P. Canart et al., 'Recherches sur la composition des encres utilisées dans les manuscrits grecs et latins de l'Italie méridionale au XV^e siècle', op. cit., pp. 29-56; M. Bernasconi et al., 'Analyse des couleurs dans un groupe de manuscrits enluminés du XII^e au XV^e siècle avec l'emploi de la technique PIXE', op. cit., pp. 57-101; R. Cambria et al., 'A PIXE analysis of manuscripts illuminated by Francesco di Antonio del Chierico', op. cit., pp. 103-119). 104 Among more recent studies reference is made to the results summarised in New York 1994, pp. 140-142, tables 4-6 (data regarding manuscripts from the Vever Collection and the New York Public Library), and E. Isacco and J. Darrah, 'The ultraviolet-infrared method of analysis: a scientific approach to the study of Indian miniatures', *Artibus Asiae* 53, 3/4 (1993), pp. 470-491. 105 See the following section. 106 Ibn Bādīs, op. cit., p. 101; Levey, op. cit., p. 21.

Gold and silver preparations

Like red ink, gold and silver had been used in writing since ancient times. In the Islamic world, the use of such precious materials was sometimes denounced as unlawful extravagance;[107] nevertheless, research has shown that they were employed by both copyists and manuscript illuminators at an early date, if rather in different ways. Sometimes only features such as titles or verse counts were highlighted with such precious substances, but certain lavish manuscripts were written entirely in gold (this is known as chrysography: see illus. 38)[108], or, more rarely, in silver (illus. 39).[109] As for their colour counterparts, textual sources survive relating to the making of gold and silver inks[110]: to determine whether practice reflected theory, it is necessary to investigate manuscripts from various periods and areas.[111]

One of the oldest attestations of the use of gilt ink in an Arabic manuscript may well be a Qur'ānic fragment in Paris (BNF arabe 330 c) thought to date from the beginning of the second/eighth century.[112] The numbering of verses in tens is in *abjad*, that is to say in letters with a numerical value whose shapes are here similar to those of the text.

Sources suggest that chrysography was introduced to transcribe the Qur'ān at a very early date. According to Ibn al-Nadīm, Khalīd ibn Abī l-Hayyāj is believed to have used it in fulfilling a commission from the Caliph 'Umar b. 'Abd al-'Azīz[113] (reigned 99-101/717-20). The so-called 'Blue Qur'ān', a manuscript copied in gilded script on blue-tinted parchment, was produced a little later.[114] Despite the disapproval of some Islamic jurists, the practice of gilding copies of the Qur'ān persisted and there is no lack of later examples.

Research carried out by Bernard Guineau, the results of which are given below, shows that book artists used either gold ink (illus. 38) or 'gold powder evenly dusted over a previously sized surface'.[115] Once the gold is applied,

107 M. Fierro, 'The treatises against innovations (*kutub al-bida'*)', *Der Islam* 69 (1992), p. 215; also in F. Déroche, 'Les emplois du Coran, livre manuscrit', *Revue de l'histoire des religions* 218 (2001), p. 55-56, which focuses on the same controversy. 108 E.g. MS. Istanbul Nuruosmaniye 27 (similarly 5 folios in the N. D. Khalili Collection of Islamic Art, KFQ 52; Déroche, *Abbasid Tradition*, pp. 90-91). 109 The use of silver in illumination at a relatively early period has been noted in the 'Blue Qur'ān' (see note 114). Its use as an ink remains rare: it appears on a copy of the Qur'ān on 'purple' paper transcribed in North Africa at the beginning of the ninth/fifteenth century (see below). 110 Ibn Bādīs, op. cit., p. 130 sq.; Levey, op. cit., p. 32 sq. 111 The reader will find results of an analysis focusing on the Islamic West together with a small sample of 'Eastern' manuscripts below. 112 Déroche, *Cat.* I/1, pp. 144-145, no. 268; numerous illuminations in a Qur'ānic fragment of the same period are gilded (F. Déroche, 'Colonnes, vases et rinceaux: sur quelques enluminures d'époque omeyyade', *CRAI* 2004, forthcoming). 113 Ibn al-Nadīm, *Kitāb al-Fihrist*, ed. R. Tajaddud (Tehran, 1350/1971), p. 9; tr. B. Dodge, *The Fihrist of al-Nadīm: a tenth century survey of Islamic culture*, vol. I (New York/London, 1970), p. 11. 114 There is an exhaustive bibliography for this manuscript in T. Stanley, *The Qur'ān and calligraphy: a selection of fine manuscript material* [Bernard Quaritch catalogue 1213] (London, n. d.), pp. 7-15. 115 See below.

meticulous burnishing imparts a homogeneous surface to the gilt. In the samples tested, no trace was found of any coat of primer such as would give the gilding a convex appearance; its absence may explain why the gilt layer seems to have flaked relatively easily.

After burnishing the outline was often outlined in ink. In a manuscript in Paris (BNF Smith-Lesouëf 217) ink encroaches onto the edges of the gilding in places, thereby confirming that it must have been applied at some later stage.[116] The same analyses have made it possible to be more precise as to the composition of the ink used in a Qur'ān, BNF arabe 389-392[117]: silver with additional traces of gold (a plausible indication of a particular origin) was finely powdered and mixed together with a binder. Silver ink was rarely employed (illus. 39). Besides the example from the Maghrib mentioned above, it appears on green-tinted paper in a late Qur'ān (1311/1893) originally from either northern India or Afghanistan.[118]

Colouring materials in Maghribī manuscripts from the sixth/twelfth to the ninth/fifteenth century: fundamentals of identification and comparison[119]

The corpus

The state of research on colourants

Researchers engaged in the study of techniques of handwritten bookmaking in the Islamic world long ago started taking an interest in the pigments chosen by miniaturists, manuscript illuminators and copyists. Two basic approaches have come to the fore, though they have evolved somewhat out of step since the beginning of the century. The first consists in analysing information culled from Eastern sources – predominantly ancient, but including information collected more recently from traditional practitioners. To the mind of the present writer, Clément Huart[120] was the true pioneer in this field in achieving a synthesis of several Persian and Turkish texts devoted to penmanship and

116 This operation may correspond to the process designated by the verb *zammaka* in the last volume of the Qur'ān of Baybars al-Jāshnagīr (MS. London BL Add. 22413), though this interpretation is rejected by James (*Qur'āns of the Mamlūks* [London, 1988], pp. 66-67). 117 Déroche, *Cat.* I/2, pp. 36-37, nos. 305-308 and pl. III B; the paper is crimson in colour. 118 Sotheby's (London), sale catalogue October 16 1996, lot no. 13. 119 By B. Guineau, in collaboration with F. Déroche, M.-G. Guesdon and A. Vernay-Nouri. 120 Huart, op. cit.

miniature painting. The second approach relies on the potential of applying physical chemistry to the analysis of the compositions used, and apparently began some time in the 1910s with the work of Eilner used by P. W. Schulz,[121] though it gathered pace more particularly in the second half of the twentieth century. To date, this manner of studying pigments has been applied mainly to miniature paintings, be they manuscript illustrations or independent works. Progress in the technologies involved means that these analyses, initially dependent on the examination of fragments taken from paintings, no longer require samples to be physically removed from them, except in exceptional circumstances where the sample can now be reduced to a microscopic size totally invisible to the naked eye.

Both approaches have met with problems. Texts often raise issues of interpretation (the vocabulary is not always of exemplary clarity) and the exact nature of the knowledge the author possesses on the subjects he addresses can be gauged only very occasionally.

Because modern scholars have unearthed errors in the old treatises, these no longer inspire total confidence as a source of information. Chemical analysis seems so far to have focused on miniatures. The results so far obtained have proved instructive, but their practical usefulness in adding to our knowledge of the history of the book in the Islamic world has proved problematic: the manuscripts concerned represent only a negligible fraction of the surviving corpus and are confined to certain circumscribed regions and periods.

Illuminated manuscripts of the Islamic West

Though more significant in numerical terms, illuminated manuscripts have until now been passed over by these types of research. It is true that assembling a coherent sample is a delicate task. The place where the manuscript was made is indicated only comparatively rarely in the colophon, so that it is usually difficult to classify manuscripts from the same period on a geographical basis.

Manuscripts copied in *Maghribī* script, however, constitute a readily identifiable regional unit. During the fourth/tenth century a specific graphic form arose which gained a ground over an area stretching from North Africa and to Muslim Spain.[122] A few exceptional cases of manuscripts produced in the East by pilgrims or scholars coming from the Maghrib do not substantially undermine the general fact that the presence of *Maghribī* script is a telltale sign that a manuscript was written in the Islamic West. As will be seen, analysis of the materials of the book and their manner of use confirms this specificity.

121 P. W. Schulz, *Persisch-islamische Miniaturmalerei* (Leipzig, 1914), pp. 16-18. 122 F. Déroche, 'Tradition et innovation dans la pratique de l'écriture au Maghreb pendant les IV^{e}/X^{e} et V^{e}/XI^{e} siècles', in S. Lancel (ed.), *Numismatique, langues, écritures et arts du livre: spécificités des arts figurés* [Actes du VII^{e} colloque international sur l'histoire et l'archéologie de l'Afrique du Nord] (Paris, 1999), pp. 239-241.

In addition, analysis of these manuscripts compensates to some extent for the shortcomings of an approach focusing exclusively on miniatures: the Maghrib cannot be said to have been in the forefront of developments in that field. In short, it appeared pertinent to try to determine whether the self-evident distinctness of the Maghrib from the Islamic East in terms of script and bookmaking techniques extended also to the characteristic uses of pigments.

Lastly, the centuries-long coexistence in the region of three different traditions – Islamic, Christian and Judaic – raises the question of the interchange of influences that surely occurred between craftsmen in those communities and that might have well had a discernible effect on manuscripts. Scholars such as Beit-Arié[123] have already drawn attention to the convergence, in terms of graphical characteristics, between Hebrew manuscripts copied in North Africa and Spain and Islamic ones produced in the same area and at the same time. The formulae that manuscript illuminators followed in preparing their colours may possibly offer similarities that will allow correlations suggested previously to be extrapolated. In analysing the colours used in illuminations from a group of Western Islamic manuscripts, the prospect of undertaking such comparisons at some future date was borne in mind. One last factor that influenced the choice of corpus was the possibility of reading these results in the light of historical Arabic sources from the Maghrib, such as Ibn Bādīs (fifth/eleventh century)[124] and al-Qalalūsī (seventh/thirteenth century),[125] both of which contain instructions for making coloured inks.

The manuscripts analysed

In an attempt to answer these questions, a study was conducted on a two groups of manuscripts from the collections in the BNF. The first contains mainly copies of the Qur'ān,[126] but also a copy of *al-Muwaṭṭa'*, a collection of

123 M. Beit-Arié, *Hebrew manuscripts of East and West: towards a comparative codicology* [The Panizzi Lectures, British Library, 1992] (London, 1992), pp. 37-52. 124 *'Umdat al-kuttāb wa-'uddat dhawī l-albāb*. The edition by Ḥalwajī and Zakī (see note 3) relies on five manuscripts: one preserved at Rampur and dated 1188/1775, and four in Cairo (Dār al-kutub, 345 Zakiyya, copied prior to 1193/1779; 38 Taymūr; 185 Majāmī'; and 109 'Ulūm ṣinā'iyya). The editors did not make use of four other manuscripts in the same library, which are fragmentary or derived from the manuscripts cited above. The Cairo manuscripts are not dated and seem, to judge by published reproductions, relatively late compared to the supposed date of composition of the work itself. For his English translation Levey (op. cit.) primarily used a manuscript conserved at Chicago (Oriental Institute, MS. A 12060) copied in 1908 from a manuscript from the Taymūr collection now in the Dār al-kutub; in addition he examined four copies preserved at Gotha (1354 to 1357) and another manuscript in Chicago (A 29809, from 1671). To the best of our knowledge, no study has been devoted to the history of the text (author, possible interpolations, etc.); this has rendered the appreciation of the exact value of this source in an historical perspective problematic. 125 *Tuḥaf al-khawāṣṣ fī ṭuraf al-khawāṣṣ*, MSS. Paris BNF arabe 6844, and Rabat Bibl. Royale, call number unknown; see Chabbouh, op. cit., pp. 69-76. 126 MSS. Paris BNF arabe 385, 388, 389-390, 395, 423, 5935, 6529, Smith-Lesouëf 194 and 217 (see Déroche, *Cat.* I/2, passim).

Ḥadīths compiled by Malik ibn Anas (710–796) and one of the basic texts of the Mālikī School of Law predominant in the Maghrib,[127] a *Kitāb* by Ibn Tumart,[128] and a copy of al-Idrīsī's *Geography*.[129] All were copied between the end of the twelfth and beginning of the fifteenth centuries CE in the Islamic West, though it is impossible to be more precise as regards the place where the manuscripts originated. Three of the Qur'āns are dated or else can be dated with a considerable degree of precision: BNF arabe 385[130] was completed in 703/1304, BNF arabe 423[131] probably between 749/1348 and 759/1358, and BNF arabe 389-390[132] shortly before 807/1405 (illus. 39). The remaining are ascribable to the seventh/thirteenth or eighth/fourteenth centuries.[133] This period was marked by the growth of the Almohad Empire which, starting out from Marrakesh, extended over the entire Maghrib (Tunis was taken in 1159) and al-Andalus.

By the mid-seventh/thirteenth century, the Maghrib was divided between three dynasties: the Ḥafṣids in Ifrīqiyya with Tunis as their capital (1237), the 'Abdalwadids from Tilimsān (Tlemcen) to Bijāya (Bougie), and, in the west, the Merinids who in 1248 were to conquer Fez, their future capital. The era was characterised by the progressive retreat of Muslim dominion in the Iberian Peninsula where the Naṣrids, ensconced in Granada from 1246 until 1492, controlled only the southern tip of Spain. Following unification under the Almohads, political and cultural centres then fragmented, although the life story of Ibn Khaldūn, who attended every court in the Maghrib, is testimony to how literati and scholars could continue to travel freely around the region.

The second group includes four Qur'āns or Qur'ānic fragments. Three were copied beyond the bounds of the Maghrib and date from before the time in which the first group of manuscripts was completed. Their dating relies on palaeographic criteria: one fragment (Paris BNF arabe 330c; ff. 11 to 19) is assigned to the Umayyad period (beginning of the second/eighth century)[134]; BNF arabe 324 c probably dates from the mid-second/eighth century,[135] while BNF arabe 350 a dates from the third/ninth.[136] More precise geographical attribution would be premature at this stage: in all probability these fragments, obtained by Jean-Louis Asselin de Cherville in Egypt, were copied *in situ* or in neighbouring areas of the Middle East. The three fragments (BNF arabe 324 c, 330 c and 350 a) are written on parchment. The fourth Qur'ān is contemporary

127 MS. Paris BNF arabe 675, dated 1326 (see Vajda and Sauvan, *Cat.* 2, p. 65). 128 MS. Paris BNF arabe 1451, dated 1183 (see Vajda and Sauvan, *Cat.* 3, pp. 314-317). 129 MS. Paris BNF arabe 2221, from the seventh/thirteenth cent. (W. de Slane, *Catalogue des manuscrits arabes*, p. 391). 130 The manuscript contains the complete Qur'ān (see Déroche, *Cat.* I/2, pp. 31-32, no. 296). 131 This is the seventh part of an eight-volume Qur'ān (Déroche, *Cat.* I/2, p. 32, no. 297). 132 These are the first two parts of a five-volume Qur'ān (Déroche, *Cat.* I/2, pp. 36-37, nos. 305-306). 133 BNF arabe 388, 395, 5935 and 6529, Smith-Lesouëf 194 and 217 (Déroche, *Cat.* I/2, passim). 134 Déroche, *Cat.* I/1, pp. 144-145, no. 268. 135 Déroche, *Cat.* I/1, pp. 75-77, no. 45. 136 Déroche, *Cat.* I/1, pp. 88-89, no. 76. 137 MS. Paris BNF arabe 5844 (Déroche, *Cat.* I/2, pp. 53-54, no. 345).

with the most recent manuscripts from the first group;[137] this seventeenth volume of a Qur'ān in thirty sections was most likely completed in Egypt before 1399 and is copied on Oriental paper. One rather difficult case remains: BNF arabe 378,[138] whose script and illumination style are quite distinct from other works of the time and may be evidence of book art as it was in the ancient Maghrib (third/ninth century and the beginning of the fourth/tenth). Here the illuminator did not use blue, unlike in the three other examples from this group.

The typology of colour use

We now return to consider once again the group of manuscripts from the Maghrib. In keeping with ancient practice elsewhere, the use of colour in the Qur'āns is not restricted to illumination alone: blue, yellow, green and red are used for vocalisation and for orthoepic marks.[139] The question arises as to whether the same individual was responsible for both vocalisation or orthoepic marks and decoration. It is difficult to be sure, but the colophon of a Qur'ān manuscript from Kairouan dated 411/1020 demonstrates that one and the same copyist could be responsible for vocalisation, illumination and binding.[140] Ornamentation, whose main function in copies of the Qur'ān is to mark the divisions of the text, can be divided into three major categories. Some decorations appear within the virtual frame formed by the block of text, others in the margin; the largest illuminations, however, occupy an entire page, generally in pairs. The first category includes verse separators and *sūra* headings, whether or not the latter are placed within an ornamental frame; it thus includes frames that surround the text. In the margins, indications of groups of verses (fives or tens), of sections (*ḥizb*, *juz'*, etc.) and of ritual prostration (*sajda*), as well as the vignettes accompanying the *sūra* headings, can be found. The most elaborate decorations are concentrated at the beginning and end of the volume. Some collections of *Ḥadīths* (accounts of the Prophet's words and deeds, accompanied by their chain of transmission) were lavish copies set aside from other manuscripts in the Maghrib by the use of parchment and their rich decoration. The decoration in *al-Muwaṭṭa'* (BNF arabe 675) fits partly into this typology: it contains a full-page initial decoration, a broad band bearing the title at the beginning, text division markers falling within the block of text, and a frame around the colophon. The *Kitāb* by Ibn Tumart (c. 1080–1130), a collection of writings by the founder of the Almohad movement, is less richly decorated and contains only a single headband with a title.

One manuscript (BNF arabe 2221) belongs in a separate category (illus. 36). Copied in *Maghribī* script on paper, it lacks precise information as to date and place of origin, but can be assigned on palaeographic evidence to the

138 Déroche, *Cat.* I/1, p. 99, no. 118. 139 See Chapter 'Scripts'. 140 Marçais and Poinssot, *Objets* 1, pp. 310-311, fig. 16; B. Roy and P. Poinssot, *Inscriptions arabes de Kairouan* [Publications de l'Institut des hautes études de Tunis, II/1] (Paris, 1950), pp. 27-32, figs. 7, 8.

seventh/thirteenth century. This text, which summarises Arab geographical knowledge as it stood in the sixth/twelfth century, was composed by al-Idrīsī for King Roger II of Sicily in 1154, and is illustrated with seventy-eight maps drawn and painted in spaces left blank by the copyist.

The colours chosen correspond in part to a precise symbolic system: blue for the (salt water) seas, green for hydrographic features, gilded rosettes for cities. Only the mountains feature a wider and more varied spectrum of colours, with shades that range from ochre to crimson through violet, probably chosen on purely aesthetic grounds. Toponyms are indicated in brown ink except for names of countries, which are marked in red.

Codicological observations

Codicological analysis confirms the distinct character of manuscripts from North Africa and Islamic Spain. The majority are copied on parchment, a particularity of the Maghrib at a time when paper was used throughout the Islamic world and when its manufacture was known even in the Muslim West, where it had become widely available from the sixth/twelfth century at the latest. Only MSS. BNF arabe 389/390, 1451 and 2221 are written on paper. The rules governing the make-up of manuscripts on parchment contrast radically with those prevailing in the Islamic East: the use of sections of six or eight leaves and the appearance of sequences facing the sides of the same type, flesh or hair, for example.[141] The roughly square format of several Qur'āns (MSS. Paris BNF arabe 385, 388, 395, 423, 5935 and Smith-Lesouëf 194) also reflects the distinct character of manuscript production in the Maghrib.

Colours: identifying features of the materials used

Preliminary remarks

In the manuscripts studied, colour is for the most part closely associated with the script. Generally coloured symbols (vocalisation or orthoepic marks) appear accompanying a script written in black ink; these may turn a brownish yellow when faded. Essentially, the colours employed in this type of decoration are four in number (red, blue, green and yellow) and both opaque and saturated. The red is generally orangey and is observed more specifically in vocalisation marks. Blues and greens are less vibrant – sometimes even a little muddy – and many have altered with the passage of time; certain dull-looking blues, greenish or even wholly green, are sometimes difficult to distinguish from a true green,

141 P. Orsatti, 'Le manuscrit islamique: caractéristiques matérielles et typologie', in M. Maniaci and P. Munafò (eds.), op. cit., vol. II, pp. 297-299; F. Déroche, 'L'emploi du parchemin dans les manuscrits islamiques: quelques remarques préliminaires', in *Codicology*, pp. 35-37.

the characteristic hue of many *waṣla*s. The yellows frequently used for *hamza*s are brightly luminous and saturated, and vary in hue from bright to orangeish yellow.

This palette is enriched with coloured signs that serve to separate verses or groups of verses such as the gilded *hā'*s, the decade indicators (tenth-verse markers), in the form of concentric circles, the decorations marking the sections (*ḥizb*) and the trilobate *sajda*s.[142] Gold and black join red, blue, yellow and green, and a new red appears, a generally translucent and brilliant crimson. On the other hand, the colour range subsists more or less unchanged in larger illuminations such as those of the *'unwān*s or pseudo-*'unwān*s, the frontispiece, dedication, and sura vignette or dedication vignette and of the colophon. Colours such as violet, pink, brownish yellow and white are seldom used. Only two pink-violets have been observed (BNF arabe 330 b and 2221), together with very little white on later manuscripts, 'white' being in the main constituted simply by the writing surface (parchment or paper) being left blank. Moreover, in the same manuscript, the pigments and dyes employed for vocalisation or orthoepic marks are broadly the same as those in larger illuminations; there were only two exceptions to this rule among the manuscripts studied. It is nevertheless difficult to determine whether the majority of the colours are genuine paint or lines drawn in coloured ink. Strictly speaking, Ibn Bādīs' treatise[143] is a source of recipes for coloured inks and dyes rather than a technical text on painting. There is a clear distinction between compilations of this kind and the few contemporary technical treatises from the Christian West concerned with illumination.[144]

The primary aim of the measurements taken was to identify the nature of the pigments or dyes employed and, in the light of the results obtained, to determine significant changes likely to stem from differences in the (assumed) dates or origins of the manuscripts concerned.

To this end, two methods of analysis were used successively. The first technique, X-ray fluorescence spectrometry, can identify the presence of elements such as calcium, copper, iron, mercury, lead, arsenic, silver and gold[145]. The second, absorption (diffuse reflectance) spectrometry makes it feasible to determine a number of functional groups and, in consequence, the nature of the chromophore responsible for the colour, while at the same time providing 'calibrated' measurements for each colour, i.e. a set of colourimetric data that can subsequently serve as a basis for comparative studies. Research was deliberately limited to strictly non-destructive methods of analysis and techniques requiring the removal of even microscopic fragments of paint were

142 See Chapter 'Books and their ornamentation'. 143 See note 124. 144 For example, the treatises entitled *Mappæ clavicula*, MS. Sélestat B. M. 360 (tenth century CE) and MS. New York Library of the Corning Museum of Glass Center, Phillips 3715 (twelfth century CE); and entitled *Schedula diversarum artium*, MS. Vienna 2527 (eleventh-twelfth century CE) and MS. Wolfenbüttel Landesbibliothek 4373 (twelfth century CE). 145 These measurements, made in collaboration with R. Akrich, engineer at the Centre Ernest-Babelon, were obtained using the laboratory's newly acquired high-end X-ray detector.

eschewed. For that reason, in general only the most important pigments and dyes could be identified, to the exclusion of binders (gums or protein glues) or traces of organic or mineral additives, where present.

Blues

The measurements taken reveal the use of lapis lazuli blue (a mineral composed of sulphur and sodium alumino-silicate, $3Na_2O.3Al_2O_3.SiO_2.2Na_2S$) in colours in the following manuscripts: BNF arabe 330 b, 324 a, 1451, 2221, Smith-Lesouëf 194, BNF arabe 5935, 395, 388, 5844 and 389/390.[146] At first sight, their incidence does not appear concentrated in any particular period or source, since they are found in manuscripts of Egyptian origin supposed to date to the second/eighth century, as well as in manuscripts of the sixth/twelfth, seventh/thirteenth and eighth/fourteenth centuries from Spain and the Maghrib. Furthermore, only 324 a (the most recent part of BNF arabe 324) contains blue decoration.

On the other hand, azurite blue – a mineral composed of basic copper carbonate, $2CuCO_3.Cu(OH)_2$ – has been identified only in manuscripts dating from the seventh/thirteenth and eighth/fourteenth centuries or later: MSS. Smith-Lesouëf 217 (illus. 38) and BNF arabe 5935, 6529, 385, 423, 675, 5844 and 389/390. More rarely still, during this same period an indigo blue was used, a colour of vegetable origin (e.g. in BNF arabe 350 a, 2221 and 388). These blues are often observed to have faded (illus. 55). Azurite blues have deteriorated has markedly, turning decidedly greenish (in MSS. Smith-Lesouëf 197 and BNF arabe 5935, for example). Indigo blue undergoes other alterations and has been affected by pigment loss; this seems to have resulted from the leaves being handled and turned, as the blues on the earlier folios of the manuscripts were especially susceptible to damage.

Overall, the use of these two varieties of blue, and particularly of indigo, appears rather late on the scene, unlike the situation in many Latin manuscripts from the Christian West where the use of indigo blue had been current since ancient times.[147] In addition, such blue pigments are not invariably employed in isolation; often they are combined either with another blue (illus. 56) – here, lapis lazuli (as is the case with the most recent manuscripts, BNF arabe 5844 and 389/390) – with black (BNF arabe 350 a, MS. Smith-Lesouëf 197, and BNF arabe 5935 and 385) – or finally, and, more rarely, with an orpiment

146 The order in which the manuscripts are cited follows the table presenting the results as a whole (see below, pp. 156-157). 147 For example, in the decor in a ninth-century Latin manuscript from the Abbey of Silos. See also in this regard, B. Guineau and J. Vezin, 'Nouvelles méthodes d'analyse des pigments et des colorants employés à la décoration des livres manuscrits; l'exemple des pigments bleus utilisés entre le IXe siècle et la fin du XIIe siècle, notamment à Corbie', *Estudios y ensayos: joyas bibliográficas* [Actas del VIII coloquio del Comité internacional de paleografia latina, Madrid y Toledo] (Madrid, 1990), pp. 83-94.

yellow in order to obtain a mixed or compound green (MSS. BNF arabe 2221 and 675, although, for the latter on f. 76, the area concerned may plausibly have been repainted).

Such compound blues seem to correspond rather closely with what is observed in the Christian West at a similar period, in particular as regards the addition of lapis lazuli blue to azurite in later manuscripts.[148] Two manuscripts (BNF arabe 388 and 5935) form a distinct group, being the only examples where the use in isolation of two different blues has been determined: lapis lazuli and indigo in the first, and lapis lazuli and azurite in the latter. In the first of these two manuscripts, lapis lazuli is the commonest blue, indigo being found only in lines in some of the text frames. Manuscript BNF arabe 5935 is apparently comparable in that the regular use of lapis lazuli blue alone has been established in the decoration of marginal vignettes in several pages. The work of two different artists can also be perhaps discerned: one in the diacritics and orthoepic signs, while another was more specifically entrusted with the more important decorative elements (vignettes or frames).[149]

Greens

Except for one compound specimen, all the greens identified are copper-based. They are essentially green lakes, originally based on copper acetates, as is clear from the kinds of deterioration observed. In many places this green, once vivid and translucent – as can be seen, for example, on Smith-Lesouëf 194 (f. 81) – has turned dull and opaque. Moreover, here and there it has disappeared from substantial areas and the parchment itself has seriously deteriorated (MSS. BNF arabe 324 c and 423). Where such gaps occur, the parchment has acquired a pale green tinge due to copper ions (Cu^{2+}) migrating through the support. Such copper greens are met in almost all the manuscripts (except for MSS. BNF arabe 1451 and 2221, Smith-Lesouëf 217 and MSS. BNF arabe 395 and 389/390): that is to say, in the last analysis, whatever their date or place of origin.

In respect of the copper green in one manuscript (BNF arabe 330 b), analysis has identified the presence of lead and tin as well as copper. To produce such a green, it was not, as the recipes state, copper foil that was placed in contact with vinegar vapour, but more probably bronze sherds or scrap.

148 B. Guineau et al., op. cit., pp. 121-155. 149 The examination was undertaken using absorption spectrometry; the curves corresponding to lapis-lazuli blue attain maximum absorption around 600 nm. (caused by sulphur ion transition S^{3-}), an absorption pattern that can be readily distinguished from that of an azurite blue whose maximum appears at approximately 645 nm. (caused by copper ion transition Cu^{2+}) and that of indigo (maximum displayed at around 665 nm.). These results were later confirmed by measurements obtained by X-ray fluorescence spectrometry; copper alone was found in the azurite blues, whereas no elements (other than those of low atomic number) were found in the lapis-lazuli blue (composed of Si, Al, Na, S and O) and in the indigo blue (an organic compound containing only the elements C, H, O, and N).

On the other hand, in only two manuscripts could compound green be identified (illus. 56). This green, a mixture of indigo blue and orpiment yellow, is characteristic of MS. BNF arabe 2221 (al-Idrīsī's geographical treatise), a manuscript that has admittedly to be placed in a category of its own, with many instances of full-page painting. Such a mixed green was also traced in a text frame fillet on page 76 of MS. BNF arabe 675: the area has probably been repainted, since clearly the top of the page has been damaged.[150]

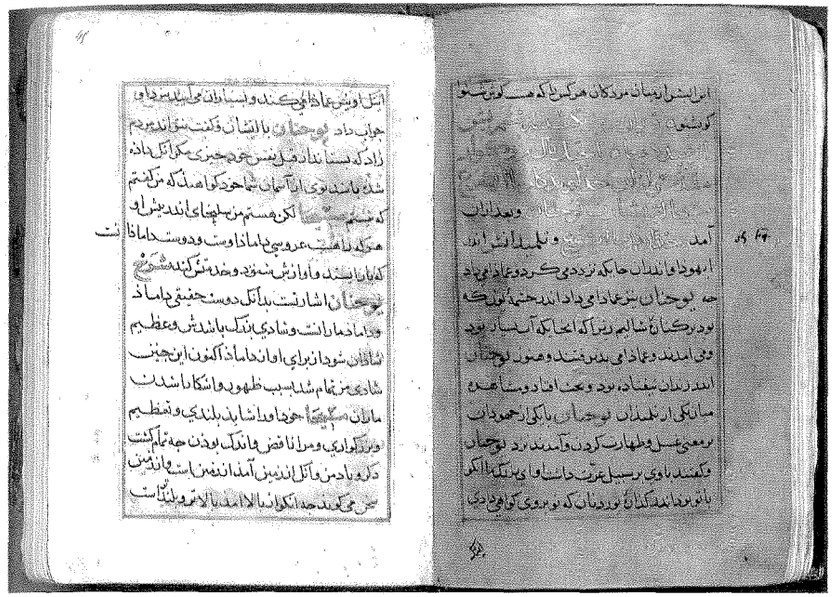
Yellows

As a whole, the yellows used are saturated and strongly luminous. The hue seldom verges on green (first pages of BNF arabe 385), the tint being generally of an orangey or sometimes brownish yellow. All these yellows are orpiment (illus. 58), a mineral composed of arsenic trisulphide (As_2S_3). This mineral was identified in a number of manuscripts (BNF arabe 324 c, 378 and 2221, Smith-Lesouëf 194 and 217, and BNF arabe 385, 675 and 5844). Once again, the use of orpiment is not observed as characteristic of any specific provenance or period. In many cases, the orangeish tinge of the majority of these yellows stems from the presence of traces of realgar, a mineral composed of red arsenic disulphide (As_2S_2) and often found together with orpiment. It is tempting to see these traces as evidence of a natural origin for the yellow pigment used. One notable exception is constituted by yellow ochre – a clayish sand coloured yellow by inclusions of iron hydroxide FeO (OH) or goethite – identified in the painting in BNF arabe 2221 (f. 10 v°) mentioned above. The many gilded areas decorating these manuscripts can also be counted as yellow. For these colours, however, brilliance was of far greater import than hue; gold was often regarded as being equivalent to an absolute white - the colour of perfection, so to speak - and cases such as these will therefore be addressed at a later stage.[151]

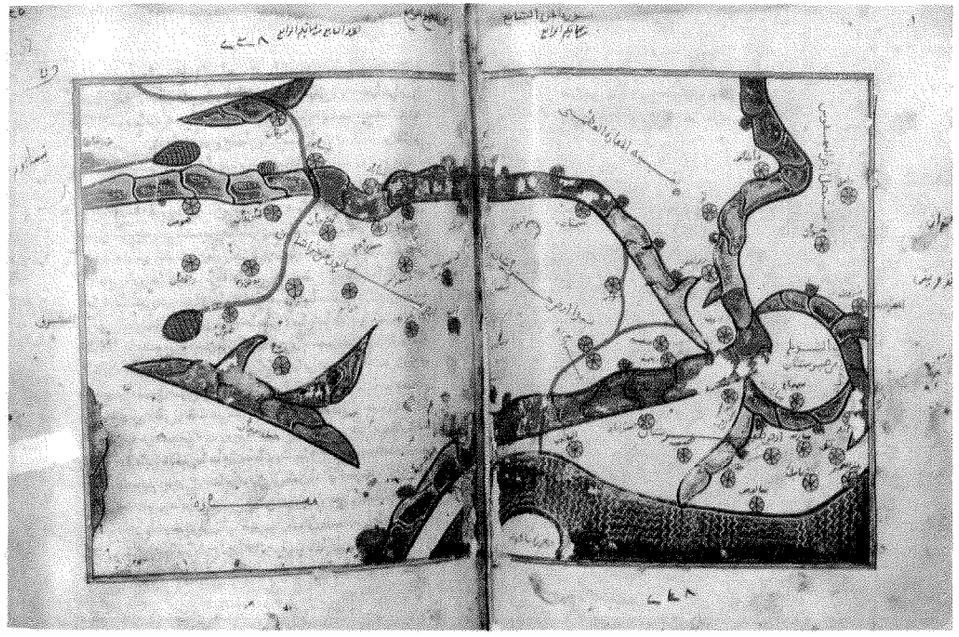
Reds

The reds identified are remarkably diverse in hue, saturation and luminosity. They include highly saturated and luminous orangeish reds, bright translucent and opaque reds, a marginally dull carmine, and some brownish variants. In fact, each red corresponds to a different compound. For the orangeish reds, measurements indicate the presence of red lead or minium (from which the word "miniature" is derived), a pigment composed of a mixture of two lead oxides, PbO and Pb_3O_4. Contrary to expectations, it was not found in the oldest manuscripts but starts to appear only in the seventh/thirteenth century

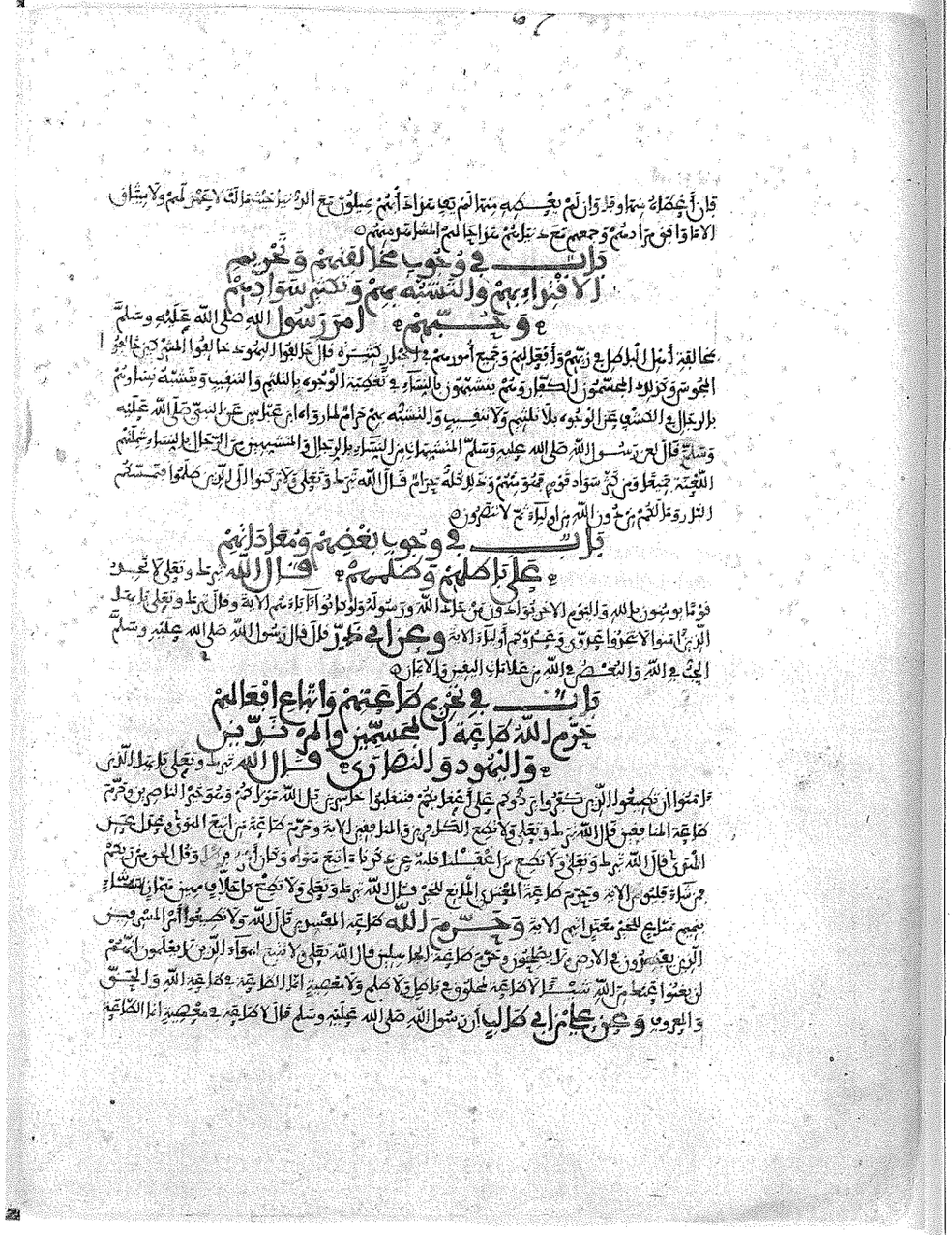
150 These results were obtained by absorption spectrometry and, as regards the identification of copper, by X-ray fluorescence spectrometry. 151 Arsenic and iron were detected by X-ray fluorescence spectrometry, the yellow ochre being identified by absorption spectrometry.



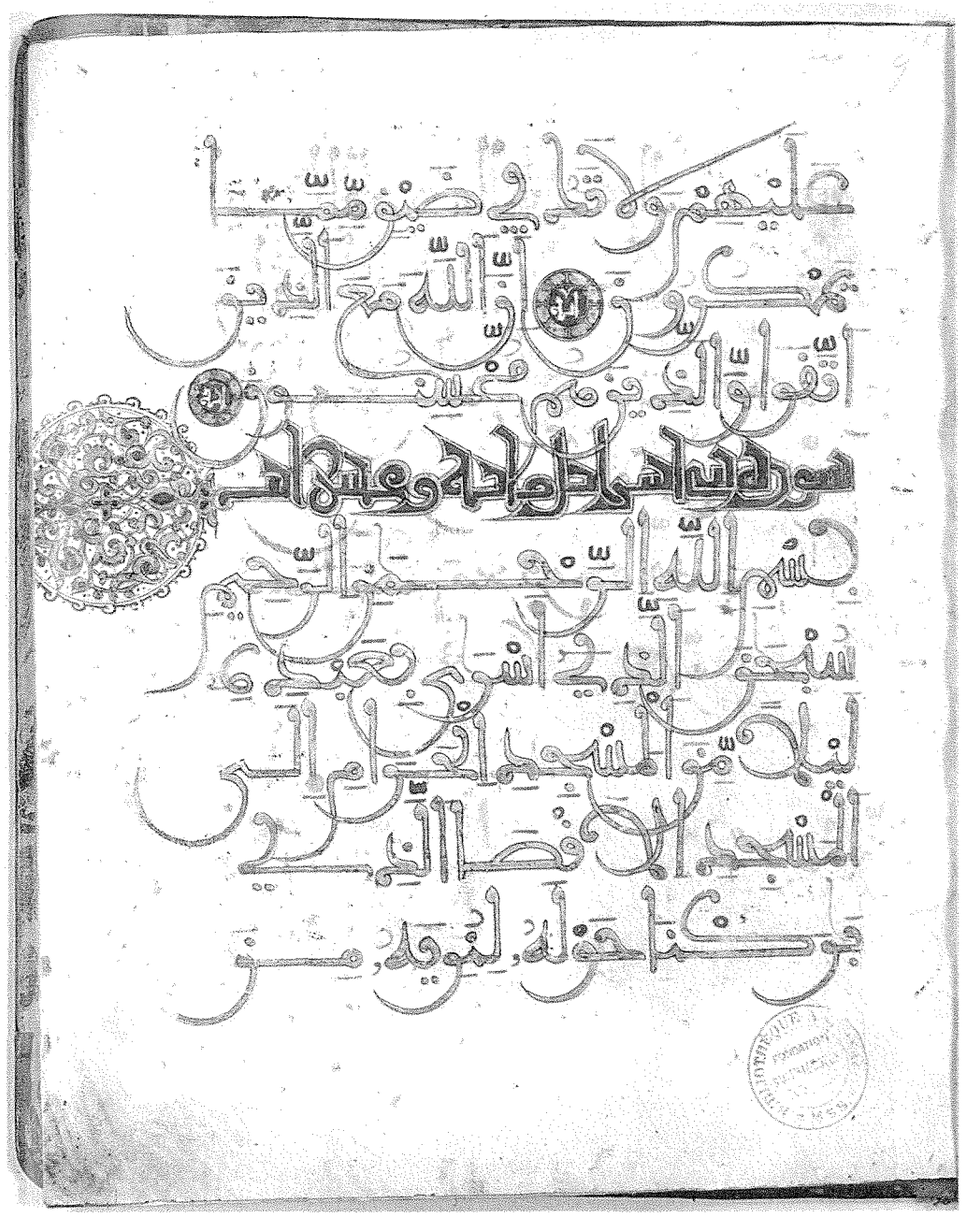
35. A quire of tinted folios. Crimea, 776/1374. Paris, BNF persan 3, f. 44v°-45.



36. The *Geographia* of al-Idrīsī: 4th clime, section 7. Paris: BNF arabe 2221, f. 236v°-237.

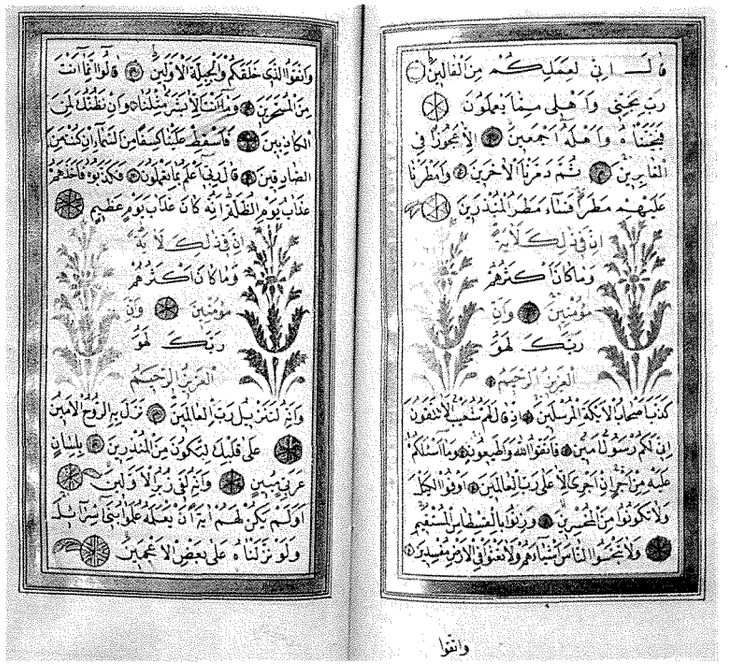


37. Rubrics. Parts of the text are also highlighted in blue or in bold lettering. Maghrib, 579/1183. Paris, BNF arabe 1451, f. 67v°.

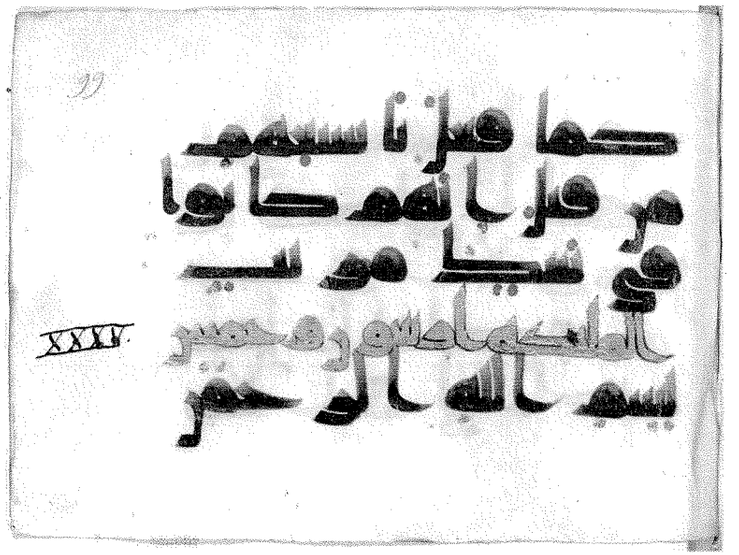


38. Chrysography on parchment. Maghrib, seventh/thirteenth or eighth/fourteenth century. Paris, BNF Smith-Lesouëf 217, f. 1.

39. Silver ink on tinted paper. Maghrib, ca. 1400 CE. Paris, BNF arabe 389, f. 63v°.

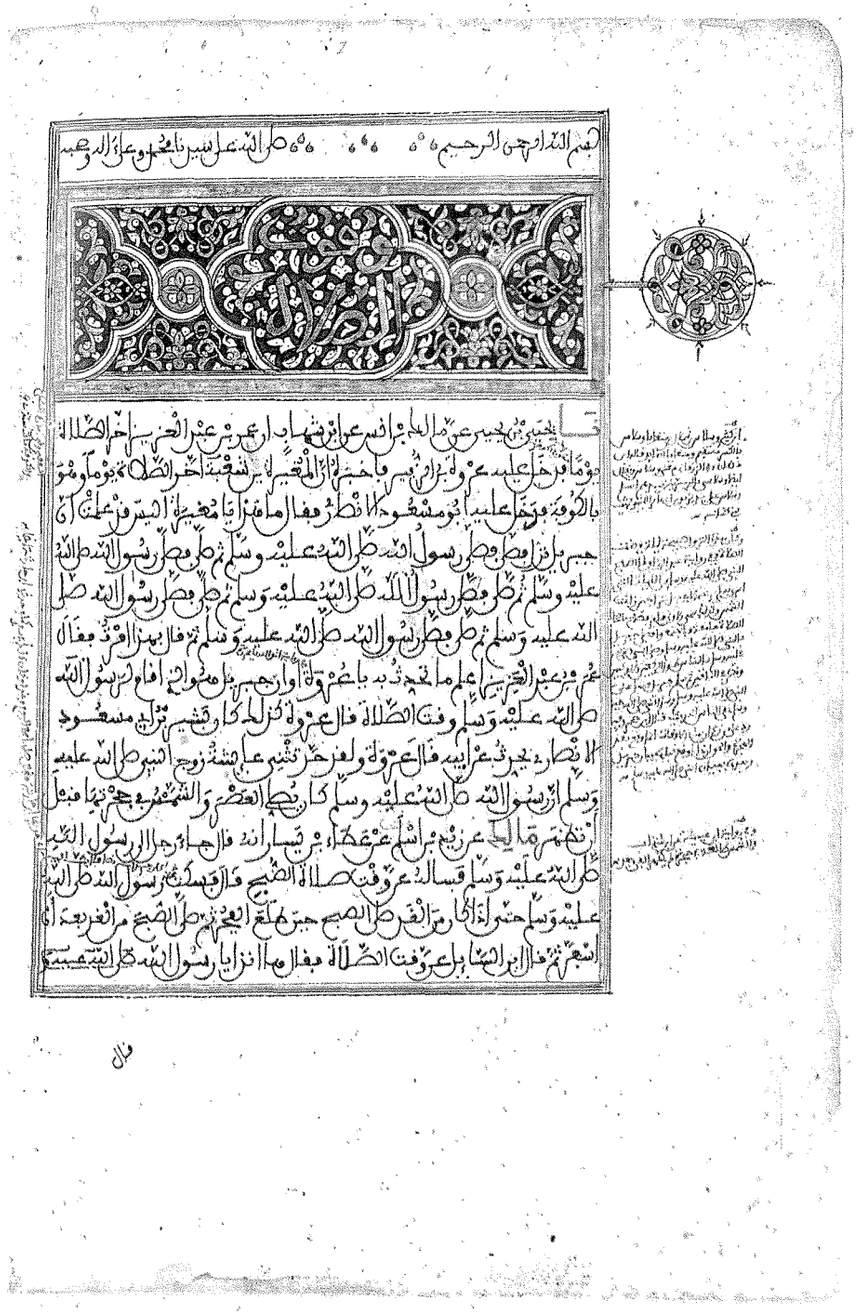


40. *Naskhī* script. Rubricated words and groups of words are so arranged as to be mirrored on the facing page. Turkey, 1270/1852-3. Istanbul, TIEM 469, f. 188v°-189.



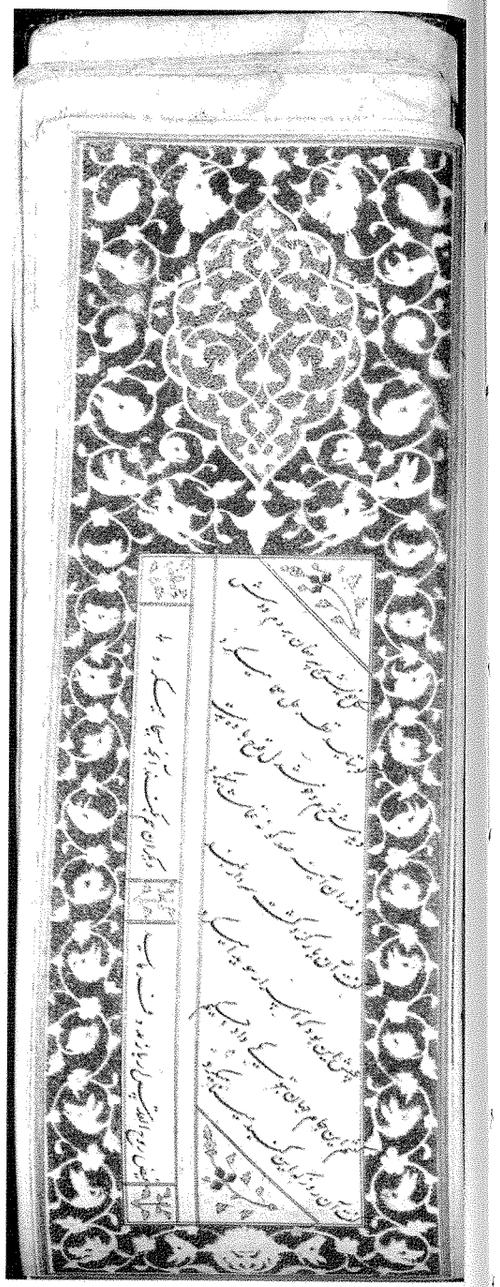
41. Early 'Abbāsid script, Type D I, on parchment, with Sūra heading in gold; datable as third/ninth century. Paris, BNF arabe 365, f. 99.

42. Type NS III script on parchment; datable as fourth/tenth century. Paris, BNF 5178 d, f. 6.

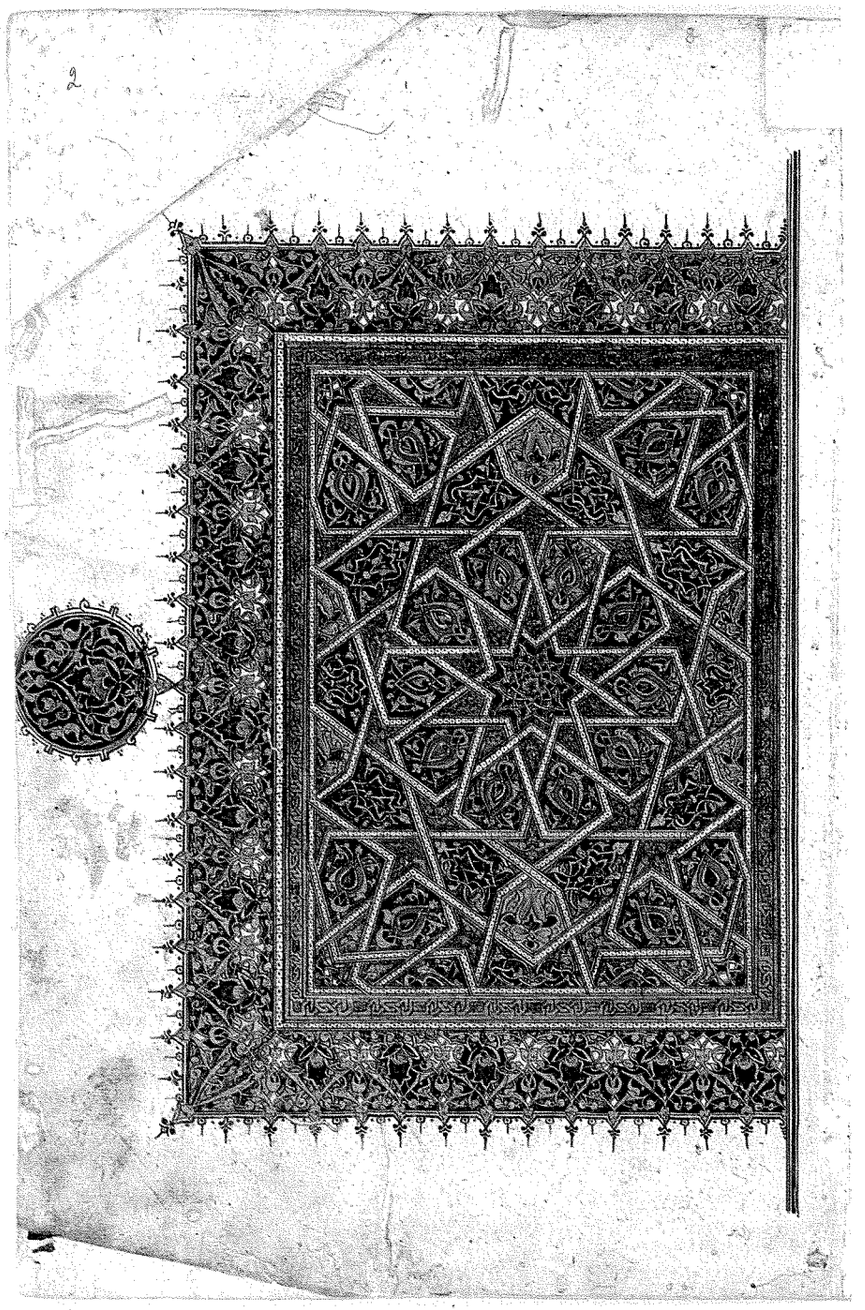


43. Maghribī *sarlawḥ* (illuminated panel). Text copied in 1191/1777. Paris, BNF arabe 678, f. 2.

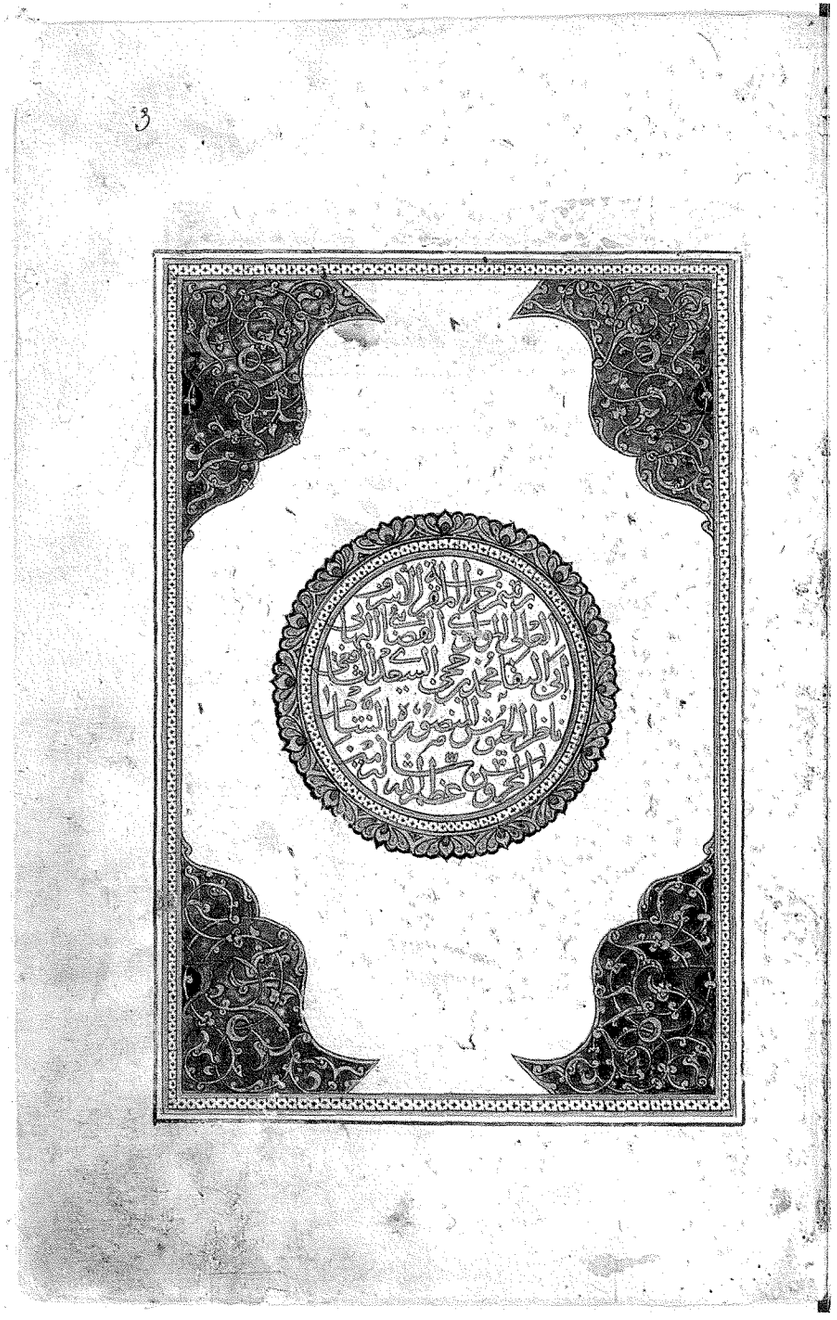
44. *Sarlawḥ* (illuminated panel) of an Ottoman Qur'ān. Ca. 1600 CE. Paris, BNF arabe 433, f. 1v°.



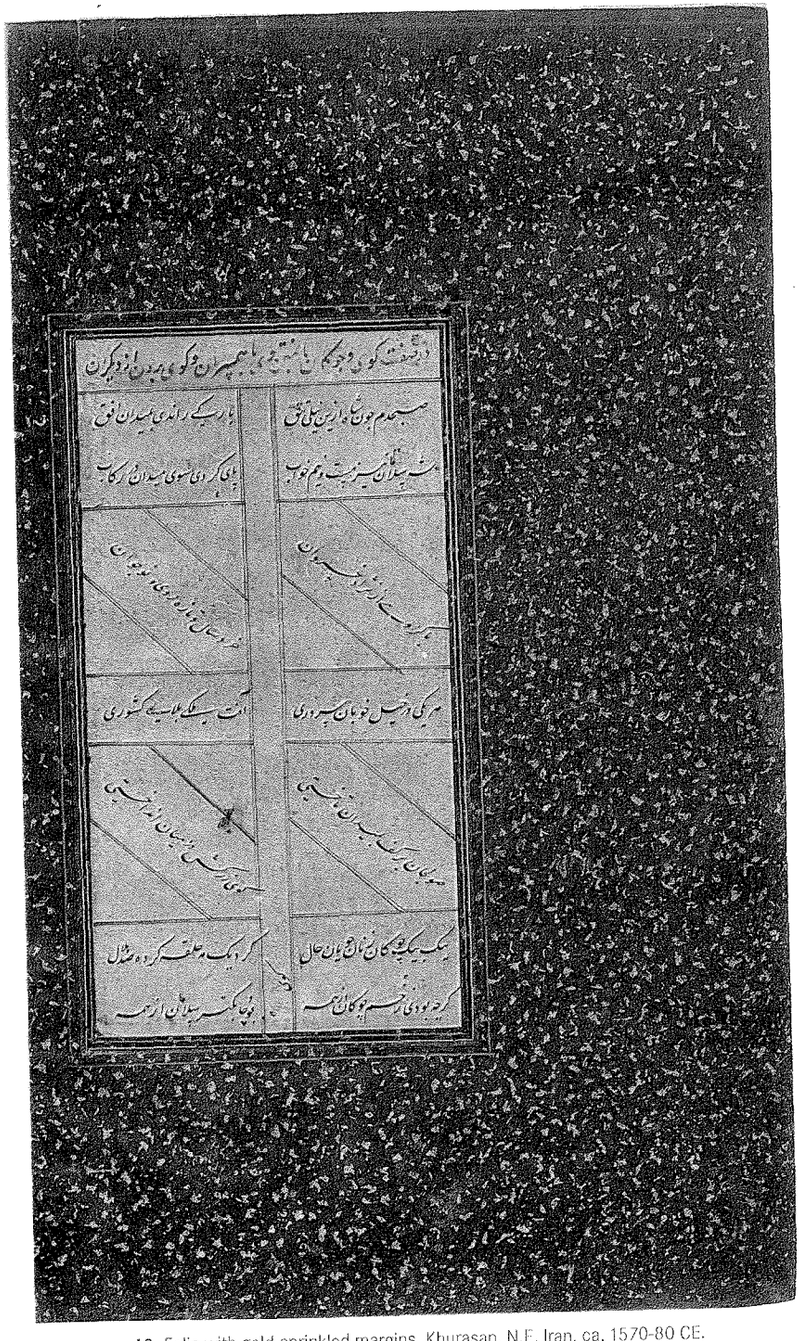
45. Page from a manuscript in *safīna* format, with stencilled decoration. Iran, ca. 1480 CE. Paris, BNF suppl. persan 1425, f. 27v°.



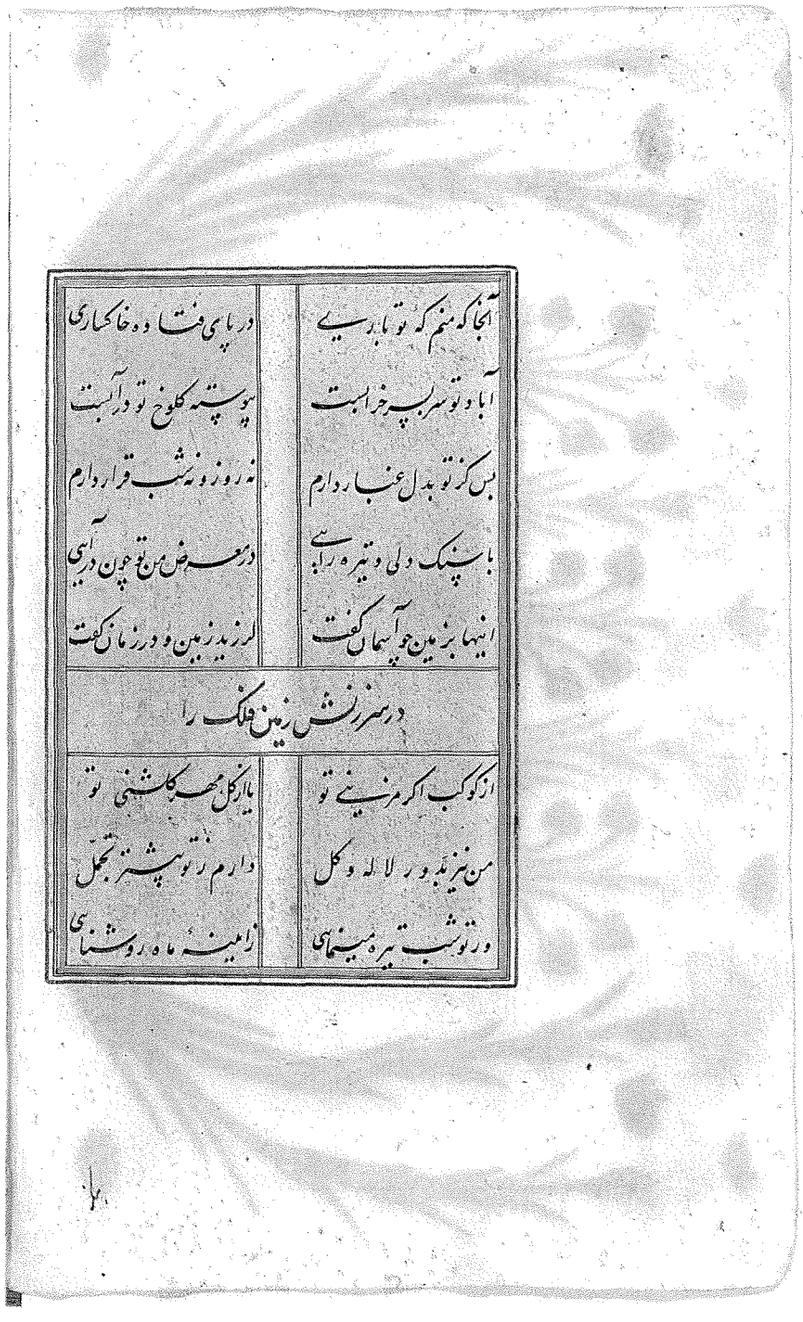
46. Full-page frontispiece decoration. MS. copied in year 1067 of the martyrs/1353. Paris, BNF arabe 12, f. 2.



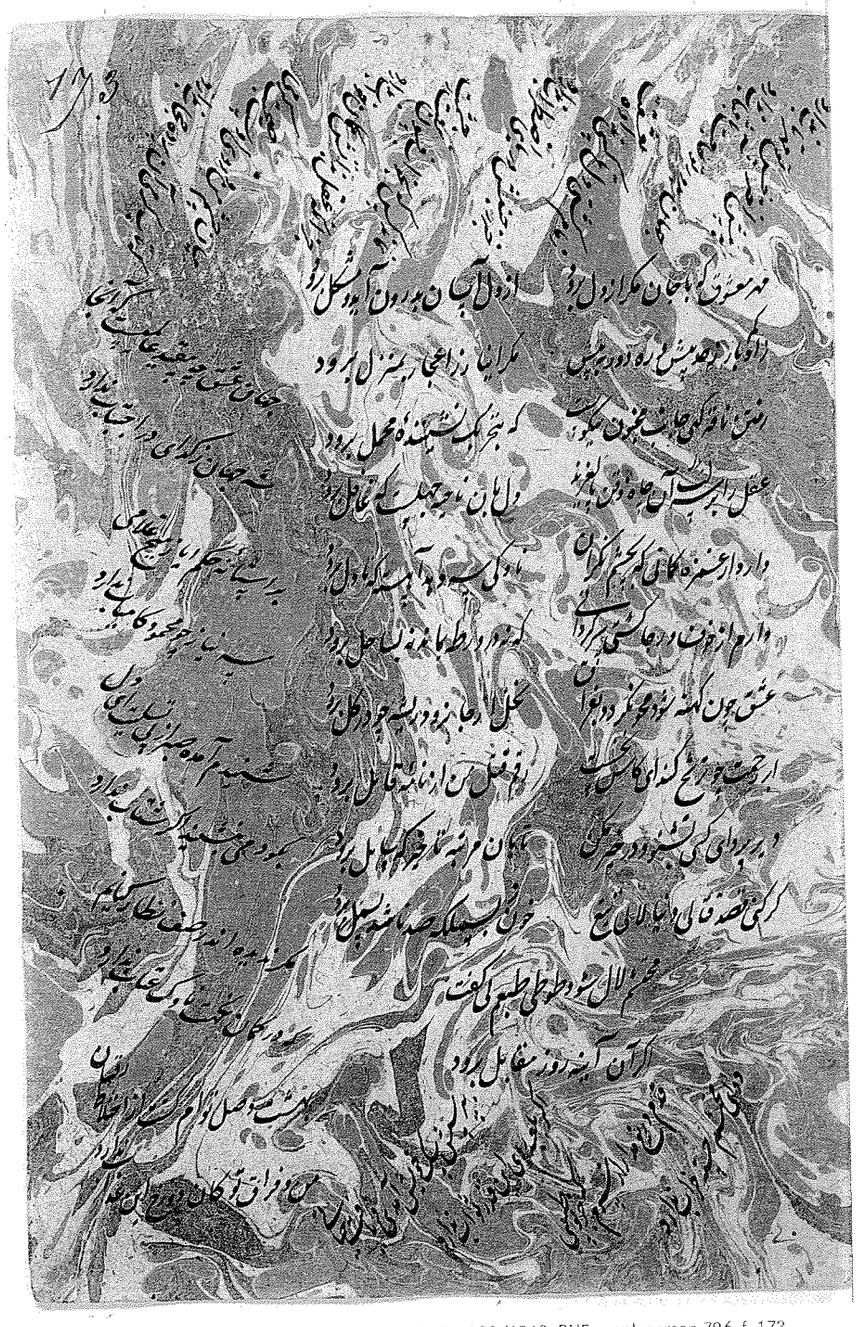
47. Ex-libris. MS. copied in 835/1432. Paris, BNF 6072, f. 3.



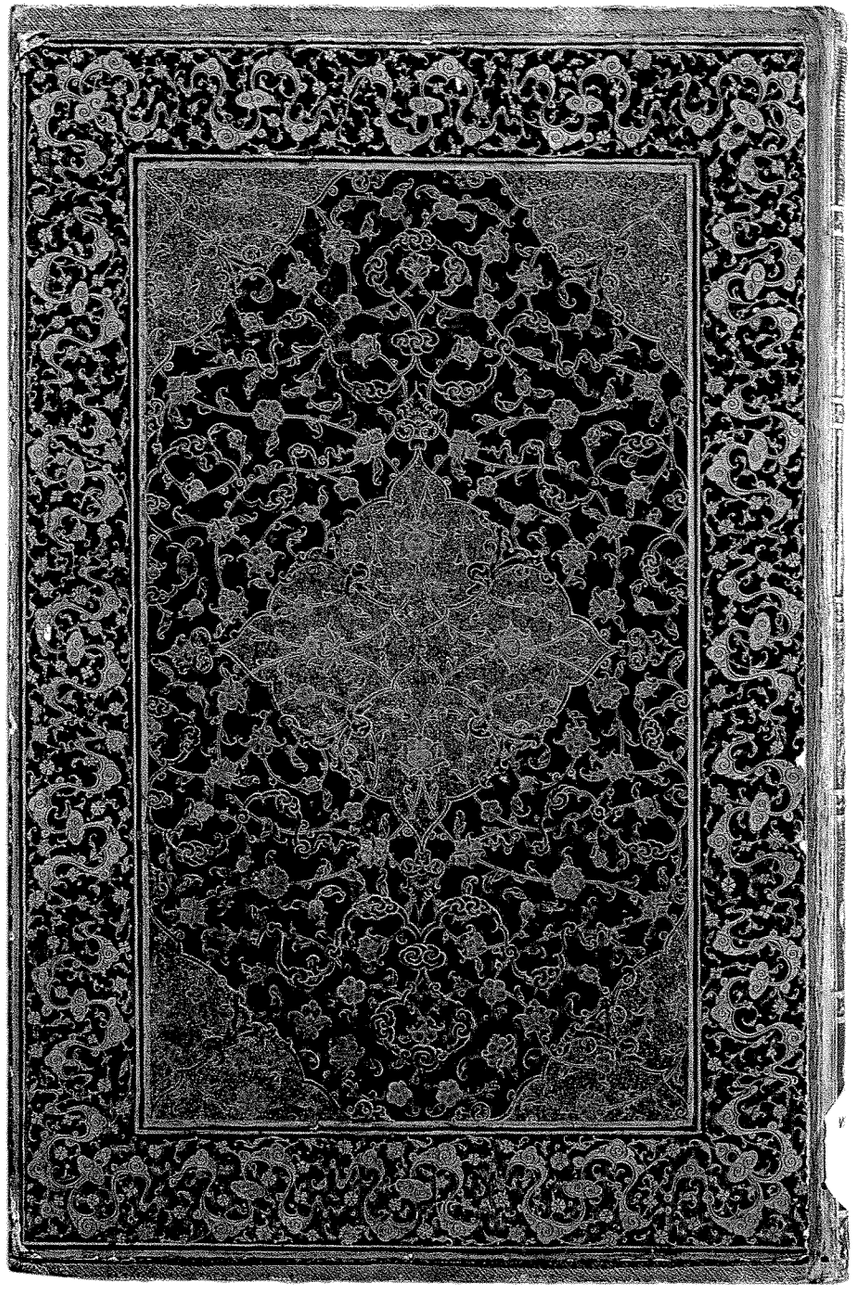
48. Folio with gold-sprinkled margins. Khurasan, N.E. Iran, ca. 1570-80 CE.
Paris, BNF suppl. persan 1344, f. 25v°.



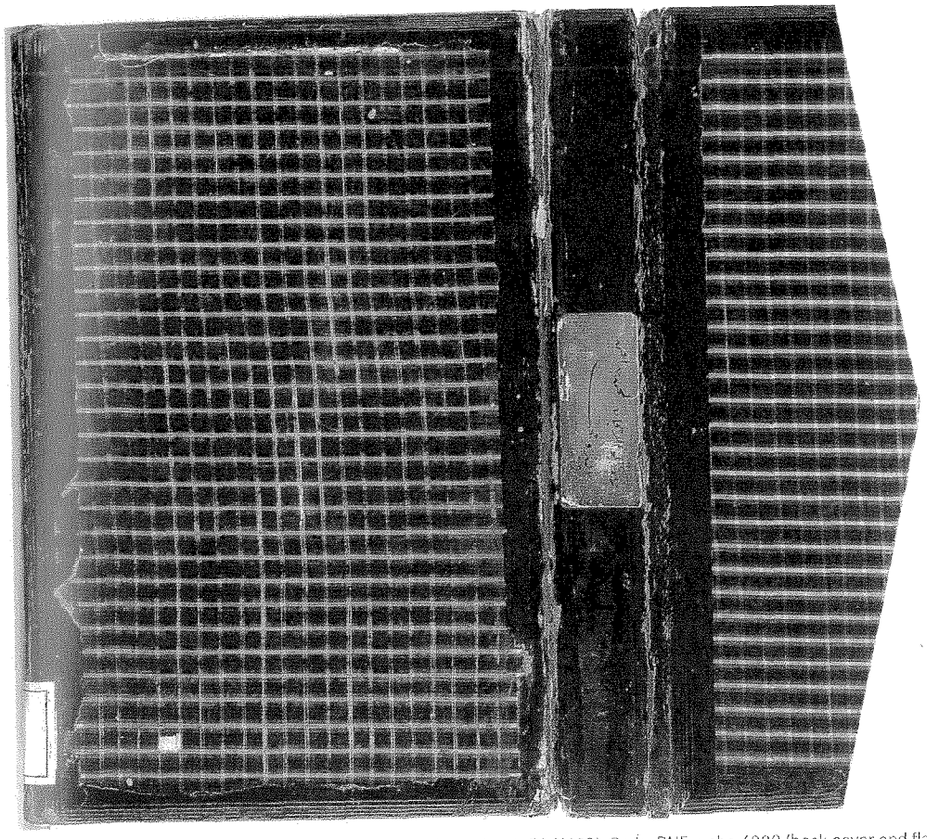
49. Ottoman silhouetted paper. Turkey, 969/1561-2. Paris, BNF suppl. persan 1479, f. 6v°.



50. Text written on marbled paper. Bijapur, India, 988/1560. BNF suppl. persan 796, f. 173.



51. Lacquered binding. Probably Herat, Afghanistan, ca. 1600 CE.
Paris, BNF persan 357 (back cover).



52. Binding covered with textile. The manuscript itself is far earlier (554/1159). Paris, BNF arabe 6080 (back cover and flap).

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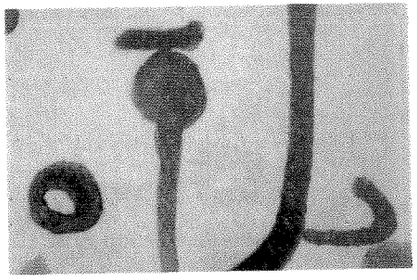

53. Example of use of white lead to lighten colours.
The light blue next to the white outline is a mix of lapis lazuli and white lead.
The green (below) is a mixture of indigo, yellow orpiment, and white lead. The orange is a lead minium (Pb_3O_4).
The orangeish red which covers the orange is vermilion (HgS). Paris, BNF arabe 2221, f. 330v° (detail).

54. Example of alteration of minium orange (Pb_3O_4). The orange has lost its original brightness.
The lead oxide at the surface has partially changed to brown lead sulphur (PbS), so darkening the orange beneath.
The blue is azurite, which has partially changed to malachite green; green specks are observable at the edges.
The red is cochineal (kermes). Paris, BNF arabe 423, f. 9 (detail).

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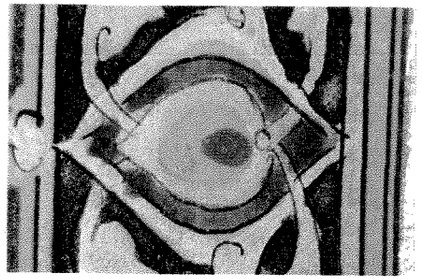

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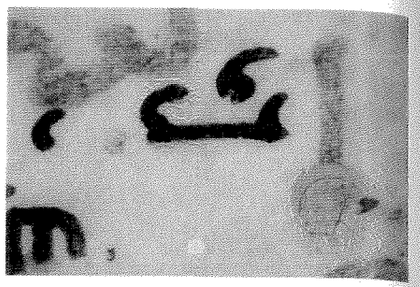

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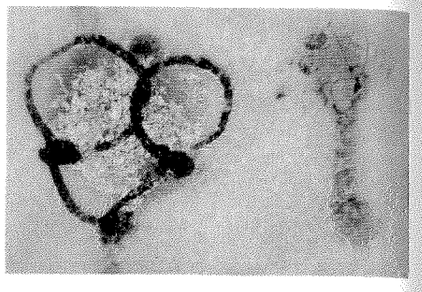

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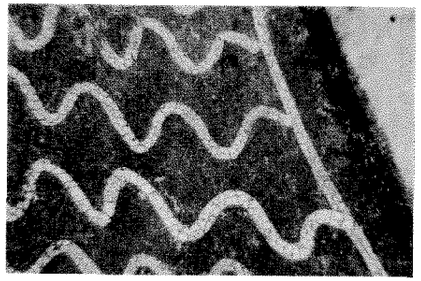

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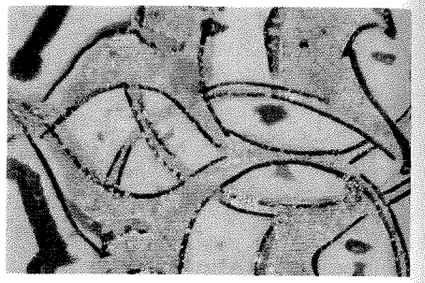


55. Example of black outlines, added after painting, surrounding coloured areas. Migration of the black into the blue has partially darkened it, making it a mixture of lapis lazuli and black. The orangeish red at the center is a vermilion of mercury sulphide (HgS). The green has a base of copper acetate. Paris, BNF arabe 5844, f. 1v° (detail).

56. Example of a composite blue made up of indigo, lapis lazuli, white lead, and black. Paris, BNF arabe 2221, f. 236v° (detail).

57. Example of the use of white lead to render colours more opaque. The green is a composite made up of indigo blue, yellow orpiment, and white lead. The pink has not been analysed but is probably (as elsewhere in the MS.) a mixture of a red cochineal lake and white lead. Paris, BNF arabe 2221, f. 330v° (detail).

58. Example of a round mark (*hamza*) in bright yellow. The pigment forms a thick layer: it consists of a mixture of orpiment yellow and a binding agent (unidentified); the latter is the probable cause of the surface cracks. The blue is lapis lazuli and the purpleish red is cochineal. Paris, BNF Smith-Lesouëf 194, f. 73v° (detail).

59. Example of changes in colours. In areas where the gold has disappeared, the yellowish-brown glue beneath, used to make the gilding adhere to the parchment, is now visible. On the left, the paint of the yellow mark (*hamza*) has flaked in places. The original bright orpiment yellow is now a yellowish brown. The blue is lapis lazuli and the red is cochineal. Paris, BNF Smith-Lesouëf 194, f. 73v° (detail).

60. Example of black outlines painted after the addition and burnishing of gold. The fine scratches visible on the surface of the gold are from burnishing. The specks of gold that have migrated to the surface show that the gold used was a fine powder (gold ink). The blue is lapis lazuli. Paris, BNF Smith-Lesouëf 194, f. 73v° (detail).

(decorations in BNF arabe 2221, 5935, 6529, 675, 423 and 5844). Another orangeish red is composed of arsenic, most often as the result of a mixture. Where arsenic alone was been identified, as in Smith-Lesouëf 194, (vocalisation marks on f. 83, for example), the colour is a mix of red realgar (As_2S 2, disulphide) and yellow orpiment (As_2S_3, trisulphide). The presence of mercury (illus. 55) in another manuscript (BNF arabe 675), indicates that the orange-tinged red is composed of 'vermilion' (red mercuric sulphide HgS) and orpiment.[152] This same mercury vermilion red, again with a slightly orange tint, was found in all the earlier manuscripts (BNF arabe 330 b, 324 a and c, 378 and 350 a) in which mercury alone has been identified. On the other hand, in two other MSS. (BNF arabe 324 a and c and 378), the presence of arsenic in addition to mercury was detected in some reds; orpiment yellow had been added to the vermilion red, thus accentuating its orange hue. Such mixtures are seldom found in contemporary illuminations from the Christian West. Vermilion red also appears in two later manuscripts (BNF arabe 5844 and 389/390); in the former, the somewhat dull hue is not at all orange, the surface being coated in a thick red glaze (probably an organic red lake).

Another red, bright and translucent, is used in the decoration of almost all the manuscripts, except the oldest ones. This light, very luminous red can be identified as a red organic lake, cochineal (illus. 54). Unfortunately, the measurements taken do not allow one to determine whether the red is cochineal kermes (extracted from *Kermes vermilio*), 'Armenian' cochineal (extracted from *Porphyrophora hamelii*) or even lac cochineal (extracted from *Kerria lacca*). Nonetheless, the most likely candidate would seem to be a red made from cochineal kermes, since it is found both in Spain and in the Maghrib. In the Middle Ages, kermes from Spain was renowned as a dyestuff because it could convey a crimson colour to wool, and it became a significant trade commodity. This kermes red was also employed in painting, as a precipitate in the form of kermes lake, and formed part of the manuscript illuminator's palette. Here, this red appears to have been applied with the pen instead of the brush, and always in relatively small areas. In fact it should really be considered as a red ink, albeit Ibn Bādīs does not seem to mention it in his treatise.[153]

152 Measurements obtained by absorption spectrometry were undertaken under laboratory conditions on standard samples of vermilion, realgar and orpiment, as well as on pairs of these constituents mixed in various proportions. The spectra obtained thus served as standard curves for the identification of compound orangeish reds. **153** In point of fact, for organic reds of animal origin, Ibn Bādīs mentions only red lake, designated by the word *lukk*, a term, corresponding, in Levey's opinion (op. cit.), to the Persian *lak*. Other authorities give the origin as the Sanskrit *laksha*, which would have lead to *lakh*, *lak*, a word reflecting the 'hundreds of thousands' (by implication, of Coccidia) that supply the red lac extracted from 'stick-lac' – twigs from the branches of the tree on which the compact swarms of *Coccus lacca* gather. It transpires that the term 'red lac' has also been used to refer to a process (the fixation of organic colorant so as to render it insoluble, either by complexation by means of metallic oxides or by adsorption on a mineral base), rather than a given red colorant; the colorant can be extracted either from *Coccus lacca* from Bengal or Burma, Armenian cochineal, or kermes cochineal collected in Spain or North Africa.

In illumination in the Christian West but at a marginally earlier time, such a translucent red often appears over gilded grounds and is evidence of an illuminator's desire to "reduce' or 'tone down' the gilding.

Finally, analysis indicates the sporadic occurrence of a duller red. In the decoration of BNF arabe 423 a haematite red (comprising iron oxide, Fe2O 3) combined with minium red, and in BNF arabe 675, a haematite red as well as a light red clearly composed of another red organic lake, have all been identified. These types of red once again seem to place this latter manuscript in a class of its own.

On the other hand, no brazilwood red was detected. This red, extracted from a wood from Sri Lanka that yields a bright and translucent or else violetish and opaque pink (when the colorant is precipitated in white lead)[154], was popular in the West in the fourteenth and fifteenth centuries, particularly for ornamenting Latin manuscripts. In the Arabic manuscripts from a comparable period that were analysed, the only violet pinks or reds that can be discerned are an opaque colour containing cochineal (BNF arabe 6529) and a mixture of cochineal and alum (BNF arabe 2221).[155]

Whites

As has been mentioned earlier, the use of white pigments is seldom observed. It is generally the writing surface (parchment or paper) being left bare that serves as a 'white' surface. White lead was used, however, in two of the later manuscripts (BNF arabe 5844 and 389/390). It is also found in another copy (BNF arabe 324 a), where it is used only in very small zones, and more particularly in BNF arabe 2221, where almost all the colours have been more or less modified in order to suggest relief by the addition of white lead (illus. 55). This form of relief modelling had long been employed by manuscript illuminators in the Christian West; well-known technical treatises such as the *Mappæ clavicula*[156] or Theophilus the Monk's *Various Arts*[157] instruct the painter on how to lighten (*matizare*) by adding white lead. In the older Arabic manuscripts studied here, the painters did not employ this process and seem to have opted for luminosity of colouring in preference to modelling or volume effects.

154 For example, at the beginning of the fifteenth century CE; see also, B. Guineau et al., 'Painting techniques in the Boucicaut Hours and in Jacques Cœne's recipes as found in Jean Lebègue's *Libri Colorum*', in I. I. C., ed., *I. I. C. 17th International Congress, Dublin, September 7-11 1998* (London, 1998), pp. 51-54. **155** Lead, mercury, arsenic and iron were identified by X-ray fluorescence spectrometry, while the presence of cochineal red was detected by absorption spectrometry thanks to the two characteristic absorption regions of this colorant, the first at around 525 nm. and the second at 565 nm. **156** See S. C. Smith and J. G. Hawthorne, *Mappæ clavicula: a little key to the world of medieval techniques* [Transactions of the Am. Phil. Soc., N. S. , 64, 4] (Philadelphia, 1974). **157** See S. C. Smith and J. G. Hawthorne, tr., *Theophilus. The Various Arts* (London, 1961).

One puzzling case remains. In what today appears to be a black zone (f. 1) in the severely damaged frontispiece of MS. BNF arabe 675, X-ray fluorescence spectrometry detected abundant quantities of lead. This implies that either white lead or red minium has deteriorated into black lead sulphide; but closer examination of the absorption region seems to exclude the latter hypothesis since it displays none of the break in the absorption curve around 665 nm. characteristic of minium even when materially degraded.

Another particular type of white occurring in the white ink used in writing in BNF arabe 389/390 is based on finely powdered silver dispersed in an extremely fluid binder. Markedly deteriorated at the surface, the metal element has since darkened and been transformed in places into black silver sulphide Ag2S. Measurements carried out by X-ray fluorescence spectrometry have also revealed minute traces of gold together with the silver. This silver interspersed with traces of gold might be characteristic of silver originating from some specific source. Lastly, the surface (be it parchment or paper) bears traces of varying quantities of a white mineral laid as a ground for both black and coloured lines. This preparation is of minimal thickness and can be observed only with difficulty, but the calcium detected by X-ray fluorescence denotes the superficial presence of chalk or gypsum whiting. Its presence, however, has been demonstrated in two manuscripts (BNF arabe 5844 and 5935), in which a cross-section of the coating, relatively thick in these cases, has been observed by capitalising on the presence of local damage such as surface tears and/or marks left when the manuscript was scraped in the distant past.

Gold and gilding

All the manuscripts without exception are embellished with gilt decoration, although, depending on the example considered, there are discernible variants. Analysis of the elements present reveals evidence of a little silver in some gilded areas. These silver impurities occur in the ornamentation of MSS. Smith-Lesouëf 194 and BNF arabe 423, 5844 and 389/390, i.e. especially in the later manuscripts (eighth/fourteenth and ninth/fifteenth centuries). This result agrees well with what is observed in Latin manuscript gilding in the Christian West at a comparable period and may be related to a change in the source of the gold used. On the other hand, much of the gilt appears particularly grainy, except perhaps in BNF arabe 389/390. Gold leaf does not seem to have been used to any great extent, though admittedly extensive zones of gilding are few and far between. Occurrences are then largely limited either to gold ink used for tracing fine lines (chrysography) or, for larger uniform areas, to powdered gold dusted regularly over a previously primed surface.[158]

158 The nature of the gum has not been ascertained.

This preparatory layer, in the form of a thin undercoat of a light yellow-brown hue, is easily observable wherever the gold has become detached (illus. 59).[159] Areas of gold were subsequently carefully burnished, as shown by the numerous examples of parallel scratches observable under a strong lens, for instance in BNF arabe 350 a. Areas of gold are also often outlined in black (in BNF arabe 330 b, 1451 on f. 1 v°, and Smith-Lesouëf 217, for example); this contour, encroaching over the edge of the gilding, was added after the gold was burnished. In the strict sense, then, such gilding techniques do not include the use of a coloured base, i.e. the preparatory layer traditionally made from a mixture of skin glue and a clayish bole (usually yellow ochre), as found in much Latin manuscript gilding. The presence of this type of preparation is betrayed by the slightly convex appearance of the gilt that enhances its brilliance, whereas the gold in the Arabic manuscripts under consideration has no discernible effect of relief. Only in BNF arabe 324 a and 5935 can a relatively thick yellow-brown layer beneath the gilding be identified. Under magnification, microscopic cockles or folds, perhaps due to the filling of any possible gaps and/or the action of the burnisher, can be observed on the gilded surface of several manuscripts.

This variant of gilding applied with powdered gold and without a base is probably less resistant to handling, since it has deteriorated in many manuscripts. In particular, substantial losses in areas of gilding can be seen in MSS. BNF arabe 1451, Smith-Lesouëf 217 and BNF arabe 385 and 423, and more still in the binding decoration of MS. BNF arabe 5844, from which a number of the gold-tooled fillets have almost completely disappeared.

Remarks on the techniques employed

Introductory observations

Like ruling lines, preparatory lines are traced out either with a hard point or in a black ink that faded may appear yellow-brown. The indentations left by the compass in the centre of the concentric circles of tenth-verse markers are often visible as well. Gilding was always laid in first, and its edges outlined in black, as were those of many of the coloured motifs (illus. 55, 60). The lines drawn are never merely preparatory marks intended to mark out the surfaces to be painted or gilded, but are genuine 'frames' whose role is to enhance the painted or gilded motif. It turns out that these black rings cannot act as a barrier as they might theoretically have been: certain colours have migrated and settled under the gilding, a process which may have implied that in certain cases a layer of

159 According to Ibn Bādīs, this coating is supposed to be tinted with saffron.

colour was indeed applied prior to the gilt being laid in. Moreover, many gilded areas are ringed or overpainted with geometrical motifs in various colours, opaque for the most part: examples include MSS. Smith-Lesouëf 194 and BNF arabe 395, 423, 2221 and 5844. Other areas of gilding are gradated by using a translucent red on the surface. This vibrant red, a cochineal lake, is applied like a glaze.

The colour is generally not particularly thick, which suggests the use of a coloured ink with a binder, probably gum arabic. It is plausible, for example, that such a binder was utilised in BNF arabe 385, where the colours are particularly shiny. Some relatively thick blue paint layers are visible, while many yellow ones are heavily impasto; the yellows on ff. 2r and 2 v° of MS. Smith-Lesouëf 217 are good examples, in which the yellow layer, consisting of orpiment intermixed with a little yellow ochre, is relatively substantial. Moreover, the surface has flaked, the type of binder used (probably protein) being responsible for its breaking up. The binder concerned has not been identified, but the matt appearance of the surface suggests that it was not gum arabic. In addition, some extremely thick layers of blue paint appear in certain ornamental features of MS. BNF arabe 1451 (on f. 42, for example). The surface of these blues (composed of lapis lazuli) is convex; when greatly enlarged, the paint layer presents minute blue and black granulations and a multitude of tiny pits testifying to the likely use of an emulsified binder, in all probability glair suspended in a little water. Medieval recipes such as those found in Latin treatises of roughly the same period recommend the use of this type of binder with lapis lazuli blue. Finally, the painted surface of two manuscripts (BNF arabe 330 b and 2221) is particularly shiny; such brilliance might originate in the use of a protective varnish containing gum arabic or gum dragon.

Results obtained on black inks have been deliberately excluded from this study since they are too limited to be adequately interpreted. Nevertheless, measurements using absorption spectrometry have made it possible to compare the more or less black hues, those verging on the brownish yellow and the brownish reds of these inks. Thus the ink used for inscriptions within the maps in BNF arabe 2221 presents absorption spectra identical to those of the ink used in the text areas on the pages in their immediate vicinity. As the hands themselves closely resemble one another, the working assumption must be that both inscriptions and texts are the work of the same person. It should be noted, however, that the presence of iron is seldom observed, except in the black ink glistening on ff. 14 v° and 36 v° in BNF arabe 324 c. This very large format Qur'ān is admittedly something of a special case in other respects. The large letters were written in two stages: the scribe initially traced the characters in dark reddish-brown ink with a broad reed-pen before going over the contours with a blacker ink that covered the red-brown beneath. As has already been mentioned, these black outlines are a frequently encountered gilding technique. BNF arabe 385 is an outstanding example in that the colours are outlined in black throughout, a practice apparently peculiar to this manuscript.

The decoration of some ancient bindings was also examined. On the fore-edge flap binding of BNF arabe 5844, for example, a rather grainy-looking gilt can be seen next to practically negligible traces of a blue verging on blue-green paint incrusted into depressions in the stamping; the blue-green is used to fill the frame-lines. It is composed of a mixture of lapis lazuli and azurite blue, such as can be identified in illuminations on ff. 1 v°, 17 v° and 26 of the same manuscript. In addition, analyses carried out on the gilding of this binding reveal, besides gold, the presence of mercury and a little copper. The presence of mercury is surprising as no vermilion red occurs in the area. It can therefore be indicative only of a gold amalgam. The process of gilding with an amalgam, however, though well known and long used on metal, does not seem to be reported for gilding leather, nor, in particular, on old bindings. On the other hand, a recipe for powdered gold[160] especially concocted for painting and writing is given in the collection of the *Secrets* of Alexis of Piedmont.[161] Powdered gold obtained from amalgam is mixed with brimstone, then heated, '[...] and when you will put it in experience [i.e. when you want to use it], stiepe it in Rose water, or other, wherein you shal have mollified or dissolved somme clere gomme Arabicke. Than dresse and order it to writ or paynt with, and you shall have an excellente thinge. Whan you have written or painted, beynge once drye, you maye burnishe it with a dogges tooth, whiche you can not do to another brayed or punned [i.e. powdered] golde, that Scriveners or Painters now a dayes do use. This secrete hath bene practised of the olde and ancieunt writers, as we see in some of their bokes. But nowe you use the practice [i.e. need skill] to burnishe it, layinge a white paper with the dogge tooth. And if you thinke that it is not yet burnished ynoughe, you maye burrnishe it once agayne, with the toothe upon the Golde without the paper betwixt.'

The specificity of colours and techniques

Although the sample of manuscripts was both limited and diverse in origin, certain characteristic observations emerge whose main lines are summarised below. The gold is invariably laid in first; viewed through a lens it is always slightly grainy in appearance. Pulverised gold was used for both the more extensive areas and the finest lines; the gilding was then carefully burnished to a sheen, rendering the surfaces perfectly uniform. Gilded surfaces are flat and only rarely applied over a base of any thickness. Unfortunately the gold has normally lost its sheen and undergone serious losses. In the majority, gilding is outlined in black, contours that also frame many other colours. Yellow and

160 Powdered gold obtained from an amalgam, the amalgam paste being purified by passing it through a chamois leather, which removes a substantial proportion of the mercury in it.
161 *The Secrets of the Reverende Maister Alexis of Piemont* [...] (tr.) William Warde (London, 1558), f. 97 v° ('Fyfte booke').

orangeish yellow hues, containing orpiment, are very widespread, more common apparently than in the decoration of contemporary Latin manuscripts (except perhaps for those from southwest France or Spain). The conclusion to be drawn is that there was a ready supply in the Maghrib of that mineral, known in the Christian West only as an import.[162] One manuscript is exceptional (BNF arabe 675) in not containing yellow; also, two different hands have been distinguished in decoration on ff. 1 v°, 76 v°, 78 and 79 v°.

Cochineal kermes reds, too, are of frequent occurrence. The preparation may be made either from dried insects or obtained more simply from *liqs*, a kind of red-stained, loose 'flock' that can serve as a dye stock.[163] Perhaps such reds correspond to the term *lukk* noted in Ibn Bādīs's treatise. *Lukk* would have been understood as designating a red colour (lake) approximating to that produced by red lac and not red lac itself[164]. Similarly, the term *crocus*, so often met with in medieval recipes, should be rendered by the expression 'saffron-coloured' (or, for certain texts of Arabic origin, 'brass-coloured') and not as meaning the dye actually extracted from saffron, which produces only the most fugitive and pale of yellows. Finally it should be mentionned that the few early Maghribī bindings available for study display traces of painted and gilt decoration that examination shows to have been produced by techniques which appear similar to those in use elsewhere during the same period.

Conclusions

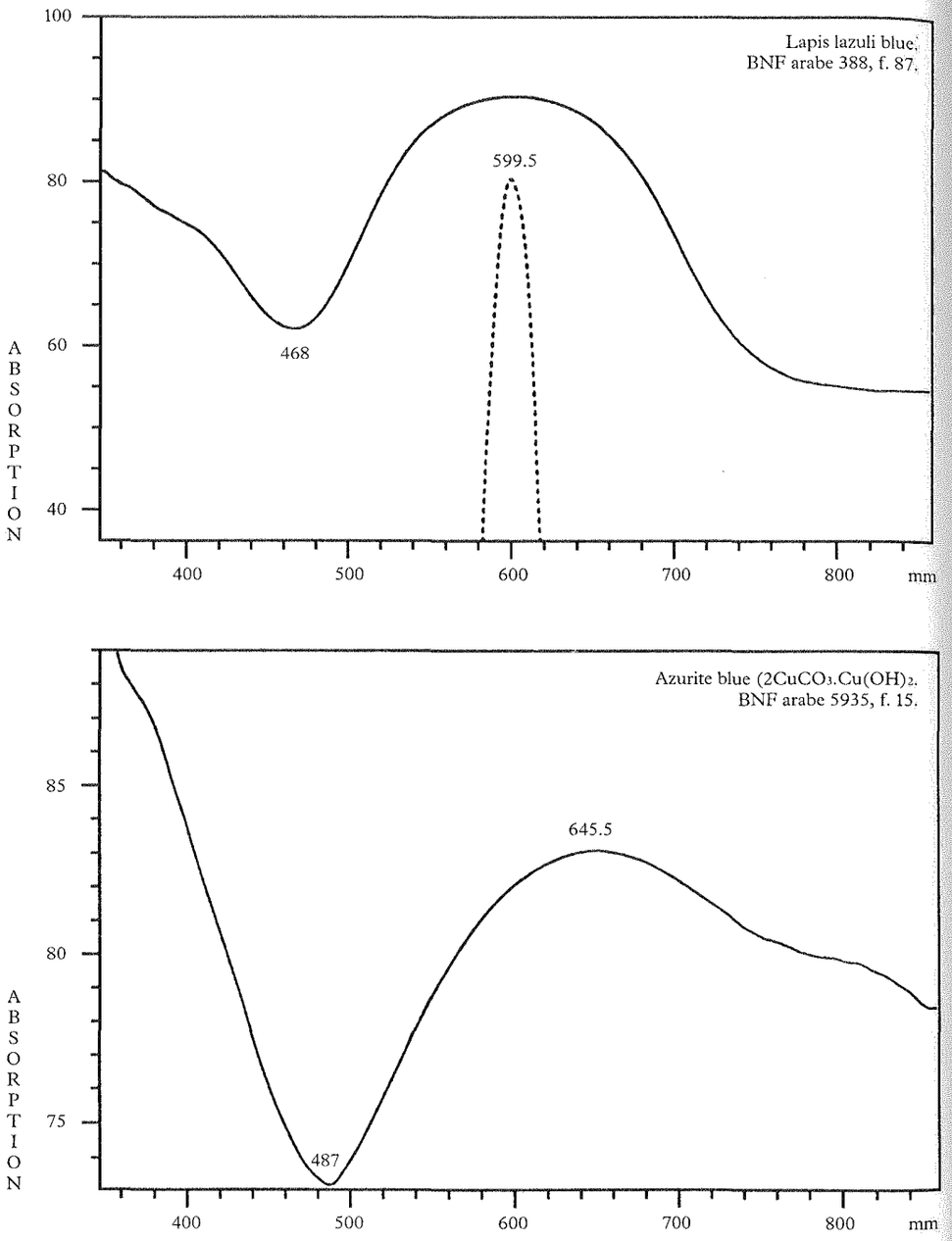
One fact is immediately striking: the materials used for ornamentation in the Maghrib sample are highly homogeneous and quite distinct from that of the 'Eastern' control group. In this latter, red means vermilion, whereas the Maghrib used cochineal instead; azurite is also restricted to manuscripts from this area, although lapis lazuli also occurs. Black was added to several blues. This analysis thus confirms the typical Maghrib characteristics adduced by palaeography and codicology. Furthermore, North African craftsmen engaged in producing manuscripts did not exploit the same range of ingredients in

162 It is known, for example, that in the ninth century monks from Corbie in France would travel to Fos, near Marseille, to procure the various 'spices' the abbey needed, including orpiment. On this subject see also L. Levillain, *Examen critique des chartes mérovingiennes et carolingiennes de l'Abbaye de Corbie.* 163 Following a technique somewhat analogous to the colour known as folium,'clothlet'; see B. Guineau, 'Le folium des enlumineurs, une couleur aujourd'hui disparue. Ce que nous rapportent les textes sur l'origine de cette couleur, son procédé d'emmagasinage sur un morceau d'étoffe et son emploi dans l'enluminure médiévale. Identification de folium dans des peintures du IX^e^ s., X^e^ s. et XI^e^ s.', *Revue d'archéologie médiévale* 26 (1996), pp. 23-44. 164 Spanish kermes was commonly used as an ingredient in a second dye bath, after a first in red lake, for instance.

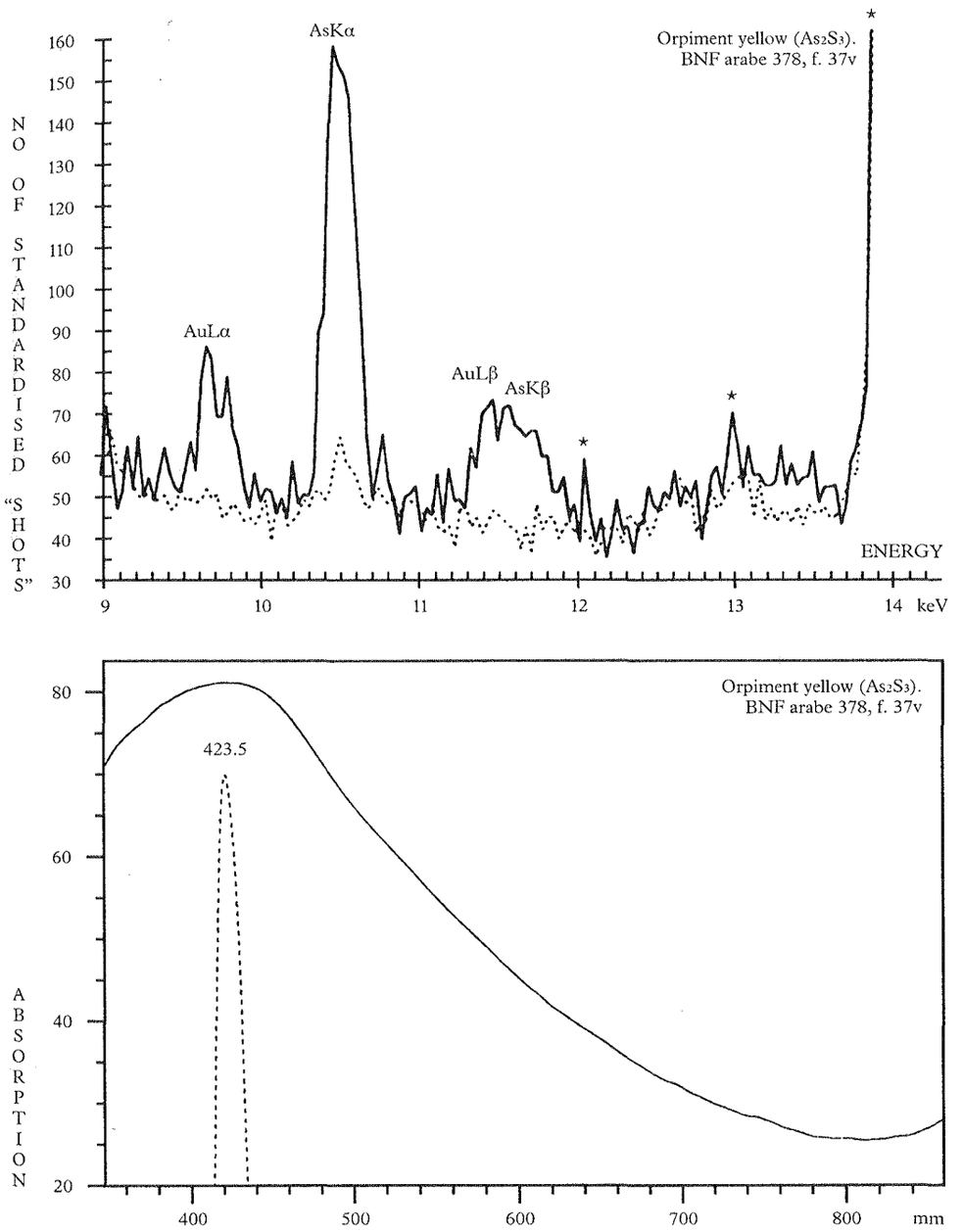
preparing their colours, the difference being especially evident in the case of yellow. Comparison between these results and the text of the treatise written by Ibn Bādīs at Kairouan in the fifth/eleventh century have thrown up some close parallels: vermilion (*zanjafr*), verdigris (*zinjār*), orpiment (*zarnīkh aṣfar*), minium (*silqūn*), realgar (*zarnīkh aḥmar*) and lapis lazuli (*lāzward*) occur in several recipes; the first five minerals in this list, together with white lead and lamp-black, also played a significant role in the preparation of coloured inks. Ibn Bādīs mentions other materials of mineral origin, including copper and iron sulphate as well as marcasite, but this analysis did not detect them.
It is true that they were generally used in making black inks, and in time these compounds tend to break down, so that in general only sulphur and iron can be determined. As regard ingredients of vegetable origin, only the presence of indigo corroborates the text of the *'Umda*, whereas it refers to many others, such as carthamus (safflower), saffron, basil and sumac. On the other hand, there do appear substances unknown to Ibn Bādīs, since neither azurite, nor hematite, nor cochineal or Spanish kermes are mentioned as such in his treatise. As noted above, cochineal kermes, an ingredient of animal origin, may be identified with the *lukk* mentioned in the treatise, especially since Spanish kermes, well-known in the Middle Ages for its dyeing properties, was often employed blended with red lake. Another text, composed by the Andalusian al-Qalalūsī (1210–1307), also contains recipes for coloured inks. One of the two known manuscripts (MS. Paris BNF arabe 6844, ff. 115 v°-116 v°), mentions vermilion, lapis lazuli, verdigris, orpiment, realgar, indigo and lime, all substances discovered in this analysis. On the other hand, sapphire and saffron, also recorded in this text, were not detected. Once more, the more plausible interpretation is likely to be a 'sapphire-coloured' blue or a 'saffron-coloured' yellow.

Analyses of this kind may in the future equip codicologists with additional means of understanding of how makers of hand-produced books in the Islamic West planned their work. The appearance of the same ingredients in elements both of the text (the various types of coloured orthoepic marks in Qur'āns) and of the decoration confirms conclusions drawn from the examination of the colophon dated 411/1020 quoted above; conversely, in BNF arabe 388 and 5935, the different use of the two blues plausibly implies the coexistence of two distinct operations. One further technical aspect that merits consideration, and whose importance at a later period is universally accepted, is burnishing applied on a large scale to gilding from earliest times. On this point, the similarity between the two groups analysed is unquestionable. For reasons already explained, the manuscript of al-Idrīsī's illustrated *Geography* constitutes a case entirely separate from that of the two study groups: certain colours, such as pinkish violet, yellow ochre and compound green, appear only in this manuscript. White lead was here used to lighten the hues. Nevertheless it would be premature to draw too many conclusions from these differences, since the al-Idrīsī *Geography* is the only manuscript in the selected corpus to feature full-page paintings.

An interesting exercise in the future would be to analyse other illustrated Arabic manuscripts of the same period from the Islamic West and East, and compare them first with each other and then with manuscripts produced in the medieval Christian West and by Jewish communities in North Africa and Spain.



61. Absorption spectra of two blue pigments compared. The dotted curve, representing an expansion of the vertical scale, shows the co-ordinates of the maximum.



62. Measurements taken of a yellowish orange punctuation mark.
Above, fluorescence spectrum X identifying the presence of arsenic and traces of gold, in this case from an adjacent piece of gilding. The asterisked rays emanated from the laboratory apparatus used. Below, absorption spectra identifying orpiment yellow.

MANUSCRIPTS				BLUES			GREENS	
BNF shelfmark	Text	Region of origin	Century or date	Lapis	Azurite	Indigo	Verdigris	Indigo+ Orpiment
Arabe 330 b, f. 10v, 12v, 16 v, 18 v	Qur'ān	Egypt or Middle East	End of 1st/7th or beginning 2nd/8th	✙			✙	
Arabe 324 a and c, ff. 8 v, 14 v, 18 v, 32, 36 v, 39	Qur'ān	Egypt or Middle East	2nd/8th and 6th/12th	✙			✙	
Arabe 378	Qur'ān	Maghrib or Egypt	3rd/9th				✙	
Arabe 350 a	Qur'ān	Egypt or Middle East	3rd/9th			with black	✙	
Arabe 1451	Ibn Tumart *Treatise*	Maghrib	1183 CE	✙				
Arabe 2221	al-Idrīsī *Treatise*	Maghrib	7th/13th	with indigo and black		with white lead		✙
S. L. 194	Qur'ān	Maghrib	7th/13th or 8th/14th	✙			✙	
S. L. 217	Qur'ān	Maghrib	7th/13th or 8th/14th		with black			
Arabe 5935	Qur'ān	Maghrib	7th/13th or 8th/14th	✙	with black		✙	
Arabe 395	Qur'ān	Spain	7th/13th or 8th/14th	✙				
Arabe 6529	Qur'ān	Spain	7th/13th or 8th/14th		✙		✙	
Arabe 385	Qur'ān	Spain?	1304 CE		with black		✙	
Arabe 675	*Legal treatise*	Spain	1326 CE		✙	(text)	✙	(retouching)
Arabe 423	Qur'ān	Maghrib	1348-1358 CE		✙		✙	
Arabe 388	Qur'ān	Maghrib	8th/14th	✙		✙	✙	
Arabe 5844	Qur'ān	Egypt	1382-1399 CE	with black	with lapis		✙	
Arabe 389-390	Qur'ān	Maghrib	1405 CE	with azurite	with lapis			

YELLOWS		ORANGES		REDS				WHITES		GILDING
Orpiment	Yellow ochre	Minium	Orpiment +red	Vermilion	Realgar	Haematite	Red lake	White lead	Silver	Gold
				✙		✙				✙
✙				✙				✙		✙
✙				✙	(?) with orpiment					✙
				✙						✙
							with cochineal			✙
with white lead	with white lead	✙		✙			cochineal with white lead	✙		✙
✙			with realgar				cochineal red			with silver
✙			with realgar		(?) with orpiment		cochineal red			✙
		✙					cochineal red			✙
							cochineal red			✙
		✙					cochineal red			with silver ?
✙							cochineal red	✙		✙
✙		✙	with vermilion	✙		✙	(?) on chalk white			✙
		✙				with minium	cochineal red			with silver
✙							cochineal red			✙
✙		✙		with red lake			(?) on chalk white	✙		with silver
✙				✙			(?) on white lead	✙	with gold	with silver

Ruling and Page Layout

A text might be copied for various reasons, and a student transcribing a treatise required for his studies would not proceed in the same way as a scribe commissioned by a prince to copy a fine volume of poetry. The final appearance of a manuscript very often reflects these different requirements, particularly in terms of the care given to the presentation of the text on the page. Indeed, differences between a working copy and a manuscript of high quality were already apparent in the preparatory stage, notably in the ruling of pages. Not all manuscripts were ruled; when close examination leads to the conclusion that no specific measures were taken to guide the writing, the codicologist should try to ascertain whether the copyist may have used a substitute – the laid-lines of the paper, for example – to organise the lines of text or whether he carried out his task without overly concerning himself with evenness. It sometimes happens that pre-ruled lines were disregarded. In one Paris fragment (BNF arabe 383a) the parchment was ruled with a hard point, but the lines were never used. Another copyist re-cut the parchment and then transcribed the Qur'ān onto it without regard for the ruled guides.[1]

Apart from its usefulness in producing straight lines, ruling could help calibrate the length of a text. In a chapter of the *Fihrist* devoted to poets, Ibn al-Nadīm provides readers with a way of gauging works to be presented: 'If we say that the poetry of a certain man fills ten leaves [*waraqāt*], we mean Sulaymāniyya ones holding twenty lines – that is, on each side of the leaf [*fī ṣafḥa al-waraqa*].'[2] It is possible that the ruling methods described had already been standardised to some degree in the fourth/tenth century.

The decision to draw ruled lines is immediate proof of a scribe's concern for page layout, a concern which in fact surfaced quite early in Islamic manuscripts, given that some copies of the Qur'ān written in the so-called *Ḥijāzī* script – datable to the late first/seventh century or early second/eighth century – have

1 Ruled guides might include horizontal 'guide-lines' for individual lines of text and/or marginal 'bounding lines' for the justification of the block of text. 2 Ibn al-Nadīm, *Kitāb al-Fihrist*, ed. G. Flügel (Leipzig, 1871), p. 159 and ed. R. Tajaddud (Tehran, 1350/1971), p. 181; translated into English by B. Dodge as *The Fihrist of al-Nadīm: a tenth-century survey of Islamic culture* (New York/London, 1970), vol. 1, p. 351.

retained the marks left by the hard-point tool used for that operation.[3] The layout was still relatively crude, for the number of lines varies noticeably from one page to the next. But more complex ruling techniques, well known to copyists from other Middle Eastern manuscript traditions, were obviously mastered by Muslims beginning in the early second/eighth century or so, for they were soon able to produce sophisticated layouts. In a Qur'ānic fragment from Ṣan'ā' (Dār al-Makhṭūṭāt Inv. Nr. 17-15.3), the copyist arranged the writing in such a way as to produce geometric patterns on the page.[4] In another example, Istanbul fragment TIEM ŞE 362, the scribe began by carefully tracing the ruling pattern (see below); then, alternating the colour of ink according to a carefully devised system, he composed checkerboard – or diamond – patterns that stand out from the background thanks to their colour scheme.[5]

A scribe's intention to control page layout can therefore be determined through clues provided by ruling procedures or by unusual writing patterns. On the other hand, it is often difficult to ascertain the actual principle governing the copyist's choice of one layout over another. Formulas devised by the more skilful practitioners for their fellow copyists might provide useful information on the proportions that were favoured at any give time; but, as we shall see below, only one text of this type has apparently survived – and even then its precise significance remains obscure. Another potential approach, therefore, entails examining manuscripts and attempting subsequently to re-establish, by deduction, the rules that underlay their production.

Ruling

Basic concepts

For anyone examining manuscripts, the most visible sign of a decision to organise the area of the page is undoubtedly the ruling, by which is meant the

3 See, for example, the fragments Paris BNF Arabe 328a and 328e (E. Tisserant, *Specimina codicum orientalium* [Bonn, 1914], pl. 41b; G. Bergsträsser and O. Pretzl, *Die Geschichte des Korantexts, GdQ*, vol. III [Leipzig, 1938], fig. 8; N. Abbott, *The Rise of the North Arabic script and its Kur'anic development* [Chicago, 1939] p. 24; Déroche, *Cat.* I/1, p. 61, no. 7; F. Déroche and S. Noja Noseda, eds., *Le manuscrit Arabe 328 (a) de la Bibliothèque nationale de France* [Lesa, 1998]). 4 H.C. von Bothmer, 'Ein seltenes Beispiel für die ornementale Verwendung der Schrift in frühen Koranhandschriften: die Fragmentgruppe Inv. Nr. 17-15.3 im 'Haus der Handschriften' in Sanaa', *Ars et Ecclesia, Festschrift für Franz J. Ronig zum 60. Geburtstag*; H.-W. Stork, C. Gerhardt and A. Thomas, eds., [Veröffentlichungen des Bistumsarchivs Trier 26] (Trier, 1989), pp. 45-67. 5 F. Déroche, 'Coran, couleur et calligraphie', *I Primi sessanta anni di scuola: studi dedicati dagli amici a S. Noja Noseda nello 65° compleanno, 7 luglio 1996* (Lesa, [2004]), p. 131-154.

line or lines traced on the writing material in such a way as to allow the copyist to write as straight and as evenly as possible. Ruling was not, however, a preparatory technique used only by copyists; manuscript illuminators also used it to guide the execution of decoration, and binders often traced lines on leather coverings prior to decoratively stamping the boards.

Justification of text blocks and measurement of dimensions

Although ruling is related to the codicological definition of 'justification' as the area of the page surface allocated to writing,[6] the fact that many manuscripts have no ruling requires that a distinction be made between ruled lines and the actual block of text. Nor – in manuscripts written in Arabic script – is the text block necessarily identical with the area within the horizontal and vertical 'bounding lines' marking the four sides of the rectangular block allocated to text, which are sometimes divided into columns.[7] Horizontal measurement poses few problems, since overruns into the margin are rare. Manuscripts were composed in 'long lines' with certain exceptions - primarily poetry and certain Christian Arabic texts.[8] Vertical measurement, on the other hand, is less straightforward. It was normal practice for copyists to write on the topmost line of the ruling where ruling existed,[9] and so the written surface is effectively greater than the ruled area, especially since the bottom line contains Arabic letters with descenders that extend below that line (although this phenomenon is less significant than top-line overrun). Hence when it comes to measuring the written area, it is recommended that the following method be applied: the distance separating the base lines of the first and last lines of a page should be recorded, and this number should be stated first, before the width. The dimensions of a manuscript whose writing area is higher than it is wide would be recorded as, for example, 25 × 13.5 cm.; to write 13.5 × 25 cm. would indicate that the justified area is greater in width than in height.

6 The term 'justification' has several meanings, of course, including – in the context of printed type – 'to adjust spacing along a line of text to a prescribed measure so that adjacent lines are of equal length.' (*The Shorter Oxford Dictionary.*) 7 Michelle Brown defines bounding lines as 'the marginal lines supplied during ruling to guide the justification of the text and its ancillaries (such as initials).' See her *Understanding illuminated manuscripts: a guide to technical terms* (Malibu, CA/London, 1994). 8 For example, MS. Paris BNF Arabe 181 (*FiMMOD* 31). 9 Exceptions exist, for example when the top line served as a 'lintel' rather than being written on. In one London Qur'ān (N.D. Khalili Collection Qur 4), the ruling for each line of writing consists throughout of three lines, the upper one marking the top limit of ascenders, thereby playing the role of lintel (D. James, *After Timur* [London, 1992], p. 42, no. 9; the manuscript is tentatively dated to the period 1480-90). In an Iranian manuscript (sixth/twelfth or seventh/thirteenth century) of the *tafsīr* of Ṭāhir ibn Muḥammad al-Isfarāyinī, four lines were marked to guide the writing of the large hand reserved for the text of the Qur'ān: two of them, above the ruling line, served to mark the height of the main body of the letters and the tallest ascenders, while a third one, below the ruling line, indicated the maximum limit of descenders; see *The Qur'an, scholarship and the Islamic arts of the book: a further selection of fine manuscript material* [Bernard Quaritch Ltd., unnumbered catalogue] (London, 1999) p. 20.

This way of measuring the height of a writing surface offers the advantage of providing a relatively reliable value for the height of individual lines, which is obtained by dividing the height of the total area (in this example, 25 cm.) by the number of lines minus one. Take, for example, a manuscript with eleven lines per page having a total text height of 25 cm.: 25 divided by (11–1) = 2.5 cm. per line. This figure constitutes the 'ruling unit'. In fact, computing this value for two groups of palaeographically coherent series of early Qur'ānic manuscripts, B II and D I, has revealed the specific characteristics of each one in terms of dimensions.[10] Some manuscripts display the particularity of having been copied (though normally by a single copyist) in two or more different types of hand which may present perceptible differences in size; among the best known examples are Qur'ān manuscripts – especially those including a commentary and/or translation - and copies of the *Burda*, a religious poem by al-Būṣīrī. In such cases, the ruling unit of each hand should be noted.

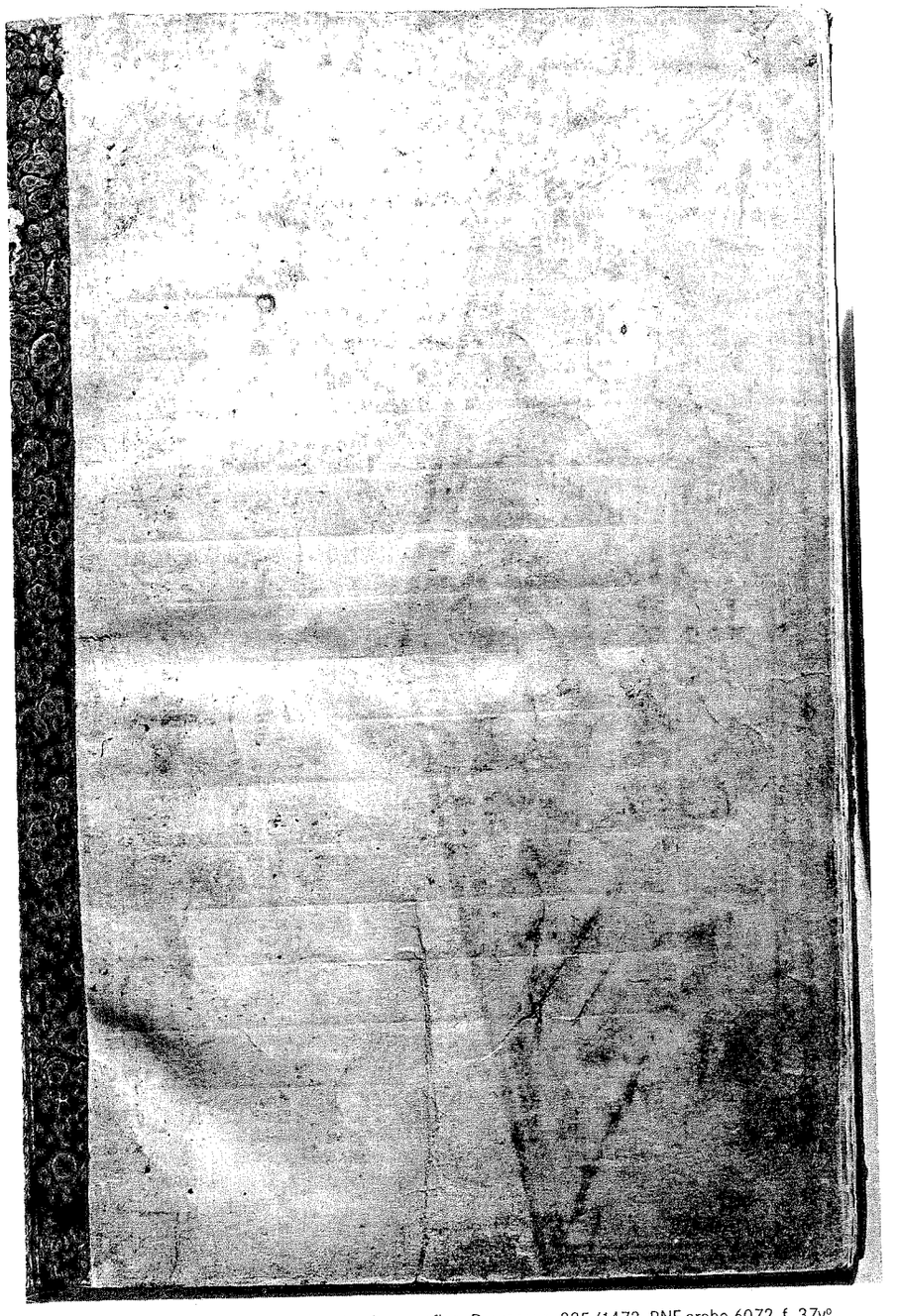
Patterns of ruling

Patterns of ruling varied significantly across the Islamic world, especially during the period when parchment was used. Subsequently, the introduction of an instrument that made it easy to rule sheets of paper – the *miṣṭara*, discussed below – led to a relative standardisation of patterns. Where manuscripts had horizontal guidelines to regulate the distance between each individual line of text, scribes might write so that letters either straddled the line or rested on it. Such guidelines were not always drawn, however; in the Maghrib, the two vertical lines marking the text area were often the only reference points employed by copyists.

Any visual trace of the ruling operation had to be as discreet as possible, while remaining distinct enough for the scribe to see. Methods that left visible marks on the writing surface were known (lead point or ink, for example), but those that only left indentations were less noticeable and therefore greatly preferred (illus. 63). With the latter method, a single operation produced the same pattern on both sides of the writing material, the implement leaving an indented furrow on one side and a raised ridge on the other. In contrast, ruling done in ink or pencil had to be repeated on each side; this made the task more laborious, but had the advantage that one could modify the layout from recto to verso.

Study of a manuscript therefore calls for meticulous examination of any lines on the leaves, since the rubbing and pressure produced by frequent use of a manuscript can reduce the trace of marks ruled in relief, especially on paper.

10 F. Déroche, 'A propos d'une série de manuscrits coraniques anciens', *MSS du MO*, pp. 102-103; 'The Qur'ān of Amājūr', *MME* 5 (1990-91), pp. 61-62, Chart I. The designations of the various 'Abbāsid scripts (B II, D I, etc.) are given in Déroche, *Cat.* I/1 and *Abbasid Tradition.*



63. Marks left by a *miṣṭara*, and by a book-cover flap. Damascus, 835/1472. BNF arabe 6072, f. 37v°.

Special lighting is sometimes required to detect furrows and ridges. As pointed out above, it may reasonably be assumed that the ruling followed principles derived from overall page layout, since it is unlikely that the number of lines, the height of each line (or 'ruling unit'), and the relationship between the height and width of the writing area were matters left to improvisation. It is therefore important that the codicologist note all these features accurately, for they may provide a better understanding of the copyist's aesthetic concerns. It is nevertheless true that any trimming of manuscripts (during the process of rebinding or re-margining, for example) will have modified the dimensions of the leaves, thereby reducing the possibility of establishing the accurate ratio between overall format and text block.

Ruling in Arabic and Islamic manuscripts

As already mentioned, ruling was used by Muslim copyists as early as the first/seventh century. This makes it all the more curious to note the near-total absence of ruling marks on most Qur'āns written in early 'Abbāsid script on parchment.[11] The regularity of the lines nevertheless implies that copyists employed some method for guiding their writing even though no vestige of it remains,[12] which perhaps means that the marks were erased. One European treatise contains a recipe for a special ruling ink that could be erased with bread after use. [13] For manuscripts written in Arabic script, paper became the most widely used writing material at an early date. This may explain the popularity of methods that left an impressed or scored mark on the surface, notably the *miṣṭara* or ruling frame.

11 Two exceptions to this trend should be noted here: firstly, manuscripts on tinted parchment (notably the case with the 'Blue Qur'ān') display traces of an elaborate ruling pattern; secondly, illuminators often left preparatory ruling marks for the decoration of manuscripts that did not employ ruling elsewhere. 12 According to E. Whelan ('Writing the Word of God: some early Qur'ān manuscripts and their milieux, Part I', *Ars Orientalis* 20 [1990], p. 115), the presence of ruling on decoration and, even more so, the tiny irregularities in the base lines of lettering are proof that text was never ruled, but that copyists relied on their eye. This argument does not seem to be decisive, however: ruling does not mean that a ruler was used – a line traced on parchment (or paper) was only a guide and did not prevent hands from writing above or below it. Nor, for that matter, does a comparison between techniques used by illuminators and copyists seem relevant to resolving the question. 13 M. Dukan, *La Réglure des manuscrits hébreux au Moyen-Âge* (Paris, 1988), pp. 15-16; the source is A. Piemontois, *De secretis libri septem*, l. V (Lyon, 1558), p. 316; see also *The Secrets of the Reverende Maister Alexis of Piemont* [...], trans. William Warde (London, 1558).

Scored ruling

A hard point[14] or fingernail[15] could be used – with or without a straightedge – to score writing surfaces as different as parchment and paper. To the best of current knowledge, there is no indication that Muslim copyists took advantage of a hard point's potential for scoring several stacked sheets of paper at once, the top leaf receiving a rather deep furrow whereas the bottom one would be less visible; this was common practice in Europe. On the other hand, the tools used for scored ruling permitted a wide variety of lines, including circular shapes for decoration. This meant that copyists enjoyed great latitude. To establish a typology of such patterns would certainly be of interest, but research in this area is still at a very early stage so far as manuscripts in Arabic script are concerned. Another, rather crude method of scoring might be noted in passing: it involved folding the leaf along the vertical line of the outer margin. Ruling done with a hard point on parchment was frequently accompanied by 'prickings', holes made by perforating the parchment or paper with the ruling tool.[16] When made close to the outer edge of the leaf, these prickings were often removed during subsequent trimming operation.

The Miṣṭara or maṣṭar

Another tool which scored the surface was used very widely for paper manuscripts, namely the *miṣṭara* (or *maṣṭar*)[17], a frame made of cardboard or occasionally of wood on which cords of various thickness could be stretched, corresponding to the text frame lines and guidelines.[18] A copyist would place the *miṣṭara* beneath a sheet of paper and then rub his thumb along the cords, perhaps wrapping his thumb in a cloth to avoid soiling the paper; in this way, a light indentation was produced (illus. 63). Some scribes invariably placed the *miṣṭara* on the verso of the leaves of a quire, whereas others probably ruled across each bifolium successively; the difference can be observed by noting the respective positions of the furrows and ridges in the various quires. A *miṣṭara* offered extreme flexibility of use, since highly complex patterns of ruling could be prepared and then conveniently and quickly imposed on dozens of quires.

14 Hard points – also known as drypoints – were made of various metals. Some of the more malleable metals (lead, silver and so on) might leave traces on the writing surface, which would be oxidised on contact with air. 15 Although the present writer has not positively identified any ruling done with the fingernail, al-'Almawī mentions it, advising copyists to be careful not to tear the paper. See F. Rosenthal, *The Technique and approach of Muslim scholarship* (Rome, 1947), p. 11. 16 Prickings also appear in manuscripts written on paper. These marks seem to be related to preparations for illumination in two Qur'āns, namely MSS. Berlin Museum für islamische Kunst Inv. Nr. I. 42/68 (*Museum für islamische Kunst Berlin, Katalog 1979*, 2nd edition [Berlin-Dahlem, 1979], pp. 9-11, no. 1 and pl. 1) and Paris BNF arabe 418 (Déroche, *Cat.* I/2, pp. 128-129, no. 535 and pl. I). 17 Gacek, *AMT*, p. 68. 18 An eleventh/seventeenth- or twelfth/eighteenth-century *miṣṭara* is reproduced in New York 1994, p. 127, fig. 88 (Metropolitan Museum of Art, Islamic art, accession no. 1973.1). An Ottoman example is illustrated in U. Derman, 'Hat', *Sabancı koleksiyonu* (Istanbul, 1995), p. 23, A.

If necessary, the copyist could add further lines – with a hard point, for example – thereby employing what might be termed 'mixed ruling methods'. The main ruling of the *Takhmīs* on al-Būṣīrī's *Burda* in Paris BNF Arabe 6072 was laid out with a *miṣṭara*, but the copyist then drew two vertical lines with a hard point to rule the areas reserved for the commentary[19]; a similar method was used in MS. Brussels BR 19991, in which hard-point lines indicate the position of decorative elements.[20] Some of the manuscripts of poetry studied by Paola Orsatti contain four or even six columns of poems, flanked by two smaller columns or diagonal margin lines.[21] Many copies of works such as Niẓāmī's *Khamsa* or Five Poems (one example being MS. Geneva Bibliotheca Bodmeriana 523, dated 889/1484), feature three double columns of text.[22] For works in mixed prose and verse, such as a copy of *Nigāristān-i Mu'īnī* (MS. Rome Accademia dei Lincei, Caetani 62), the ruling pattern done with a *miṣṭara* includes two columns and a double margin, but the copyist only kept to it fully when transcribing passages in verse.[23]

Other ruling techniques

The methods described above were not the only ones used by copyists. As already mentioned, scribes also employed ink or lead point. A Qur'ānic fragment dating from the late first/seventh century, now in Paris (BNF arabe 328c), features inked guidelines and a vertical outer margin line on the recto and verso of the leaves.[24] This approach is not confined to the early period, for it was still used by the copyist of a Qur'ān (Paris BNF arabe 5388) in Sudan in the thirteenth/nineteenth century.[25] Laid-lines, particularly visible in certain types of Eastern paper, also made it easier to write horizontally, although strictly speaking this cannot be termed a ruling technique, and their use as guidelines may have been limited to copies made for the purpose of academic study.

The description of ruling patterns: brief comments

Ruling was never practiced in a standardised way. Apart from the differences that arose from the choice of one method over another, the way the leaves were handled to conduct the operation might vary: in some manuscripts each folio was ruled one after another, whereas in others it was the open bifolium that received the ruling pattern. In the former case, the effect of the process was to leave the same mark – whether a furrow or a ridge – on the same side of every folio, either on the recto or on the verso, as can be seen for example in MS. Paris BNF arabe 5976.[26] In the latter case, the person doing the ruling marked

19 FiMMOD 3. 20 FiMMOD 195. 21 Paola Orsatti, 'Epigraphes poétiques de manuscrits persans', *Mss du MO*, pp. 73-75. 22 *FiMMOD* 178. 23 Orsatti, op. cit., p. 73. 24 Déroche, *Cat.* I/1, pp. 60-61, no. 4. 25 Déroche, *Cat.* I/1, p. 51, fig. 341. 26 *FiMMOD* 172.

the lines on the same side of both halves of the bifolium. Using a hard point offered the possibility of tracing guidelines with no break in continuity between one half and the other, as is found in a Qur'ānic fragment on parchment (Istanbul TIEM ŞE 362) and a Qur'ān on paper (London N. D. Khalili Collection of Islamic Art QUR 89 and 89a[27]). The use of a *miṣṭara*, however, seems to have required that each half be ruled separately. Once the quire was assembled and folded, any ruling marks made on an open bifolium would be inverted depending on whether a given leaf was located in the first or second half of the quire. This effect can be observed in MS. Strasbourg BNU 4252, where the furrows appear on the versos of ff. 1 to 5 but on the rectos of ff. 6 to 10.[28]

In describing a ruling pattern,[29] there is a standard formula which can readily be adapted to manuscripts written in Arabic script, taking into account the direction of reading from right to left. Thus the symbol < indicates the presence of a furrow on the recto of a given leaf, while > indicates a furrow on the verso. Consequently, the usual order of folios can be reconstituted, although the notation will read from left to right. For example, the sequence: >>>>> / >>>>> means that the furrows are found on the verso all the way through the quire. To describe a quinion in which the furrows are on the recto in the first half, but on the verso in the latter half, the following formula is used: >>>>> / <<<<< (Folios 1–5 are placed to the left of the symbol indicating the centre of the quire, ff. 6–10 to the right).

Page layout

General comments

The arrangement of the various elements appearing on a page is known as the layout, or mise-en-page. Page layout therefore concerns not only the text, but also margins, decoration, and the relationship between these different elements. Examination of ruling patterns may provide clues to the intentions of the scribe (or illuminator), but it is important to proceed to study the entire page – and, indeed, the double page when the manuscript is open, since makers of quality manuscripts seem to have placed special emphasis on the overall visual

27 Déroche, *Abbasid Tradition*, p. 160. 28 *FiMMOD* 196. 29 Muzerelle defines *méthode de réglure* as 'the procedure employed to obtain a ruling pattern on every leaf of a quire, the pattern being traced either on each folio or on each bifolium'; see his *Vocabulaire*, p. 104.

impression. But it is very often the case that the proportions of the folio, and the proportions of the text area in relation to them, have been altered owing to trimming of the margins, and this can greatly complicate any analysis of mise-en-page.

Little research has been devoted to the important question of the format of manuscript folios, although some interesting results have been published for manuscripts from later and better documented periods. Analysis of the volumes produced in the Topkapı Palace workshop between 1520 and roughly 1630 reveals the existence of three formats (25.5 × 16 cm.; 35 × 25 cm.; and 44.5 × 31 cm.).[30] The passage by Ibn al-Nadīm quoted at the start of this chapter suggests that the notion of standardised formats had acquired its full meaning by the fourth/tenth century.

Various approaches to layout

Textual sources

When addressing this crucial topic, codicologists might expect to glean information from Arabic and Islamic sources. Yet despite abundant literature on calligraphy and, to a lesser extent, on painting, only one text is currently known to provide any kind of answer to the specific question of mise-en-page. It includes a formula for establishing a page layout, preserved for posterity by al-Qalalūsī, an Andalusian scholar of the second half of the seventh/thirteenth century. His text was brought to light and translated into French by Yvette Sauvan,[31] but the transmission of the text seems to have been imperfect: part of the description of the method was apparently omitted or distorted. 'The paper is folded lengthways; the fold serves as a guide to fix the lower margin, which is defined by the line linking two points pricked with a compass on the two edges of the sheet. There are two margins running widthwise, starting from the prickings of the first two points; heightwise, the upper margin is parallel to the lower margin. The block of text is divided into two parts, determined by the *shīḥa* which is obtained [as follows]: mark a point parallel to the point marking the middle of the first line traced lengthways, based on three semicircles; starting from two equidistant points on this semicircle, trace two arcs that meet at a point; a straight line is drawn between these two points. This is the figure of the *shīḥa*, which divides the block of text into two equal parts. The guidelines are established half by half, starting from the lateral prickings.' Incomplete as it is, this formula nevertheless proves that precise instructions circulated among scribes explaining how to organise the text area of a page using commonly available tools. It is to be hoped that more such sources will emerge and supply additional information.

30 Z. Tanındı, 'Manuscript production in the Ottoman Palace workshop', *MME* 5 (1990-1991), p. 70 and fig. 23. 31 MS. Paris BNF arabe 6844, f. 120; see Y. Sauvan, 'Un traité à l'usage des scribes à l'époque nasride', *Mss du MO*, pp. 49-50. See also I. Chabbouh, 'Two new sources on the art of mixing ink', *Codicology*, pp. 69-76.

Examination of manuscripts

Examination of the manuscripts themselves, meanwhile, may provide evidence of ways in which the illumination or even the text of a carefully produced copy occupies a space whose overall proportions and subdivisions were based on a precise standard unit. Such an examination, although complicated to carry out, has been undertaken on MS. Paris BNF suppl. persan 226, enabling Chahryar Adle to identify a standard unit, itself a multiple of the 'point' which is, as we know, the basis of the calligraphic construction of handwriting. Just as the forms and proportions of calligraphic letters are based on the area of a point drawn by applying the tip of the reed pen to the paper and moving it vertically a distance equal to its width, Adle showed how, on pages of text, the standard unit he discovered corresponded to 'drawn elements'.[32] His study thus defined a parameter that may serve, in a way, as a common denominator between the various elements in a book.

Special proportions

The above examples reveal the importance of the geometric construction of page layout. Study of the manuscripts themselves proves that makers of books possessed the basic tools for constructing these figures: the ruling of the decoration of a third/ninth-century Qur'ānic fragment (Istanbul TIEM ŞE 7, f. 2) was produced partly with the help of a compass. A straightedge, one of the tools used by calligraphers, was used not only in drawing guidelines but also, in North African and Andalusian Qur'āns, to link the letter *ḥā'* to the letter *mīm* in the word *Raḥmān* of the *basmala*.[33]

As Valery Polosin has suggested, the taste for enigmas displayed by highly cultured mediaeval readers probably spurred artists to produce illuminations whose proportions were based on special formulae.[34] Copyists themselves were certainly sensitive to questions of balance and ratio – although the overall dimensions of the leaves were partly determined by outside factors, the mise-en-page itself came more directly under the copyist's control. A professional scribe or calligrapher was probably able to appreciate the more or less felicitous nature of certain ratios, and he certainly possessed the means – theoretical and material – to decide how much of the page surface to use, and in what proportions.

At the time of writing, little research has been undertaken into the proportions of the text area in Arabic and Islamic manuscripts. Apart from Adle's observations, mentioned above, a study of a series of Qur'ānic

32 C. Adle, 'Recherche sur le module et le tracé correcteur dans la miniature orientale I', *Le monde iranien et l'islam* 3 (1975), p. 96. 33 As seen, for example, in MS. Paris BNF arabe 386. See Déroche, *Cat.* I/2, p. 33, no. 299. 34 V. Polosin, 'To the method of describing illuminated Arabic manuscripts', *Manuscripta Orientalia* 1/2 (1995), p. 19; 'All is numbers? an unknown numerical component in the design of medieval Arabic manuscripts', *Manuscripta Orientalia* 5/1 (1999), p. 7-11.

manuscripts from the third/ninth century has revealed the constancy of a ratio of 0.66 (in other words, 2/3) between the height of the writing space and the height of the page.[35] Two rectangular figures in particular are noteworthy: the golden rectangle and the Pythagorean rectangle. The first, based on the Golden Section, begins with a line segment AB: another segment, perpendicular to the first and starting at A, is then drawn, this line (AM) being one half the length of AB (AM = AB/2); one of the two points of a compass is then placed on point M, the other on B, and the compass is rotated from B until it intersects the perpendicular axis extending below AM, establishing point C (MC = MB; line AC = AM + MC). To complete the rectangle, point D merely needs to be located on a line segment perpendicular to B, so that BD = AC. In rectangle ABCD, then, the ratio of width to height (w/h) is 0.618, while that of height to width (h/w) is 1.618. In the Pythagorean rectangle, the sides have a w/h ration of 3/4, that is to say 0.75 (h/w being 1.333).

Another way of obtaining a special figure involves diagonals. The initial figure is a square with side *a*. The square is extended into a rectangle whose length is equal to the diagonal of the square. While maintaining the width *a*, new rectangles are constructed with lengths equal to the diagonal of the previously constructed rectangle. The long side of the first figure is equal to the product of width *a* multiplied by the square root of 2 ($a\sqrt{2}$); that of the second equals $a \div 3$; that of the fourth, $a \div 4$; and so on. Interestingly enough, the ratio between *a* and $a \div 2$ is that of the modern European paper formats A3 and A4: the height of a sheet is equal to the diagonal of the square formed by its width.

Ratio of sides	Min/Max values	Special figure
1	0.98/1.02	Square
1.236	1.211/1.260	Two golden rectangles, side by side
1.333	1.307/1.359	Pythagorean rectangle
1.368	1.341/1.395	Pythagorean and golden rectangles side by side
1.414	1.386/1.442	Rectangle of dimensions $a \times a\sqrt{2}$
1.5	1.470/1.530	Double Pythagorean rectangle
1.618	1.586/1.650	Golden rectangle
1.732	1.698/1.766	Rectangle of dimensions $a \times a\sqrt{3}$
2	1.960/2.040	Double square

In practice, the codicologist must allow for both a certain degree of approximation when it comes to determining the page layout used by mediaeval copyists, and also variations due to the writing surface itself (for

35 Déroche, *Mss du MO*, p. 103.

example, shrinkage in parchment). Specialists in Latin manuscripts recommend allowing deviations of 2% from rigorously calculated ratios. Thus the tolerated ratio for the Golden Section, whose precise value is 1.618, ranges from 1.586 to 1.650.[36]

This line of research needs to be conducted with care. Besides the fact that other formula may have been used, the chart above reveals overlapping ratios that may lead to confusion. In practice, when examining a manuscript, it is easy to determine whether this approach should be adopted by simply dividing the height of a given figure by its width; the quotient thus obtained can then be compared to the figures given in this chart, taking into account the permitted deviation of 2%.

Units of measure

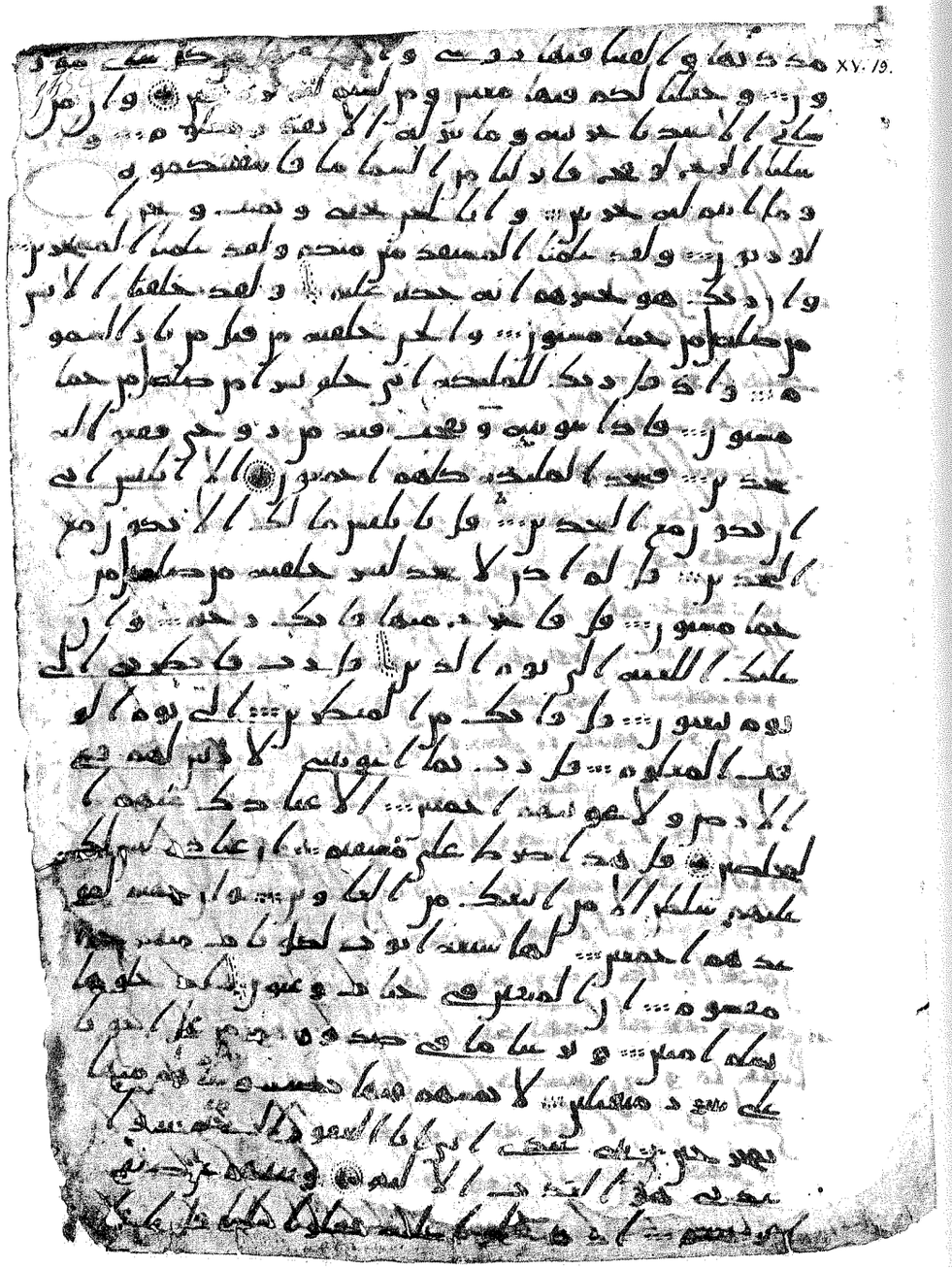
In the mediaeval West, copyists were aware of the proportions discussed above, and constructed ruled areas and other units with tools such as the compass and straightedge. Sometimes they also developed ruling patterns by employing units of measurement commonly used in their everyday environment. The codicologist may therefore find that one or both of the lines defining the text area of the page have values corresponding to any of the measurement systems that were in general use at a given time and place.

This line of research has not yet been exploited in the field of Arabic manuscripts, except for another article by Valery Polosin which focuses on illumination.[37] Codicologists should therefore be attentive to this factor while remaining cautious in the way it is applied, as Jacques Lemaire has stressed.[38]

The arrangement of lines

The oldest manuscripts in Arabic script – Qur'āns written in *Ḥijāzī* script, datable to the second half of the first/seventh (or early eighth) century (illus. 64) – show that the earliest copyists opted for long lines, as is illustrated by MSS. Paris BNF arabe 328a[39] and London BL Or. 2165.[40] The same applies to non-Qur'ānic texts, as can be seen in the first dated manuscripts from the third/ninth century.[41] Subsequently, the tradition of manuscripts written in Arabic script remained basically faithful to this model, and the length of lines

36 These values, along with those in the chart above, are given in Lemaire, *Introduction*, pp. 138–139. 37 V. Polosin, 'Frontispieces on scale canvas in Arabic manuscripts', *Manuscripta Orientalia* 2/1 (1996), p. 5-19. 38 Lemaire, loc. cit. 39 See note 3. 40 W. Wright, *Facsimiles of manuscripts and inscriptions (Oriental Series)* (London, 1875-1883), pl. LIX; London 1976, p. 20; F. Déroche and S. Noja Noseda (eds.), *Le manuscrit Or. 2165 (f. 1 à 61) de la British Library* (Lesa, 2002). 41 Lists of third/ninth-century manuscripts have been published by G. Endress ('Handschriftenkunde', *GAP* I, p. 281) and F. Déroche ('Les manuscrits arabes datés du III^{e}/IX^{e} siècle', *REI* 55-57 [1987-1989], pp. 343-379).



64. Text in *Ḥijāzī* script on parchment, datable to the second half of the 1st/7th century. Paris, BNF arabe 328, f. 54.

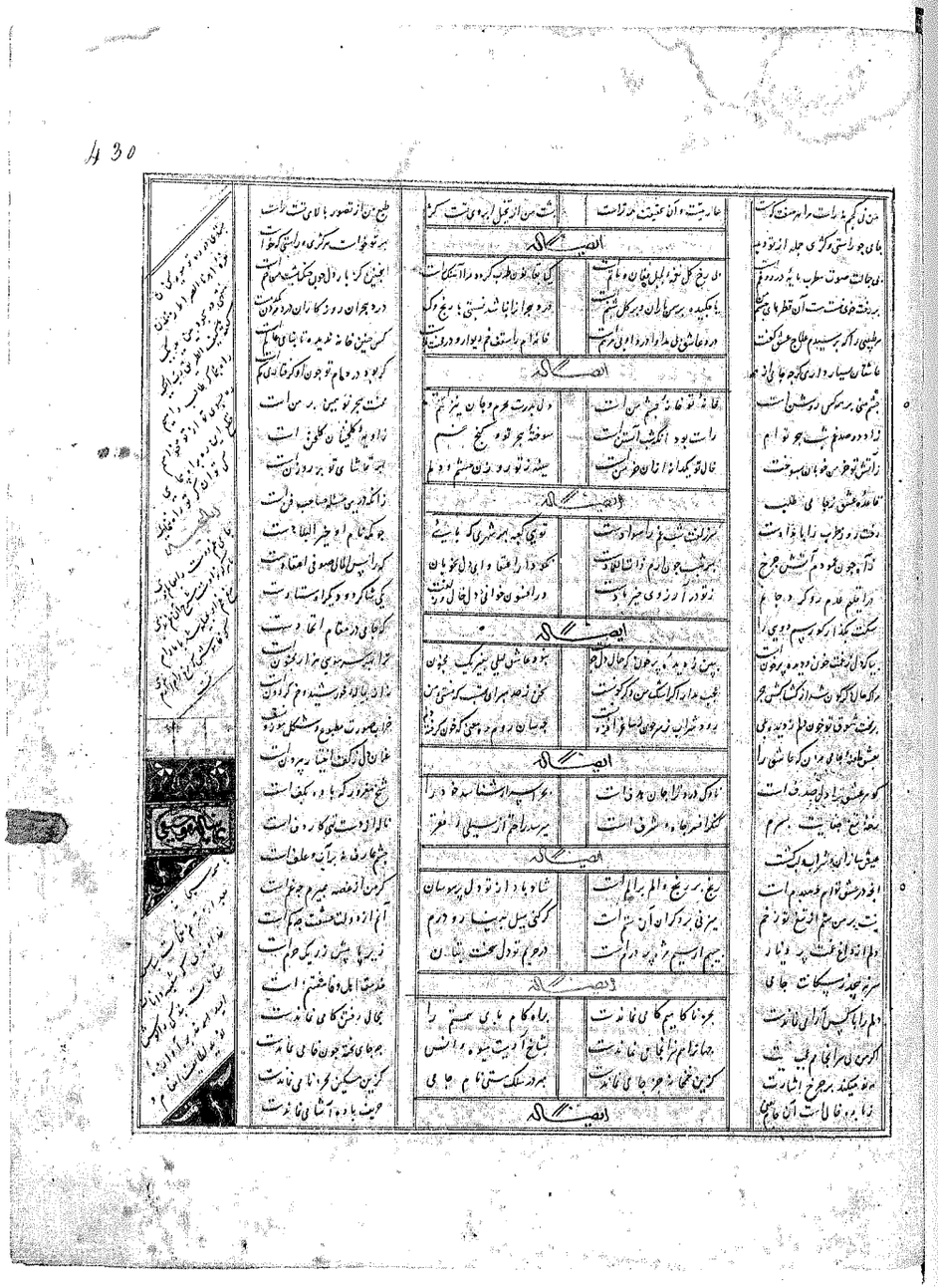
usually stayed constant throughout a manuscript. Polosin's research on text density shows that, in the examples studied, the number of letters per line and per page remains relatively stable.[42] Variations and divergences from this rule nevertheless exist, and should be noted when they occur: in describing a manuscript it is advisable at least to state the minimum and maximum number of lines per page.

Poetry represents an exception to the rule of long lines. Given its structure and its use of rhyme, poetry favours an arrangement that underscores these recurring features. Poetry is therefore usually laid out in two or more columns (illus. 65); the use of a frame (*jadwal*) to highlight more effectively the division of textual components was apparently introduced in areas of Persianate culture.[43] In Christian Arabic manuscripts the text is also sometimes arranged in columns, although for totally different reasons.[44]

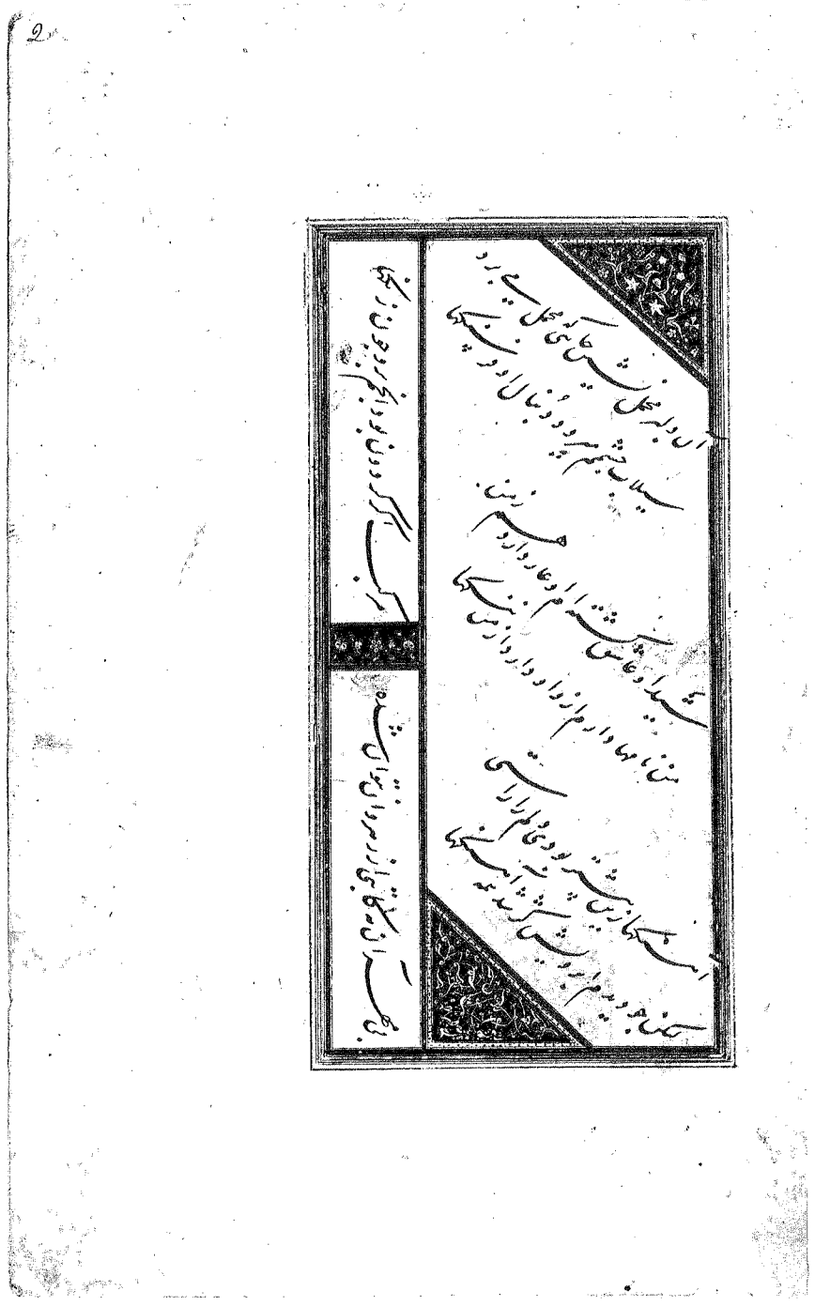
As a general rule, lines of writing run perpendicular to the gutter margin – which is simply to say that the lines of text are horizontal (illus. 40 and 64). Exceptions do occur, however, especially in manuscripts of poetry: one Persian anthology (MS. Paris BNF suppl. persan 1473) has three columns, the one nearest the outer margin containing diagonal lines; the same diagonal writing, across one column this time, was used by the copyist of Kātibī's *Ghazaliyyāt* (MS. Paris BNF suppl. persan 1776), with one line of text written vertically to the left of that justified column (illus. 66).[45] There are also other texts in which copyists decided to arrange the lines diagonally: whereas manuscripts of *Ḥadīth* works with a Persian translation in verse may be related to the poetic tradition,[46] a copy of Shayḥ Aḥmad al-Zarrūq's *Sharḥ al-Ḥikam al-'Aṭā'iyya* (MS. Tunis BN al-Aḥmadiyya 3616/12320) is notable for the diagonal layout of the entire text.[47]

When a scribe planned to write a second or even a third text in the margin, and prepared a *miṣṭara* to that effect, the layout will reflect adaptations required by the constraints of the limited space available; for instance, the lines reserved for text are generally diagonal, although this is not always so. Quite often, copies of the Qur'ān (e.g. BNF arabe 4955) are accompanied by a *tafsīr* (commentary) whose text is written on diagonal lines traced with a *miṣṭara* prepared with the pattern for the layout of the entire page[48]. The same applies to manuscripts of other kinds containing more than one text.

42 V. Polosin, 'Arabic manuscripts: text density and its convertibility in copies of the same work', *Manuscripta Orientalia* 3/2 (1997), p. 3-17. 43 Orsatti, op. cit., and 'Le manuscrit et le texte: éléments pour une interprétation du *maxlaṣ* dans la poésie lyrique persane', *Scribes*, p. 291. See also the chapter below on 'Books and their ornamentation'. 44 An example can be found in a manuscript of *al-Ḥāwī al-kabīr* (MS. Paris BNF arabe 181; *FiMMOD* 31). 45 Richard, Paris 1997, p. 99, no. 53 et p. 98, no. 52. 46 Op. cit., p. 175, no. 120 (Paris BNF arabe 6063). Also MS. Riyadh Farfur Collection 4/15 (Riyadh 1986, pp. 180-181, no. 114). 47 Chabbouh, *Le manuscrit*, no. 47. 48 *Cat.* I/2, pp. 141–142, no. 558; see also Riyadh 1986, pp. 160–161, no. 94 (MS. Riyadh King Faisal Center 2829).



65. Text arranged in columns; *nasta'līq* script. Herat, 896/1490-1.
Paris, BNF suppl. persan 822, f. 430.



66. Text in columns, in diagonal lines; *nasta'līq* script. Herat, 880/1475-6.
Paris, BNF suppl. persan 1776, f. 2.

Variations

At an early date – during the second half of the third/ninth century or the beginning of the fourth/tenth – scribes began looking for ways to lighten the justified blocks of text of Qur'āns copied in a small hand now designated as E I.[49] Several manuscripts written in this style are noteworthy for the fact that one of the lines on the page, often the middle one, contains only a few letters, most of the space being occupied by an extended ligature. This style is probably the one noted by Joseph Schacht in legal manuscripts copied by a certain scribe at the Great Mosque in Kairouan around 400/1010: several of the manuscripts studied by Schacht display a block of text that is "cut" in two equal halves by a line (or part of a line) left blank, yet without any lacuna in the text.[50] This type of composition was made feasible through the calligraphic technique of *mashq*, which means extending the base line that links the connected letters of a word (or even certain independent letters).[51] Thus one or more lines on the page (sometimes the middle line, sometimes the first and last lines, and sometimes a combination of the two) contain a limited number of letters connected by a very long stroke or strokes. In manuscripts, this feature is most commonly to be seen in the opening *Basmala* of a Qur'ānic sūra, or indeed of a complete text of any kind.

Copyists also exploited the possibility of changing the size, or even the style, of a script from one line to the next. The first known attestation of a technique that involved alternating two series of lines in a small hand with three lines in a large hand can be found in a Qur'ān dated 582/1186 (MS. Dublin CBL 1438).[52] This technique does not, however, imply a hierarchy among the various elements, unlike certain manuscripts in the National Library of Tunis (MSS. 3357[53] and al-Ṣādiqiyya 263/10441[54]); nor does it lead to confusion with titles and headings or other ways of organising the flow of the text and guiding the reader.

49 At the time of writing, no example of this type of layout, found on fragments in the 'Damascus Papers' collection at the Museum of Turkish and Islamic Art in Istanbul, has been published. 50 J. Schacht, 'On some manuscripts in the libraries of Kairouan and Tunis', *Arabica* 14 (1967), p. 225. 51 In this context, *mashq* refers to a technique rather than to a style of writing. This usage in commentaries – often critical – is found in Arabic sources, for examples al-Ṣūlī, *Adab al-kuttāb*, edited by M.B. al-Atharī, revised by M.Sh. al-Alūsī (Cairo, 1341/1922), p. 55-56; *mashq* as a style of writing is mentioned by Ibn al-Nadīm (op. cit., ed. Flügel, p. 6; ed. Tajaddud, op. cit., p. 9; and Dodge, op. cit., p. 11). 52 James, *Q. and B.*, p. 35, no. 20. 53 Chabbouh, *Le manuscrit*, p. 22 and colour plate. In this manuscript, dated 601/1205, pious phrases and *Ḥadīth*s are written in gold. 54 Op. cit., p. 16 and pl.; in the reproduction of this *tafsīr*, dated 550/1155, quotations from *Qur'ān* IV, 24 stand out thanks to a change in writing style. The same technique can be found in a *tafsīr* copied in 484/1091 by 'Uthmān ibn al-Ḥusayn *al-Warrāq* (see Fu'ād Sayyid, *Makhṭūṭ*, pl. 7).

Number of lines per page

The number of lines on a page can vary greatly. Sometimes there is no regularity within the same manuscript even when the copyist ruled the leaves. One of the earliest examples of a ruled manuscript, Paris fragment BNF arabe 328a, has pages where the number of lines varies between twenty-two and twenty-six. Nevertheless, as Islamic manuscript tradition developed, the propensity for an odd number of lines per page became predominant everywhere; indeed, the possibility of exploiting a median line could often prove a distinct advantage for the purposes of mise-en-page. The scribe of the Qur'ānic fragment mentioned above (Istanbul TIEM ŞE 362) was handicapped in producing his polychrome pages by the fact that he decided on fourteen lines per page (for example, f. 8 v°). Conversely, the middle line (l. 3) of the Ūljāytū Qur'ān (as for example in MS. Leipzig Universitätsbibliothek XXXVII Kl), with its gold ink, provides a strong organisational axis for the entire page.[55]

Margins

The foregoing discussions have already hinted at the importance of margins, an area of the page that experience shows to be highly vulnerable. Heavy use of a manuscript can lead to discolouration, wear and tear, while restorations can occasionally damage, reduce, or even completely eliminate the margins. In the latter case, it becomes impossible to reconstruct the original layout; this applies, for example, to two highly important early copies of the Qur'ān (London BL Or. 2165 and Paris BNF arabe 324) where the text now runs practically up to the edge of the page. Today it is difficult to know whether early Muslim copyists left large margins, because although in their current state the oldest Qur'ānic fragments display a limited space around the block of text it is quite possible that they were trimmed at a later date.[56]

In any case, makers of books soon realised the potential afforded by margins for accommodating items complementary to the text. The oldest illuminations, found in Qur'āns, are sometimes located in the margin – often the outer margin, but occasionally also the gutter margin – where they stand out more clearly, thus fulfilling more satisfactorily their function as markers. Later, artists began using the margins of the page in striking ways; in de luxe manuscripts, margins offered prime territory to illuminators and decorators. The *waṣṣālī* technique in particular favoured the use of a wide range of decorated papers (illus. 15).[57]

55 See reproductions in D. James, *Qur'āns of the Mamlūks* (London, 1988), pp. 92-98. 56 The state of the oldest Arabic manuscripts – all of them Qur'āns – makes it impossible to determine whether or not they originally had margins worthy of that name. By way of example, see W. Wright, op. cit., pl. LIX, or F. Déroche and S. Noja Noseda (eds.), op. cit. (1998 and 2002). 57 See Chapter 'The Writing surface: paper'.

Margins were not, however, the sole preserve of illuminators and artists, for they also played host to notes, glosses and commentaries. A scribe may have anticipated these additions from the start, as is sometimes implied by the size of the margins around the main text area; but they were often the work of a later reader. Although certain mediaeval authors such as al-'Almawī advised limiting the extent of marginal notations in order to prevent text from encroaching on the entire page,[58] there are manuscripts in which every available nook and cranny is laden with words. One copy of the Qur'ānic commentary *Anwār al-tanzīl wa-asrār al-ta'wīl* (MS. Riyadh King Faisal Centre 4249[59]) is noteworthy for the way the margins are inundated with writing, without any discernible regard for page layout. A manuscript of Jāmī's *Lawā'iḥ* (MS. London BL Add. 16820), by contrast, stands out in the way notes on various points in the marginal commentary are arranged like veritable picture-poems.[60]

Sample page layouts

For the reasons explained above, it is not possible at the present stage to do more than offer a few examples of page layout, in an effort to provide an idea of the ways copyists exploited the space available to them. Manuscripts that contain paintings or many tables and figures raise specific issues that cannot be dealt with here; the examples cited below basically concern high-quality copies of texts, although some of the same approaches can be found in more modest manuscripts.

A few special layouts have already been mentioned – early 'picture-poems' reveal that a concern for the aesthetic appearance of the page was present from the outset. A fragment in Istanbul (TIEM ŞE 362) proves that the copyist only took one page at a time into consideration.[61] It was only later that scribes began to approach layout in terms of double pages, as revealed by tentative efforts in the third/ninth century to balance the presentation of the end of Qur'ān manuscripts. A fragment from that period (MS. Istanbul TIEM ŞE 2002, ff. 4 v° – 7 v°) attests to the copyist's effort to place the titles of the *sūra*s in symmetrical positions over four double pages, even though the illumination did not take this effect to its logical conclusion.[62] The quest for symmetry in this and other details was later to be pursued with great tenacity, finding its most unusual expression in manuscripts of Ottoman production or inspiration. The scribes of MSS. Istanbul TIEM 469, London N. D. Khalili

58 Quoted by Rosenthal, op. cit., p. 18. 59 Riyadh 1986, pp. 82-83, no. 18. A. Gacek has published a page from a copy of al-'Āmilī's *Khulāṣat al-ḥisāb* in which the margins are filled with glosses and corrections (MS. Montreal McGill BWL 230, dated 1226/1811); see Gacek, *McGill*, p. 92, no. 100/3 and fig. 29. 60 M.I. Waley, 'Illumination and its functions in Islamic manuscripts', *Scribes*, p. 104 and fig. 8. This type of layout seems to have become quite popular in later lithographed editions. 61 Déroche, op. cit. (*I primi sessanta anni di scuola...*). 62 Déroche, op. cit. (*Mss du MO*), pp. 110-111.

Collection Qur 33[63] and Tunis BN 14246 even managed to situate the same word(s), written in red, on the same line of both the right and left hand pages, in the same position relative to the gutter (illus. 40). In Sūra XXVI, *al-Shu'arā'*, entire passages of the text are arranged symmetrically in the same way.[64]

This latter example underscores the role of page layout in the attempt by Islamic scribes to standardise the production of manuscripts. The arrangement described above was based on the division of the Qur'ānic text into units of identical size, a task accomplished by Ottoman copyists who, starting with the standard breakdown into *juz'* and *ḥizb*, managed to define pages of fifteen lines in a format that is often close to 18 x 12 cm. With the exception of initial and final pages, decoration itself (framing, text divisions, etc.) was also relatively standardised. Other widely disseminated texts, likewise, were often standardised in aspects of their page layout. Sellheim has analysed a group of six copies of *al-Nuqāya, mukhtaṣar kitāb Wiqāyat al-riwāya fī masā'il al-Hidaya* by Ṣadr al-Sharī'a al-Thānī (a popular commentary on a standard textbook of Hanafi jurisprudence), all of which were written in the thirteenth/nineteenth century and display strong resemblances. He concluded that they may have been copied by several scribes from the same madrasa or *khānaqāh* (Sufi centre) in Central Asia, perhaps in Bukhara or Samarkand.[65]

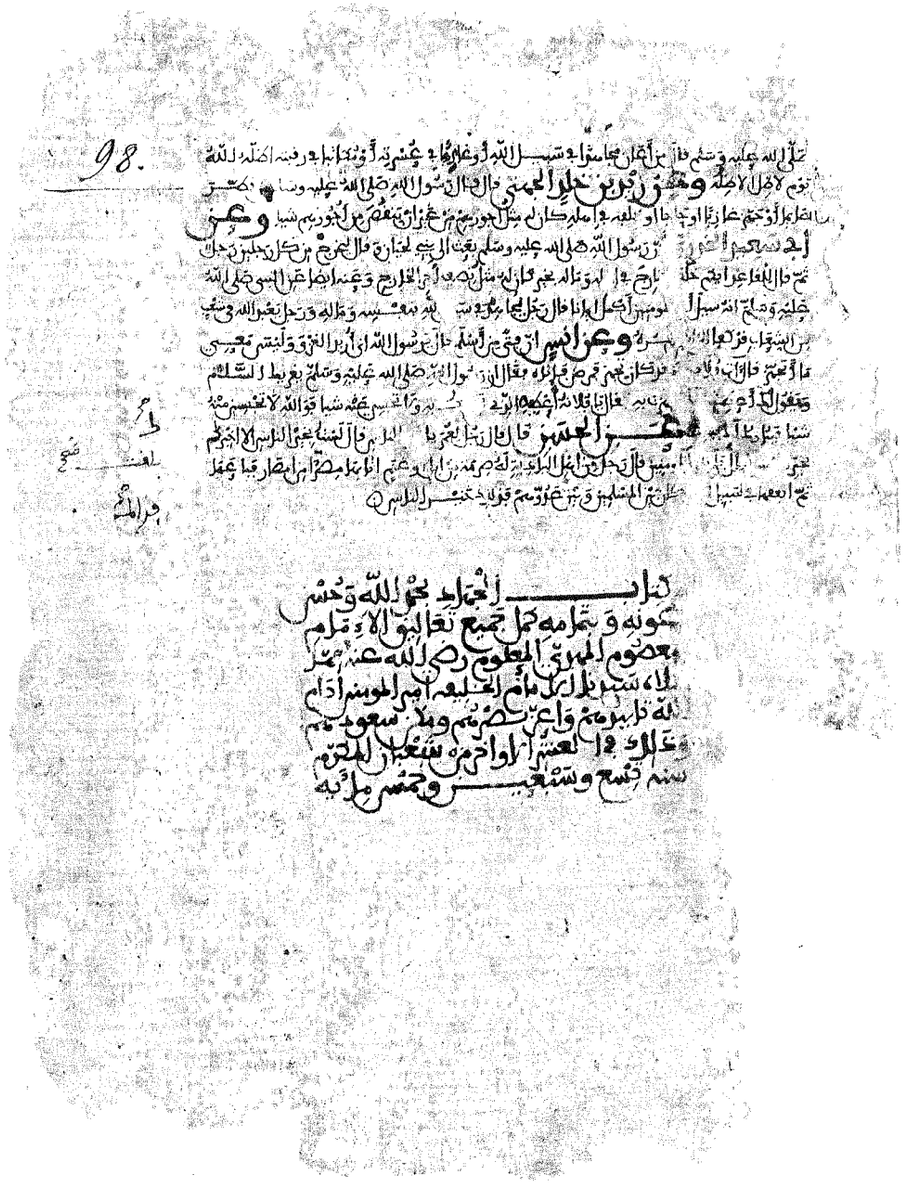
The outline of the justified text block is generally rectangular, except in a few early Qur'āns in which it is almost square[66] (also noted in some Maghribī Qur'āns[67]). It was perhaps an effort to avoid overly repetitive layout that led copyists to become interested in alternating the size and type of script within a page. Beginning in the early eighth/fourteenth century, notably in the Persian sphere of influence, many Qur'āns feature three lines in a large hand (each one generally set within a decorative band), usually located at the top, middle, and bottom of the page; two blocks of text in a smaller hand, normally written in black ink, are placed in the space between each pair of larger lines, usually in coloured ink (blue or gold).

63 M. Bayani, A. Contadini and T. Stanley, *The Decorated Word: Qur'āns of the 17th to 19th centuries* [The D. N. Khalili Collection of Islamic Art IV] (London, 1999), p. 121, no. 40. 64 F. Déroche, 'The Ottoman roots of a Tunisian calligrapher's *tour de force*', in Z. Yasa Yaman (ed.), *Sanatta etkileşim=Interactions in art* (Ankara, 2000), p. 106-109. 65 Sellheim, *Materialen* 1, pp. 125-127. The manuscripts he studied are at the Staatsbibliothek in Berlin (MSS. Or. Oct. 470, 1762, 1770, 1771, 1773, 3531). They measure between 23 × 13 cm. and 26 × 15.5 cm. and contain seven lines per page (except Or. Oct. 1762, which contains nine lines) written in hands belonging to the same script tradition. 66 This is notably the case with Qur'ānic fragments written in style B Ib (for example Paris BNF arabe 327 whose text area, measured according to the method described above, is 220 × 225 mm.); see Déroche, *Cat.* I/1, p. 68, no. 19 and pl. IV, A. 67 The square format of Maghribī Qur'āns written on parchment is sufficiently common to require no further discussion here; see for instance F. Déroche, "Cercles et entrelacs: format et décor des corans maghrébins médiévaux", *Académie des inscriptions et belles-lettres, Comptes rendus des séances de l'année 2001*, p. 593-620.

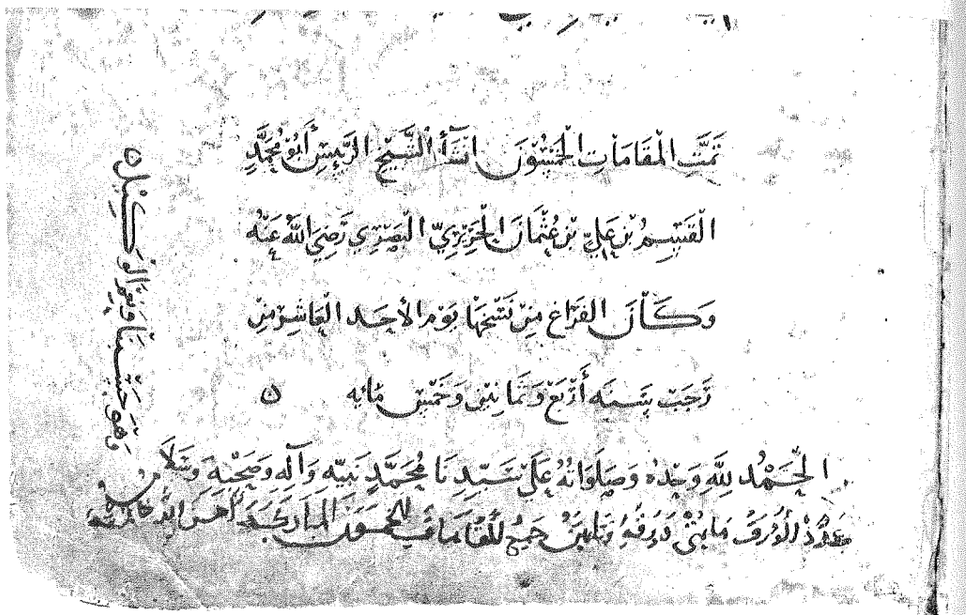
Small, octagonal Qur'ān manuscripts represent an exception to the usual layout of text: owing to their unusual format, the text area is sometimes circular and sometimes (more rarely) octagonal.[68]

Colophons were occasionally arranged in a special way (illus. 67 to 71). In particular, they were frequently written in a triangular block at the end of the manuscript (illus. 69); in fact the downward point of the triangle is often truncated, producing a keystone-like form. An early example of this practice can be seen in a London manuscript dating from 626/1229 (BL Add. 5965, f. 88 v), although the colophon in a 488/1095 copy of *Kitāb al-Luma' fī l-naḥw* by Ibn Jinnī (Berlin SB Or.oct. 3538, f. 70) may represent an earlier phase of evolution towards this triangular layout; both manuscripts seem to have originated in Iran. Later, colophons appeared in more varied shapes such as a circle (MS. London N.D. Khalili Collection QUR 27, dated 1213/1798-99[69]), a multifoiled mandorla, (Tabrizi Collection, no. 51, dated 1227/1812-13[70]), and many others.

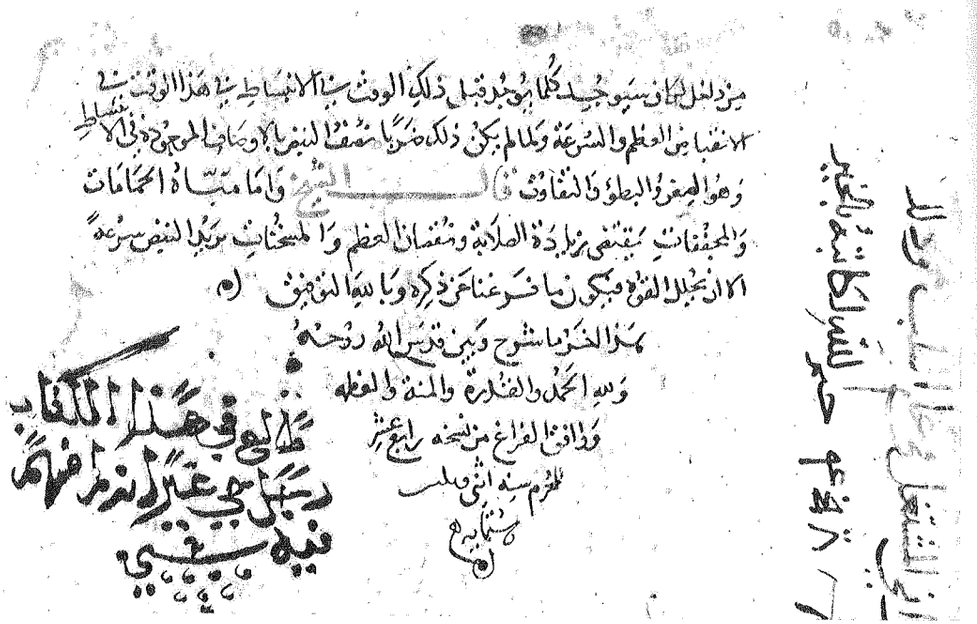
68 Both types of text block appear side by side in a manuscript in the catalogue of a Sotheby's sale on October 16, 1996 (lots 25 and 26). 69 Rogers, Geneva 1995, p. 70, no. 31. 70 M. A. Karimzadeh Tabrizi, *Ijazat nameh=Icâzet name, the most unique and precious document in Ottoman calligraphy* (London, 1999), pp. 125-126.



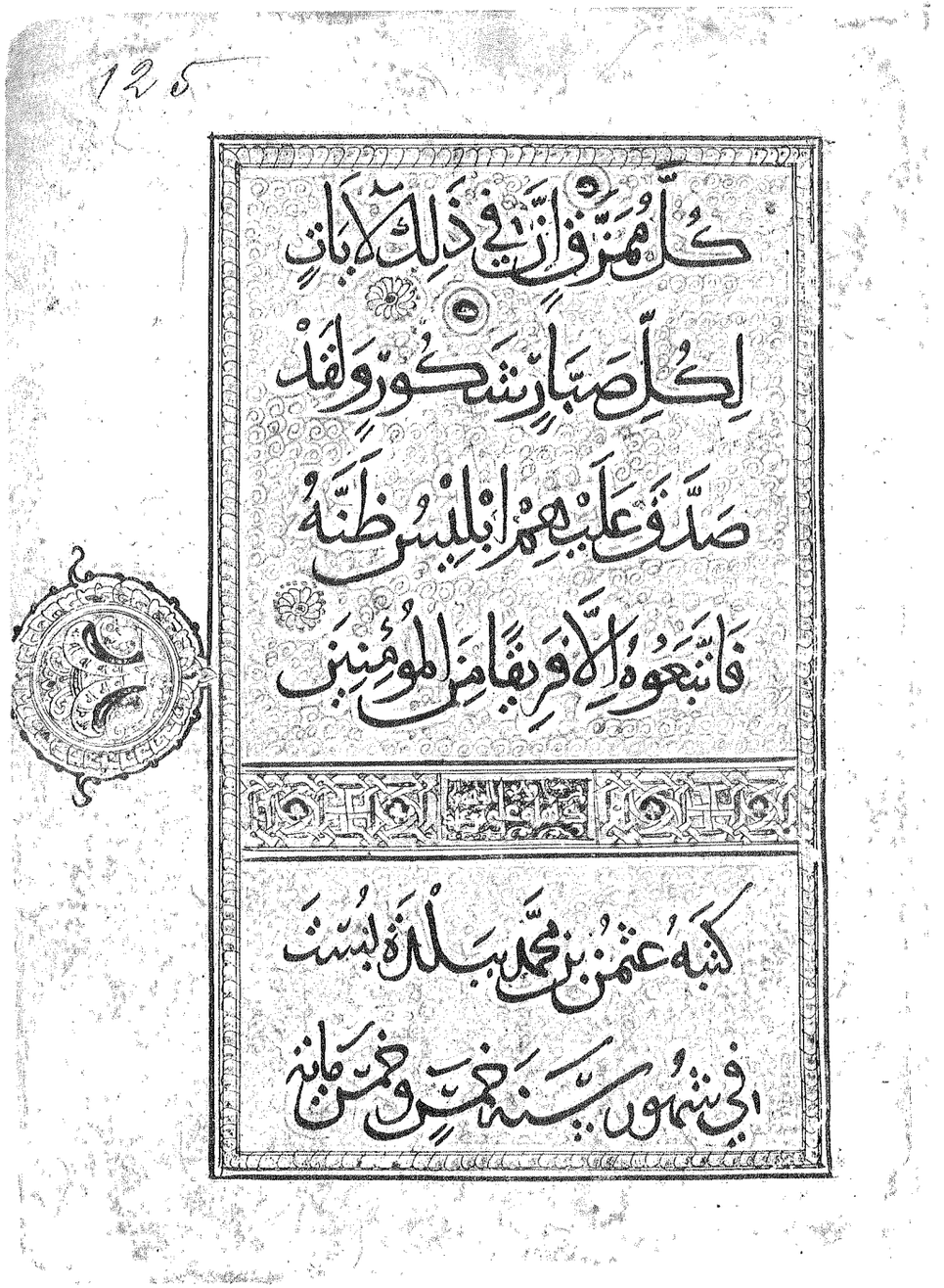
67. Maghribī colophon, rubrication and marginal text corrections. Dated 579/1183. Paris, BNF arabe 1451, f. 98.



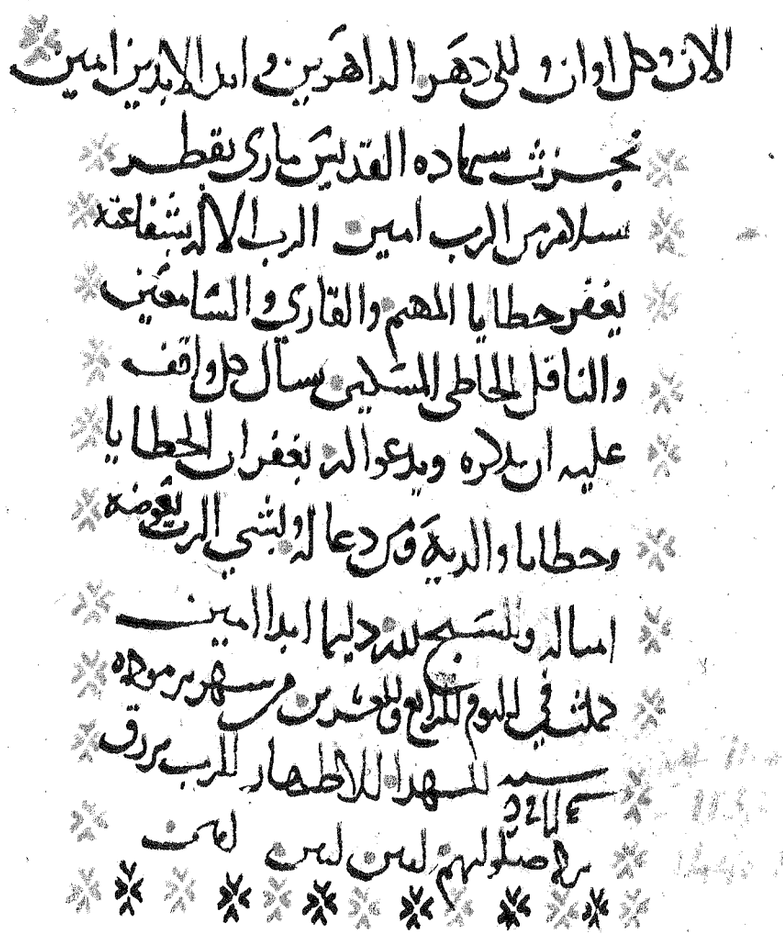
68. Eastern colophon in rectangular form. 584/1148. Paris, BNF arabe 3924, f. 232.



69. Colophon in triangular form. 632/1234. Paris, BNF arabe 6845, f. 120v°.



70. Illuminated colophon. Bust, Afghanistan, 505/1112. Paris, BNF arabe 6041, f. 125.



71. Christian decorated colophon. Egypt, year of the martyrs 1156/1140 CE. Paris, BNF arabe 131, f. 71v°.

Craftsmen and the Making of the Manuscript

In the context of a general introduction to the codicology of Arabic and Islamic manuscripts, it may appear superfluous to discuss the working practices of copyists. In the first place, this aspect of book production is not always easy to discern in the finished product since a number of basic facts – such as who was to receive the work, how long it took, and where it was undertaken –often remain unknown. In addition, illustrations of specific points are frequently taken from literary sources or, more occasionally, from archives, and still have to be compared with the facts as they transpire from the manuscripts themselves. And lastly, the preceding chapters have already detailed many of the operations involved in the making of books, and thus introduced the reader, to a certain extent, to the tasks of the copyist. Moreover, colophons, which could at least potentially provide compelling evidence in this connection, call for separate treatment and accordingly will be dealt with below. It is nevertheless worthwhile drawing the attention of researchers to the importance of this question in the broader context of the history of the Islamic book. The aim of the following pages is little more than to present a succinct account of some of the more important advances in contemporary research.

The identity of the copyists

Who, then, were the men, and sometimes women,[1] who lavished effort and patience on the time-consuming task of copying manuscripts? Colophons are generally speaking so sparing of details that, unless they provide the name of a specific individual – author, scholar, physician, or other – already recorded in other sources, they are of little help in determining the identity of the person who transcribed the text. In the absence of catalogues of dated manuscripts

1 Female calligraphers almost seem to have received the lion's share of attention: see Z. M. 'Abbās, '*Nisā' khaṭṭāṭāt*', *al-Mawrid* 15/4 (1986), p. 141-148. Ṣ. al-Munajjid, 'Women's roles in the art of Arabic calligraphy', *The Book in the Islamic World* (New York, 1995), pp. 141-148.

with a full series of indexes, and lacking a general inventory of all copyists' names, to build up a picture of the oeuvre or career of an individual scribe, is, in the current state of affairs, very much an uphill task.[2]

The professionals

Since the art of calligraphy occupied such a pre-eminent place in the Islamic world, it seems perfectly natural to begin with the calligraphers, a group *a priori* distinct from the general run of copyists. Treatises on the calligrapher's art[3] often incorporate brief biographies of these craftsmen, and they and their creations are regarded with the utmost respect. According to the data provided by their colophons, Qur'āns Paris BNF arabe 6082 and BNF arabe 6716 were copied by the celebrated Yāqūt al-Musta'ṣimī:[4] both bear fulsome notes expressing the regard in which they were held. Nonetheless, BNF arabe 6082 is in fact a forgery, as are many similarly attributed manuscripts in other collections.

Without even entering into the discussion of forgeries, to which the existence of these two manuscripts inevitably gives rise, the codicologist is confronted with two particularly thorny questions: should calligraphic manuscripts be put into a special category? And if so, how may calligraphers be identified? Some copyists overtly claim this status: a *Kalīla wa-Dimna* (a famous collection of fables) copied in 661/1262 is signed by a certain Muḥammad ibn Muḥammad ibn 'Umar Ibn al-Kamāl *al-khaṭṭāṭ*.[5]

As has already been mentioned, from a certain juncture, a number of specialised texts were composed in which artists' names are listed, while the teaching system, mirroring that found in the religious sciences, introduced the *ijāza*, the possession of which served as an equivalent of a calligrapher's 'certification'.[6] Such sources make it possible to identify a given calligrapher, but they are far from covering the entire Islamic world: such texts are indeed a relatively recent phenomenon and do not cover all areas. There are many old manuscripts, exhibits or illustrations in books about calligraphy, with colophons bearing the name of a copyist unrecorded in the surviving corpus of

2 Francis Richard has unearthed several cases of the hand of the same copyist surfacing in more than one manuscript (see Paris 1997, passim). 3 Among the numerous works of this genre of literature, mention may be made of Sulaymān Mustaqīmzāda (Süleyman Mustakimzade), *Tuḥfat al-khaṭṭāṭīn*, ed. M. K. Inal (Istanbul, 1928); Qāḍī Aḥmad, *Calligraphers and painters: a treatise by Qāḍī Aḥmad, son of Mīr-Munshī (ca A. H. 1015/A. D. 1606)*, transl. V. Minorsky, (Washington, DC, 1959); or again al-Zabīdī, *Ḥikmat al-ishrāq*, ed. 'A. S. Hārūn, (Cairo, 1373/1954). 4 MSS. Paris BNF arabe 6082 and 6716; Déroche, *Cat.* I/2, pp. 92-93, no. 458, and p. 122, no. 523 and pl. XXVI A. For Yāqūt, see James, *The Master Scribes* (London, 1992), pp. 58-59, and N. Çetin (in *Islām Ansiklopedisi*, vol. XIII, pp. 352-357, s. v. 'Yāḳūt Musta'ṣimī'). 5 MS. Geneva B. Bodmer MS. 527; *FiMMOD* 174. 6 U. Derman, 'Türk yazı sanʿatında icazetnameler ve teklid yazılar', VII. *Türk Tarih Kongresi* II [T. T. K. yay. IX/7 a], (Ankara, 1973), pp. 716-728; F. Déroche, 'Maîtres et disciples: la transmission de la culture calligraphique dans le monde ottoman', *REMMM* 75-76 (1995), pp. 85-87; M. A. Karimzadeh Tabrizi, *Ijazat nameh= Icāzet name: the most unique and precious document in Ottoman calligraphy* (London, 1999).

biographical sketches of scribes. Does that necessarily mean that the individual concerned was not in fact a calligrapher?

There is no need, therefore, to invent a whole new class. As Sellheim has suggested,[7] a better course of action is to subsume calligraphers under the umbrella term 'professional copyists', a group whose diversity is outlined below. The author of a history of Cordoba compiled in Umayyad Spain reports that in the Eastern suburb of the city alone 'one hundred and seventy women were occupied transcribing Qur'āns in Kufic characters'.[8] It is tempting to imagine that individuals such as these earned their means of subsistence from copying. An important and familiar figure had emerged at an early period – that of the *warrāq*, although it remains difficult to place this protean character in any one fixed category. Johannes Pedersen has documented a number of incidents in which the *warrāq* played a part somewhat resembling that of a modern publisher.[9] Though a *warrāq* might have run the store and sold books, it is more difficult to ascertain whether he was also involved in actual copying[10]. A measure of versatility seems to have been the rule in the book trade[11]: for example, there exist manuscripts transcribed by copyists whose colophons state that they were *warrāq*s (among them the 'Qur'ān of the Nurse',[12] dated 410/1019–1020 and MS. Mashhad Āstān-i Quds 4316,[13] from

7 In index 2 of *Materialen*, under the heading 'Ductus', Rudolf Sellheim places the categories 'calligraphic' and 'professional' side by side (p. 411). 8 Ibn al-Fayyāḍ, quoted in J. Ribera, 'Bibliófilos y bibliotecas en la España musulmana', in *Disertaciones y opúsculos*, vol. I (Madrid, 1928), p. 199. 9 *The Arabic Book* (Princeton, NJ, 1984), p. 43. 10 Amongst the documents in the Cairo Genizah Sadan ('Nouveaux documents sur scribes et copistes', *REI* 45 [1977], pp. 41-56) found an inventory of the possessions of a Jewish copyist that furnishes a picture of how a thirteenth-century writing professional might have been equipped. 11 Similar observations may be made with regard to a closely allied area, that of bookbinding: see Y. Porter, *Peinture et art du livre* (Paris/Tehran, 1992), p. 170. Later in the present chapter, reference will be made to a bookbinder who was also a copyist. 12 The MS. thus designated comes from the collection of the Great Mosque at Kairouan: see B. Roy and P. Poinssot, *Inscriptions arabes de Kairouan* (Paris, 1950), pp. 27-32 and fig. 7-8; the colophon is not strictly speaking the copyist's own, as it was written by a secretary (*kātiba*), a certain Durra. It seems that elements from this MS. are housed in a number of Tunisian institutions: the Centre d'Art Islamique at Raqqāda near Kairouan possesses several leaves (see Paris 1983, p. 273, no. 356; Paris 1995, p. 9), as do the museum of the Bardo in Tunis itself (Inv. 277; see Paris 1983, p. 273, no. 357), and the Bibliothèque Nationale (MS. Rutbī 13; see London 1976, p. 30, no. 26). 13 A. Gulchīn-i Maʿānī, 'Shāhkārhā-yi hunari-yi shigift-angīzī az qarn-i panjum-i hijrī va sargudhasht-i ḥayrat-āvar-i ān', *Hunar va mardum*, 157 (1354/1976), pp. 45-65; and by the same author, *Rāhnamā-yi Ganjīna-yi Qurʾān* (Mashhad, 1347/1969), p. 49, no. 21. The same copyist is believed to have written MS. Istanbul, TKS EH 209 (see Fuʾād Sayyid, *Makhṭūṭ*, pl. 7). Slightly earlier, another manuscript copied in the region (MS. Leiden, BRU Or. 437) also bears the signature of a *warrāq*, Abū Bakr Muḥammad ibn Abī Rāfiʿ; see P. de Jong and M. J. de Goeje, *Catalogus codicum orientalium bibliothecæ Academiæ Lugduno Batavorum*, vol. IV (Leiden, 1866), pp. 60-61, no. 1735; P. Voorhoeve, *Handlist of Arabic manuscripts in the Library of the University of Leiden and other collections in the Netherlands* [Codices manuscripti, 7] (2nd ed.) (The Hague/Boston/London, 1980), p. 162; S. M. Stern, 'A manuscript from the library of the Ghaznawid Amīr 'Abd al-Rashīd', in R. Pinder-Wilson (ed.), *Painting from Islamic Lands* (Oxford, 1969), p. 12 and pl. 8 – the name is given in the text in an incomplete form; J.J. Witkam, *Seven specimens of Arabic manuscripts* (Leiden, 1978), p. 4–5. Material of a more literary character has been collected by Ḥ. Zayyāt (*al-Wirāqa wa-ṣināʿa al-kitāba wa-muʿjam al-sufun* [Beirut, 1992], pp. 7-40).

466/1073–1074).[14] According to these colophons, both 'Alī ibn Aḥmad and 'Uthmān ibn Ḥusayn respectively copied the text, punctuated it, and illuminated and finally bound the manuscripts concerned. It may be that during the early centuries it was the *warrāq*'s role to oversee every stage of a manuscript's production. More than a century after the above examples, at the end of the sixth/twelfth century, Rāwandī, author of the history *Rāḥat al-ṣudūr* and himself a calligrapher, declared that he 'had learned seventy types of script and practised as a copyist of the Qur'ān, an illuminator and a bookbinder, skills [he] had acquired to perfection.'[15] Not quite such an all-rounder as some of his predecessors, the copyist of one manuscript (Montreal McGill ISL 91, dated 967/1560) was also nonetheless an illuminator; this combination of roles was fairly common.[16] On the other hand, were the tasks performed by the *nassākh* who signed a manuscript in London (BL Add. 25026)[17] in 672/1274 any less wide-ranging than those of the *warrāq*s mentioned above? The sources indicate that professional copyists set up shop in the market-place, though when the term *warrāq* is used it is not always easy to tell whether it refers to copyists or to booksellers.[18] By the beginning of the seventeenth century in Central Asia, they were plying their trade in the bazaars.[19]

On occasion, colophons introduce practitioners of other trades concerned with book production: the copyist of MS. London BL Add. 7214 dubbed himself *al-mudhahhib* ('the illuminator),[20] while that of MS. Paris BNF suppl. persan 1411 and 1528, a certain Darwīsh Maḥmūd, describes himself as a *naqqāsh* (painter): he must have both transcribed the text and executed illustrations in both volumes.[21]

Another writing professional, the *kātib*, or scribe, also sometimes copied texts. In 562/1167, a certain 'Alī ibn Ja'far ibn Asad *al-kātib* transcribed a Qur'ānic text which was endowed as *waqf* by Abū l-Qāsim Maḥmūd ibn Zankī.[22] Marginally later, a figure practically contemporary with the calligrapher of the aforementioned *Kalīla wa-Dimna*, a *kātib*, Amīr Ḥājj ibn Aqsunqur al-Qūnyawī, copied a manuscript now in Paris (BNF suppl. persan 1447).[23] MS. Paris BNF suppl. persan 2105 (completed in 1167/1754), was copied by Ḥāfiẓ Ibrāhīm, *kātib* of the *ṭūpchī* at the fortress in Khania, Crete. The name of Sayyidī Muḥammad *al-Munshī* too, who copied a number of manuscripts in a style closely related to Āq Quyūnlū chancery scripts, should

14 Another Qur'ānic manuscript is signed by 'Uthmān ibn al-Ḥusayn *al-Warrāq* (F. Déroche, 'Une reliure du v[e]/xi[e] siècle', *NMMO* IV/1 [1995], pp. 4-5 and pl. I): this is most likely a case of homonymy, but it is not beyond the bounds of possibility that the signature was intended to raise the value of the copy. 15 D. Meneghini Correale, 'Il capitolo sulla scrittura nel *Rāḥat al-ṣudūr* di Muḥammad ibn 'Alī ibn Sulaymān al-Rāwandī', *Annali di Ca'Foscari* 33/3, Serie orientale, 25 (1994), p. 231. 16 Gacek, *McGill*, p. 227, no. 253/1. 17 *FiMMOD* 157. 18 See Zayyāt, op. cit., pp. 34-35. 19 M. Szuppe, 'Lettrés, patrons, libraires. L'apport des recueils biographiques sur le rôle du livre en Asie centrale aux xvi[e] et xvii[e] siècles', *Cahiers d'Asie centrale* 7 (1999), p. 109. 20 *FiMMOD* 163. 21 Richard, op. cit., p. 115, no. 77. 22 MS. Richmond Keir Collection no. VII, 3 and 4 (B. Robinson et al., *Islamic painting and the arts of the book* [London, 1976], pp. 287-288). 23 *FiMMOD* 1.

not be forgotten.[24] These figures, though, were only following in the illustrious footsteps of Ibn Muqla: chanceries offered an opportunity for writing specialists to exercise their profession under the auspices of the prince, even if that meant working – depending on the requirements – for a government office or the prince's library.[25] In MS. Paris BNF arabe 6997, 'Abd al-Qādir al-Shukrī emphasises his position as calligraphy master at the Sublime Porte.[26]

Scholars and amateurs

Yāqūt al-Ḥamawī earned his keep as a copyist,[27] as had the philosopher Yaḥyā ibn 'Adī.[28] before him. Scholars and students alike were induced to transcribe texts to earn money. It sometimes fell to such individuals to copy manuscripts for study purposes: besides solving the problem of obtaining the texts they needed, copies might also become channels through which knowledge could be transmitted, as shown by occasional reading or audition certificates appended to manuscripts.[29] The final appearance of a manuscript thus might differ greatly depending on circumstances: since a hand is rarely unintelligible to the writer himself, copying for oneself is quite different from working for another party, a task requiring a higher standard of legibility. External features, such as the way a script is laid out and the page composed, can convey additional data in this regard, though these too should be treated with caution. Sometimes, a colophon recording that the copyist carried out the work *li-nafsihi*,[30] for him- or herself, goes some way to filling this information gap. Of course, not all manuscripts transcribed for this purpose were copied in a slapdash manner. Finally, there were the 'amateurs' who occasionally turned their hand to copying: this is especially frequent in the case of Qur'āns and other pious works. As Shadman Vahidov and Aftandil Erkinov have noted in the case of late thirteenth/nineteenth-century Central Asia, many of those who worked for Ṣadr-i Ḍiyā' were his friends: 'a *qāḍī*, a mufti, a *mudarris*, or anyone else who wrote a fine hand could transcribe books, either to order or for his own use'.[31] A manuscript in the hand of the author (an autograph or holograph) belongs to a special category and will naturally command the especial attention of anyone editing, studying, or translating a text.

24 F. Richard, 'Dīvānī ou ta'līq', *Mss du MO*, pp. 89-93. 25 Rogers, Berlin 1988, pp. 73-74. 26 Déroche, *Cat.* I/2, p. 114, no. 508, and pl. XXIV A. 27 Ibn Khallikān, *Wafayāt al-a'yān wa-anbā' abnā' al-zamān*, ed. I. 'Abbās (Beirut, s.d.), vol. VI, p. 127. 28 This Christian Arab philosopher is said to have transcribed al-Ṭabarī's immense *tafsīr* twice (Pedersen, op. cit., p. 43). 29 See below. See also Pedersen, op. cit., pp. 32-33, note 32. 30 *FiMMOD*, nos. 30, 40, 55, 56, 57, 65, 94, 171, 187, 192, 224 illustrate this point. See in this connection the formulae listed by A. Fu'ād Sayyid (*Makhṭūṭ*, pp. 455-458). 31 S. Vahidov and A. Erkinov, 'Le *fihrist* (catalogue) de la bibliothèque de Ṣadr-i Ẓiyā': une image de la vie intellectuelle dans le Mavarannahr (fin xix[e]-début xx[e] s.)', *Cahiers d'Asie centrale* 7 (1999), p. 147.

Internal evidence of a personal nature

Only rather rarely do colophons in Arabic-Islamic manuscripts offer pointers to the personality of the copyist or to the conditions in which transcription took place. One may sometimes glimpse the odd biographical detail, as in MS. Berlin SB or. 4794, where the copyist proclaims that his father was *khaṭīb* of the mosque of Aḥmad Pāshā;[32] while in MS. Paris BNF arabe 1612, it is the copyist himself who was *imām* and *khaṭīb* of the mosque at Qinā in Egypt.[33] Details concerning the manuscript used as a model were customarily held in high regard by copyists, as for example in MSS. Istanbul Köprülü Kütüphanesi 949 and 956.[34] There are instances, admittedly few and far between, when the pen lets slip details of a more personal nature. Max Weisweiler (for Arabic manuscripts)[35] and Angelo Michele Piemontese (for Persian examples)[36] have traced passages in verse conveying personal sentiments, though they tend to be rather conventional, such as pious exclamations or an appeal to the reader to show compassion and indulgence towards the copyist's shortcomings.

By comparison, colophons in Christian Arabic manuscripts were far more forthcoming. As Gerard Troupeau has stressed, while the place of copying is more commonly mentioned in this corpus, it is the many self-deprecating adjectives applied by the copyist to himself, as well as the pleas he addresses to the reader, that puts these colophons in a tradition quite distinct from that of Islamic manuscripts in Arabic.[37]

Places of transcription

Ordinarily very few clues survive as to exactly where a copyist performed his or her labours. The sources do provide the occasional insight, but, by and large, they remain too fragmentary. Indications in colophons may also allow the environment in which the copyist worked to be more exactly pinpointed. The name of the city where the manuscript was transcribed is, however, seldom mentioned, and remarks as to the specific location where copying was undertaken are yet less common. When such data does appear, however, it makes it easier to imagine the circumstances in which the scribes performed

32 Quiring-Zoche, *Ar. Hss.* 3, p. 35. 33 Sauvan and Balty-Guesdon, *Cat.* 5, pp. 159-160. 34 See e.g. R. Şeşen, 'Esquisse d'une histoire du développement des colophons dans les manuscrits musulmans', in *Scribes*, p. 203 (no. 26) and p. 204 (no. 29). 35 'Arabische Schreiberverse', in R. Paret (ed.), *Festschrift E. Littmann* (Leiden, 1935), pp. 101-120. 36 'Devises et vers traditionnels des copistes entre explicit et colophon des manuscrits persans', in *Mss du MO*, pp. 77-87. 37 G. Troupeau, 'Les colophons des manuscrits arabes chrétiens', in *Scribes*, pp. 223-231.

the various tasks demanded of them. Scarcity of information itself is reason enough for prudence: though tempting, generalisations and extrapolations are ill-advised. For example, the use of the notion of the 'scriptorium' to characterise the way bookmaking in the orbit of the princely courts may have been organised in the Arabic-Islamic world has recently met with a degree of respectability. This term, however, is used by medievalists to designate primarily 'a room in a religious house set aside for the copying of manuscripts'.[38] Quite apart from the fact that the reality covered by this word is very different in the Western medieval context, efforts should be made to guard against the misuse of terms that carry the risk of distorting our approach to the study of how manuscripts were copied in the Muslim East.

Workshops

Genuine 'workshops' or 'ateliers' of variable size did nevertheless spring up. Reference has been made above to a document stating that in Spain at the time of the Umayyads and in an eastern suburb of Cordoba alone 'one hundred and seventy women were occupied transcribing the Qur'ān in Kufic characters'. Unfortunately, it has not yet been possible to determine whether these ladies worked independently or collaboratively in workshops. For Pedersen, there can be no doubt that *warrāq*s put slaves to work copying books[39]; no source is adduced for this, though it may be a brief allusion to slaves renowned for their talents as penmen in the *Fihrist*. It is not inconceivable that these were indeed employed as scribes,[40] but, even supposing that they were involved in transcribing texts, the passage in Ibn al-Nadīm provides no insights into how exactly their activities were apportioned. The copyist of a manuscript in Fez (Qarawiyyīn 874) was certainly a slave – indeed, slave to a master renowned for his liking for books, the Umayyad caliph al-Ḥakam II. [41] It might reasonably be asked whether this slave too practised in an atelier environment. Although various authors have suggested that the illustrious library that bore the caliph's name employed copyists, there is nothing to suppose the existence of an institution resembling a scriptorium.[42] While in this case it is especially difficult to know whether the work was carried out for the Umayyad caliph's benefit alone, in others it is clear that copying took place in workshops and fulfilled commissions from a bibliophile prince. The taste for books displayed by the

38 *OED*, s.v.; see also Muzerelle, *Vocabulaire*, p. 66, s.v. 'scriptorium'. 39 Pedersen, op. cit., p. 46. A *ghulām* appears in a colophon published by R. Şeşen (op. cit., p. 200, no. 21). 40 Ibn al-Nadīm, *Kitāb al-Fihrist*, ed. Flügel (Leipzig, 1871), vol. I, p. 7; ed. Tajaddud (Tehran, 1350/1971), p. 10; tr. B. Dodge, *The Fihrist of al-Nadīm: a tenth century survey of Muslim culture* (New York and London, 1970), vol. I, p. 12. 41 E. Lévi-Provençal, 'Un manuscrit de la bibliothèque du calife al-Ḥakam II', *Hespéris* 18 (1934), pp. 198-200. 42 D. Wasserstein, 'The library of al-Ḥakam II al-Mustanṣir and the culture of Islamic Spain', *MME* 5 (1990-1991), p. 101.

great and the good was sometimes extremely keen. Not satisfied with collecting ancient and costly texts, they would also on occasion arrange for copyists to ensure a steady flow of manuscripts in accordance with their wishes. The supreme instance of this category of patron is without doubt the Tīmūrid Bāysunghur, son of Shāh Rukh, who gathered round him in Herat the most distinguished artists of his time, including illuminators, painters and calligraphers.[43] Although the objectives of this prince's workshop (which functioned in tandem with a library or *kitābkhāna*) were not limited to the art of the book, the manuscripts produced there seem to have served as a benchmark for later book lovers.

Manuscript artists also encountered arrangements providing regular means of subsistence around the Palace in Istanbul. Though archive research to date has focused more closely on the activities of painters, surviving records also supply valuable information on the production of the more lavish manuscripts.[44] It may be that such workshops are portrayed in miniatures such as an illustration in a copy of the *Akhlāq-i Nāṣirī* by Naṣīr al-Dīn Ṭūsī in the Prince Sadruddin Aga Khan Collection,[45] which shows various artists and craftsmen all together in the same locale. Workshops might well be of more modest size: some time in the mid-sixteenth century, a Persian traveller told of how book production was rationally organised in family-based workshops which together completed each stage in the process. 'There are in Shiraz of many writers of *nasta'līq*, all copying one another, making it impossible to distinguish between their work. The women of Shiraz are scribes, and if illiterate, they copy as if they were drawing. The author [of these lines] visited Shiraz and ascertained for himself that in every house in this city the wife is a copyist, the husband a miniaturist, the daughter an illuminator and the son a binder. Thus any kind of book can be produced within one family.'[46] So far, however, no colophons that might confirm the existence of working methods of this kind have been met with. It transpires from this description of manuscript production organised on a quite extraordinary footing that a single house was converted into an integrated workshop. These shops were admittedly busy producing high-quality manuscripts, and work of a less opulent nature would not have called for such a concentration of specialised artisans. In fact, manuscripts were more frequently transcribed by isolated individuals who,

43 E. J. Grube, in collaboration with E. Sims, 'The School of Herat from 1400 to 1450', in B. Gray (ed.), *The Arts of the book in Central Asia* (Paris/London, 1979), pp. 154-158. 44 F. Çağman, 'Nakkaş Osman in sixteenth century documents and literature', in F. Déroche, C. Genequand, G. Renda, and J.M. Rogers (eds.), *Art turc = Turkish Art. 10e Congrès international d'art turc* (Geneva, 1999), pp. 197-206; and Z. Tanındı, 'Manuscript Production in the Ottoman Palace Workshop', *MME* 5 (1990-1991), pp. 67-98. These articles illustrate the potential rewards of tracking the career of a first-rate artist and the projects in which he was involved through the Ottoman archives. 45 Geneva 1985, p. 153, no. 127; New York 1982, pp. 171-175, no. 58. 46 Būdāq Qazwīnī, *Jawāhir al-akhbār*, MS. St. Petersburg NLR Dorn 288, ff. 109-109 v°. The passage is recorded and translated by O. F. Akimushkin and A. A. Ivanov, 'The Art of Illumination', in B. Gray, ed., op. cit., p. 50.

depending on circumstances, could operate from of all kinds of premises. Many copyists would surely have worked in locales such as their dwellings or shops. Unfortunately the only sources of information pertaining to this issue are of an indirect nature. The inventory[47] drawn up in Cairo during the thirteenth century offers some idea of what a copyist's shop might have resembled. It seems to have been an activity that did not require particularly specialised premises: Yāqūt recounts[48] how Ibrāhīm al-Ḥarbī spent his whole life in contemplation and transcribing texts in his humble dwelling. Similarly, the same source[49] has it that Ismā'īl ibn Sabīḥ installed a *warrāq* in one of the houses he owned in order to copy books by Abū 'Ubayda which he had managed to procure. It is probable that in the larger cities, districts where booksellers congregated would also have possessed their fair share of copyists.[50]

Libraries

In several of the examples quoted above, the image of a library can be seen in the background. Together with educational establishments in which books naturally had pride of place, libraries were indubitably one of the most important places where manuscripts were copied. This may have been particularly true of the *Bayt al-ḥikma* to which one[51] or even more copyists[52] seem to have been attached. The Fāṭimid library in Cairo supplied all the materials necessary to anyone who wished to transcribe a text.[53] In twelfth/eighteenth-century Morocco, the royal library of the 'Alawīs had a room reserved for copying, and scribes were recruited to transcribe valuable manuscripts[54]. As Pedersen points out, until recent times copyists in the larger libraries in the Middle East would offer their services to any scholar desiring a copy of a given text.[55] An interesting colophon in this connection is that of MS. Paris BNF arabe 6690 which states that the transcription of the text was completed in the library of the Atābakiyya Madrasa at Zanjān (in northwest

47 Sadan, op. cit., pp. 41-56. 48 Yāqūt al-Rūmī, *Kitāb Irshād al-arīb ilā ma'rifat al-adīb* [E. J. W. Gibb memorial series, 6], ed. D. S. Margoliouth, (London, 1923), vol. I, p. 39. 49 Op. cit., vol. V, pp. 421-422. 50 Pedersen, op. cit., p. 51. 51 Y. Eche, *Les Bibliothèques arabes publiques et semi-publiques en Mésopotamie, en Syrie et en Égypte au Moyen Âge* (Damas, 1967), p. 23. 52 Pedersen, op. cit., p. 44. 53 Eche, op. cit., pp. 79 and 85-86. 54 A. Binebine, *Histoire des bibliothèques au Maroc* (Rabat, 1992), p. 77. 55 Pedersen, op. cit., p. 53. The Olser Library, Montréal, contains approximately ten manuscripts copied by Maḥmūd Ṣidqī *al-Nassākh* at the beginning of the twentieth century at the Khedival Library (see Gacek, op. cit., p. 6, no. 8, p. 11, no. 16, etc.); this is doubtless the copyist of MS. Chicago Or. Inst. A 12060, which served as the basis for Levey's translation of Ibn Bādīs's treatise (see M. Levey, *Mediaeval Arabic bookmaking* [Philadelphia, 1962]). The same individual also copied a brief tract in the collectaneous MS. Paris BNF arabe 7068 (colophon on f. 181); in the same volume (colophon on f. 124), a text appears that was transcribed by an individual who, even before giving his name, proclaims his position as a copyist in the Ẓāhiriyya Library, Damascus.

Iran),[56] though for the moment this note remains an isolated instance.[57] In Eastern parts of the Muslim world, a 'workshop' where precious manuscripts could be copied was often affiliated to a prince's library (*kitābkhāna*). It is nevertheless hard to trace the origins of the emergence of structures, however vulnerable and transient, like the one mentioned above which Bāysunghur[58] succeeded in instituting at his court in Herat. Nonetheless, in Tīmūrid Iran princely courts vied with one another in setting up ateliers of this kind, and the model was successfully transplanted to Mughal India.[59]

Educational institutions

Institutions dedicated to the dissemination of knowledge, on the other hand, are well attested in colophons. As might be imagined, there are abundant examples from all over the Muslim world of copyists exercising their activity in a *madrasa*, though here we can mention only a few cases illustrating their considerable geographical and chronological continuity.

Central Asia is well represented (the Sulṭāniyya madrasa at Samarkand),[60] together with Iran (the Rashīdiyya,[61] Mīrzā Taqī, Chahār Bāgh and Īlchī madrasas, all in Isfahan),[62] while Anatolia and neighbouring areas were also active (the Shifā'iyya[63] and Ṣāḥibiyya Shamsiyya madrasas[64] in Sivas, that of Sa'd al-Dīn Kūpak at Konya[65], the Sulṭāniyya at Ankara[66] and the Ṣāḥibiyya madrasa at Nakhchiwān).[67] Iraq (the Ṣārimiyya madrasa at Mosul)[68] and Syria (the Karūsiyya madrasa at Damascus)[69] are also recorded as places of copying, and this somewhat arbitrary selection can be concluded with an example from Egypt, the *madrasa* of Abū Sa'īd al-Ẓāhir Barqūq[70] in Cairo.

56 The manuscript is dated 581/1185 (see *FiMMOD* 55). **57** The colophon of MS. Istanbul Köprülü 1078 (712/1313) indicates that the manuscript was intended for a library, though it cannot necessarily be inferred that the copy was actually made there (see Şeşen, op. cit., p. 206, no. 31). **58** Washington 1989, pp. 159-169. **59** New York 1985, pp. 57-85. **60** MS. Istanbul Köprülü 927/4, dated 842/1438 (see Şeşen, op. cit., p. 208, no. 36). **61** MS. Çorum 2450, dated 780/1378 (see Şeşen, op. cit., p. 207, no. 34). **62** MSS. Paris BNF suppl. persan 2073, dated 1060-1061/1650-1651; suppl. persan 1638, dated 1231/1816; suppl. persan 1327, dated 1234/1819. **63** MS. Berlin SB Or. 4437, dated 1095/1684 (Quiring-Zoche, *Ar. Hss.* 3, p. 124). **64** MS. Istanbul Köprülü 956, dated 683/1284 (see Şeşen, op. cit., p. 204, no. 29). **65** MS. Dublin CBL 1466, dating from Rabī' II 677/September 1278 (see A. J. Arberry, *The Koran Illuminated* [Dublin, 1967], p. 17, no. 46 and James, *Q. and B.*, p. 89, no. 69). **66** MS. Istanbul Carullah Ef. 410 bis, dated 672/1274 (see Şeşen, op. cit., p. 204, no. 28). **67** MS. Berlin SB or.oct. 2291, f. 2-45, dated 689/1290 (see Schoeler, *Ar. Hss.* 2, p. 312). **68** MS. Paris BNF arabe 1694, dated 600/1204 (see *FiMMOD* 44). **69** MS. Paris BNF arabe 1296, dated 746/1345 (see *FiMMOD* 140). **70** MS. Brussels BR 19991, dated 789/1387 (see *FiMMOD* 195).

Mosques and religious foundations

Copies, especially of the Qur'ān, were frequently made in mosques, since at an early stage jurists had ruled that it was licit to transcribe the scripture in such institutions.[71] Evidence from colophons demonstrates that the range of texts copied in mosques was actually far wider.[72] The transcription of the first section of Imām Mālik's *Muwaṭṭa'*[73] was completed at the Great Mosque at Granada in 542/1147–1148. There are several cases in Persian manuscripts of copyists recording that their work was completed in a mosque: for instance, in those at Karbala,[74] Isfahan,[75] Surat,[76] or al-Azhar in Cairo (the text transcribed – Ḥusayn Vā'iẓ Kāshifī's version of the Bīdpāy fables – seems to have been somewhat at odds with the customary concerns of a mosque, but al-Azhar was and is a university where many subjects are studied).[77] Manuscripts were also copied in other places of worship, such as, in no particular order, a *zāwiya*,[78] a *mazār* (tomb or cemetery),[79] a Sufi centre,[80] a *khānaqāh* (meaning the same thing)[81] and a nameless cell (*ḥujra*).[82] Among the aims that Rashīd al-Dīn assigned to the foundation he established in Tabriz was that of copying his own collected oeuvre.[83] The text does not specify exactly where the copyists were meant to work; but we know that the originals were held at a library in the Rab'-i Rashīdī quarter of Tabriz while the copies went on display in the mosque.

Other places where manuscripts were copied

There are also colophons that allude to other, less conventional, situations. Indeed, it appears that copyists sometimes worked in buildings of a kind that may sound unsuited to such an activity. Fortresses, for instance, appear more

71 M. Fierro, 'The treatises against innovations (*kutub al-bida'*)', *Der Islam* 69 (1992), p. 221. **72** See *FiMMOD* 76, 90, 196, 236 and 242. **73** Christie's (London) auction sale catalogue, October 14 1997, lot 69; *The Qur'ān, scholarship and the Islamic arts of the book* (London, 1999), pp. 33-36, no. 17. **74** MS. Paris BNF suppl. persan 1864, dated 1261/1845. **75** MS. Paris BNF suppl. persan 669, dated 992/1581. **76** MS. Paris BNF suppl. persan 758, dated 1150/1737. **77** MS. Paris BNF suppl. persan 916, dated 931/1525. **78** That of Imām al-Shāfi'ī (MS. Paris BNF arabe 1652, dated 827/1424; *FiMMOD* 126, and Sauvan and Balty-Guesdon, *Cat.* 5, pp. 212-213) and that of Iskandar Pāshā just outside Galata (MS. Paris BNF persan 22, dated 1017/1608; Richard, *Cat.* I, pp. 49-50). **79** For example that of Shaykh Bukhārī at Bursa, in MS. Paris BNF persan 266 (Richard, *Cat.* I, p. 277). **80** MSS. Paris BNF suppl. persan 820, dated 1081/1670, at Bijapur; suppl. persan 1439, dated 1234/1818, in Üsküdar, Istanbul; at Shīrāz, Āstāna-yi Aḥmadiyya (MS. Paris BNF suppl. persan 1785, dated 1185/1771) and Āstāna-yi Ḥusām al-Dīn Ibrāhīm, in a series of manuscripts copied between 1480 and 1520. **81** For example the *khānaqāh Sa'īd al-Su'adā'*, in Cairo; MS. Berlin, SB or. oct. 3707, dated 798/1309 (see Schoeler, *Ar. Hss.* 2, p. 85). **82** MS. Paris BNF suppl. persan 395, dated 1568; MS. Tashkent IOB 3907/I, dated 544/1149 (*FiMMOD* 249). **83** I. Afshār and M. Mīnuwī (eds.), *Waqfnāma-yi Rab'-i Rashīdī* (Tehran, 1356/1978); tr. W. Thackston, in S. S. Blair, *A Compendium of Chronicles: Rashid al-Din's illustrated History of the World* [The N. D. Khalili Collection of Islamic Art, 27] (London, 1995), pp. 114-115.

than once in the records: in Narmūdzan,[84] Mohanpur[85] and Ahmedabad,[86] at Samarkand[87], and at Vidin in Bulgaria.[88]

Copying work-rates and methods

Unfortunately, the paucity of information available militates against the possibilities of satisfactory discussion of these subjects. Though in literary sources references to the 'production' of a copyist,[89] and more still to that of an author[90] are legion, prudence should be exercised when these records in fact concern writers who also copied texts, either to earn their keep or to furnish their personal libraries. As he himself averred, Ibn al-Jawzī would write four 'quires' per day;[91] after his death, the reed-pens he had used up in his prodigiously productive life were burnt to boil the water used for washing his body.[92] But because Ibn al-Jawzī was also an author it is impossible to determine what proportion of this activity was copying and what represented original composition.

Copying speeds

The sheer speed of executing Arabic script was a source of amazement to observers from early times; in the *Fihrist,* al-Kindī exclaims: 'It also makes possible greater speed than can be attained in other forms of writing'.[93] This criterion seems to have had some pertinence in the eyes of medieval authors such as Ibn Bādīs, who explains the terms denoting certain scripts in reference to how quickly they could be written down: 'If the master of the decorative letter (*ṭūmār*) pen writes a letter in a certain time, then the master of the two-thirds (*thuluthayn*) pen can write it in two-thirds of the time. The master of the half (*niṣf*) can write it in half the time. The master of the third (*thuluth*) can

84 MS. Paris BNF suppl. persan 168, dated 1022-1023/1614. 85 MS. Paris BNF suppl. persan 455, dated 1772. 86 MS. Paris BNF suppl. persan 935, dated 1141/1728. 87 MS. Paris BNF persan 126, dated 737/1337; see Richard, *Cat.* I, p. 142. 88 MS. Paris BNF persan 189, dated 953/1546-1547; see Richard, *Cat.* I, pp. 205-206. 89 Treatises on calligraphy often mention how many copies of the Qur'ān a calligrapher produced. In a later age, a copyist himself might record in the colophon the number of the manuscripts he had previously copied; see Rogers, Geneva 1995, p. 70, no. 31, and p. 73, no. 33. 90 See this connection Pedersen, op. cit., p. 37 sq. 91 Ibn Khallikān, op. cit., vol. III, p. 141, even gives a figure of nine quires a day. 92 Ibid. 93 Ibn al-Nadīm, *Kitāb al-Fihrist*, ed. Flügel, vol. I, p. 10; ed. Tajaddud, p. 13; here quoted from Dodge (tr.), op. cit., p. 19.

write it in a third of the time'.[94] To date, no studies concerned with copying speeds have been undertaken; a systematic examination of manuscripts with intermediate colophons would permit a more precise evaluation of rates of production. It is worth quoting recorded figures pertaining to copyists from Central Asia for the end of the nineteenth and the beginning of the twentieth centuries. Ṣadr-i Ḍiyā' regularly noted in his library catalogue the number of volumes transcribed by a copyist: according to this source, Damūllā Mīrzā 'Abd al-Raḥmān A'lām Mūllā transcribed nearly a thousand different texts, Ṣiddīq-Jān, five hundred, Damūllā Raḥīm-Jān, two hundred, 'Ināyat Allāh, more than one hundred and fifty, and his brother, Mīrzā Ḥikmat Allāh Maḥmūd, more than three hundred and seventy. Unfortunately, as the catalogue does not record the length of the works in question it is impossible to gauge the exact quantities these copyists turned out. Scribes themselves occasionally indicated the length of time it took to copy a text, either by noting the date on which they began their labours, or else by inscribing the duration of the whole process. *Darwīsh-i dardmand* 'Alī ibn Muḥammad, for instance, declares, in a colophon (to MS. Paris BNF persan 266) that he took a fortnight to copy on two hundred and seventy-three leaves the *Mathnawī* of Jalāl al-Dīn Rūmī.[95] There are literary works that dwell on exploits of this kind: at the beginning of the thirteenth/nineteenth century, a certain Fuḍayl-i Dīwāna ("Crazy Fuḍayl") is said to have executed, on orders from the emir of Bukhara, a copy of the works of Bīdil in forty days, all the while taking an abridged version of the same corpus for himself during the night. As for 'Ināyat Allāh – copyist, mufti and *mudarris* – he is alleged to have transcribed the *Mukhtaṣar* of the *Wiqāya* (an abridgement of a commentary on a major textbook of Hanafi law) in a single night.[96]

The instructions left by Rashīd al-Dīn Faḍl Allāh convey an idea as to the rate of work that might be expected by a patron with considerable sums at his disposal: they stipulate that every year two fine copies were to be transcribed of each of the six treatises composed by the Īl-Khānid vizier, works sometimes comprising more than one volume.[97] The surviving manuscripts, richly illustrated and/or illuminated, give ample proof of the enormous labour involved in compiling such codices.[98]

94 This passage appears in Levey's translation (op. cit., p. 41; here slightly altered and with the Arabic terms in brackets), but does not feature in the edition of the Arabic text by Ibn Bādīs (*'Umdat al-kuttāb wa-'uddat dhawī l-albāb*, ed. 'A. al-Ḥalwajī and 'A. A. Zakī, *RIMA* 17 [1391/1971]). 95 Richard, *Cat.* I, p. 277. See F. Déroche, 'Copier des manuscrits: remarques sur le travail du copiste', *REMMM* 99-100 (2002), p. 141-143. 96 Vahidov and Erkinov, op. cit., p. 147. The authors also record that the prolific Dāmullā Mīrzā 'Abd al-Raḥmān A'lām allegedly transcribed the *Chahār kitāb* in a single evening with the aid of his pupils (p. 172, note 19). 97 See note 83. 98 MSS. Edinburgh University Library Arabic MS. 20 and London N. D. Khalili Collection of Islamic Art, MS. 727; Paris BNF arabe 2324.

Individual labour or team effort?

The manuscripts demonstrate that transcription was largely a solitary pursuit, a single individual carrying out the entire copying process from beginning to end. Examples of group work do exist, but identifying them is not always easy unless the colophon provides details. A change in handwriting, particularly at the end of the manuscript, does not invariably signal a change of copyist. Conversely, as the teaching of writing was very largely based on imitation and several texts stress the skill of certain individuals in mimicking the hands of their contemporaries or predecessors,[99] it can be hard to detect whether a given work was a joint effort or not. Except for insignificant details, calligraphers in particular made it a point of honour to iron out their idiosyncrasies. Indeed, there is even anecdotal evidence of the abuses this propensity could lead to: in the seventh/thirteenth century, for example, the Egyptian master Ibn al-Waḥīd would put his pupils to work for a pittance before signing the manuscripts and pocketing a handsome fee from his patron.[100] There was also a student of Shaykh Ḥamd Allāh, the great Ottoman calligrapher, who slipped works by his own hand among others by his master, letting him sign the manuscripts before drawing his attention to the trick he had played.[101]

From the very first century of Islam, there is no dearth of cases of manuscripts produced by more than one copyist. Fragments of two very early Qur'āns from the second half of the first/seventh century (Paris BNF arabe 328 a[102] and Ṣan'ā' DaM Inv. 01-25-1)[103] are cases in point: the first was copied by three different hands and the second by two. The desire to adopt a homogeneous approach was obviously not felt strongly by the scribes here since each remained wedded to his own personal style. Later on, manuscripts of less exceptional quality could also be transcribed collectively: MS. Sarajevo HBB 142 and 155 to 159, a copy of the aforementioned *al-Wiqāya* by Maḥbūb ibn Ṣadr al-Sharī'a, is a particularly striking instance.[104] The text was transcribed by twenty-five copyists who combined their labours in answer to a commission

99 See for example D. S. Rice, *The Unique Ibn al-Bawwab manuscript in the Chester Beatty Library* (Dublin, 1955), pp. 7-8. 100 D. James, 'Some observations on the calligrapher and illuminators of the Koran of Rukn al-Dīn Bāybars al-Jāshnagīr', *Muqarnas*, 2 (1984), p. 148. 101 C. Huart, *Les calligraphes et miniaturistes de l'Orient musulman* (Paris, 1908), pp. 126-127. 102 Déroche, *Cat.* I/1, pp. 59-60, no. 2. A facsimile of this fragment has been published: F. Déroche and S. Noja Noseda, *Le manuscrit arabe 328 (a) de la Bibliothèque nationale de France* (Lesa, 1998). 103 Kuwait 1985, p. 60. 104 K. Dobraca, 'Scriptorij u Foci u XVI stoljecu', *Anali Gazi Husrev-Begove Biblioteke* 1 (1972), pp. 67-74; *Katalog arapskih, turskih i perzijskih rukopisa*, vol. II (Sarajevo, 1979), pp. 251-256, no. 1072-1077. P. S. Van Koningsveld and Q. al-Samarrai noted a copy of al-Sakhāwī's *Fatḥ al-mughīth bi-sharḥ Alfiyyat al-Ḥadīth* compiled by several copyists, dated 954/1547, 'apparently under the supervision of the collator'; see *Localities and dates in Arabic manuscripts: descriptive catalogue of a collection of Arabic manuscripts in the possession of E. J. Brill* (Leiden, 1978), p. 62, no. 91. Another instance, MS. Berlin, SB or. 4772, a copy of Shaykhzāde's *Ḥāshiya*, is described by R. Quiring-Zoche ('A manuscript copied in teamwork?', *Manuscripta Orientalia* 9/4 [2003], pp. 65-72).

financed at Foča in 996/1587 by a group of 'patrons', some of whom also personally copied out parts of the text. In 1080/1669-70, thirteen copyists worked together in order to achieve MS. Zāwiya al-'Ayyāshiyya 505 in Morocco.[105] Sometimes catalogues record that a volume is in two or more different hands:[106] these, however, do not necessarily represent cases of collaboration, but may be due to restoration or missing folios or other circumstances. For example, in an early copy of *al-Mukhtaṣar fī akhbār al-bashar* (Paris BNF arabe 1511), the eighty original leaves missing from the beginning of the text were restored by a second copyist.[107] Such possibilities do not of course alter the fact that variations in script always call for scrutiny on the part of the codicologist; the same applies to changes in ink and/or paper, from which it may sometimes (but not always) be inferred that the manuscript under study was transcribed by more than one copyist.

The conditions of manuscript copying

Most extant manuscripts were transcribed from a source manuscript which the copyist kept in front of him as he worked. This familiar notion becomes more tangible when the colophon includes precise notes regarding the source copy.[108] Some manuscripts, however, were produced in different conditions. Besides the special case of originals written in the author's own hand, the place of dictation in the copying process should not be overlooked. This is amply illustrated by an anecdote concerning al-Farrā' (died 207/822), who, in the course of his public lectures, transmitted the contents of a *tafsīr*, with two *warrāq*s taking down the text.[109] In this case, as in so many others, the *warrāq* appears to have acted as something like an author's secretary – although, as Pedersen has stressed, the links between these two parties could otherwise be relatively loose. A copyist might also take down text from dictation, since any person who wanted to transmit a work might choose this method of distribution– as was the case with MS. Tashkent IOB 3105, dating from 649/1251.[110]

105 Binebine, op. cit., p. 106 and 181. 106 See e.g. the index to Sellheim, *Materialen* 2. Several hands can be identified in both of two Qur'ānic fragments from West Africa, the MSS. Paris BNF arabe 4854 and 5035 (Déroche, *Cat.* I/2, pp. 49-51, no. 337 and 340). Witkam documents a Yemeni copy of the first half of the Qur'ān transcribed by three different hands, in 'Manuscripts & Manuscripts [6] Qur'ān fragments from Ḍawrān (Yemen)', *MME* 4 (1989), p. 161, no. 32 and fig. 19. 107 Sauvan and Balty-Guesdon, *Cat.* 5, pp. 62-63. 108 For example, in MSS. Istanbul Köprülü 949, dated 658/1260, and 1500/1, dated 729/1329, etc.; see Şeşen, op. cit., p. 203, no. 26; p. 207, no. 32. 109 Pedersen, op. cit., p. 45. 110 *FiMMOD* 250.

Writing posture

There is an independent Persian miniature that depicts all the various operations involved in the production of a manuscript, including a figure performing his ablutions (Washington D.C., A. M. Sackler Gallery S86.0221, c. 1540).[111] Several sources insist on the need for the copyist to be in a state of ritual purity when engaged in his trade, especially if the texts to be transcribed treat subjects of a religious nature.[112] Examining the way scribes are portrayed in miniature painting offers important insights into how copyists settled down to work, though admittedly it is occasionally difficult to be absolutely sure that the scene depicted is of a book being copied and not some other task. Generally speaking, the scribe is depicted seated and steadying the leaf on which he is writing against his right thigh; the angle between his upper body and thigh varies, depending on the region and period.[113]

Ottoman Turkish miniatures tend to portray copyists in front of items of low furniture (perhaps tables or trunks) upon which all their implements are laid out.[114] The problem of how copyists held the reed-pen is, on the other hand, much more intractable, and this question – an extremely significant one for a correct approach to certain palaeographical questions – does not seem to have received sufficient attention from scholars.

The process of transcription

Not all copyists were literary men; as Būdāq Qazwīnī's text points out, some might even be 'illiterate', though there is actually no need to resort to such an extreme explanation to account for the numerous errors with which some manuscripts are riddled. Transcribing a text is a exacting business and the concentration of the finest copyist can falter. When the transcript was made from an existing manuscript, some of the errors can be explained by difficulties encountered when reading the source manuscript: as Jan Just Witkam has shown, producing the unique extant manuscript of Ibn Ḥazm's *Ṭawq al-ḥamāma* (MS. Leiden BRU Or. 927) must have required considerable effort in that it involved converting an original in *Maghribī* script into an Eastern

111 Washington 1988, pp. 182-183, no. 59. 112 F. Rosenthal, *The technique and approach of Muslim scholarship* (Rome, 1947), p. 12. In addition, the same text has it that he should turn in the direction of the *qibla*. 113 For instance, compare the miniatures at Washington, DC, A. M. Sackler Gallery S86.0221 (Washington 1988, pp. 182-183, no. 59; Iran c. 1540 CE) and Cambridge, MA, Fogg Art Museum, Private Collection; see A. Schimmel, *Calligraphy and Islamic culture* (New York, 1984), illustration following p. 34 (India, ca. 1625 CE). 114 N. Atasoy and F. Çağman, *Turkish miniature painting* (Istanbul, 1974), p. 143 (MS. Istanbul TKS H 1263, f. 54 v°, c. 1618-1622 CE); and Y. H. Safadi, *Islamic calligraphy* (London, 1978), p. 88, illus. 93. A piece of furniture of this type is conserved at the Musée du Louvre in Paris (Versailles 1999, p. 167, no. 117; Dept. d'Antiquités Orientales, Inv. MAO 871).

cursive.[115] Ideally, the work of the copyist calls for a grasp of palaeography, though in practice this may prove inadequate. Other types of error – dittography,[116] haplography,[117] *saut du même au même* (jumping to repetitions),[118] and interversion[119] – were as well known to some copyists themselves as they are to text editors, and can be rectified on rereading. Interpolations[120] and substitutions, however, are harder both to detect and correct. Manuscripts sometimes bear the marks of these oversights: the copyist of MS. Leiden BRU Or. 14424 omitted a passage on f. 127, a lapse corrected by the addition of the missing text in the margin of the affected page.[121] Concerning the copyists who, until comparatively recently, still offered their services in the larger libraries of the East, Pedersen noted that 'individuals could be found among them who felt it their duty to correct in their transcripts real or imagined errors in the manuscript they were copying, so that one could not always be certain of receiving an accurate representation of [the original]'.[122]

Copyists and the role of market conditions

The above discussion leaves open the question of how the business of copying was actually organised. For workshops attached to a palace, and for the occasional copyist fulfilling a specific commission, the issue hardly arises. For professionals working independently, however, it remains difficult to ascertain whether copying involved much in the way of forward planning: manuscripts (with the possible exception of Qur'āns and a few popular texts such as al-Jazūlī's *Dalā'il al-khayrāt*, prayers invoking blessings on the Prophet) seem to have been generally executed on request. The so far seemingly exceptional example of mid-tenth/sixteenth-century Shiraz, however, does show book production anticipating demand; the study of manuscripts of 'popular' works, which still remains to be undertaken, might perhaps cast further light on the subject.

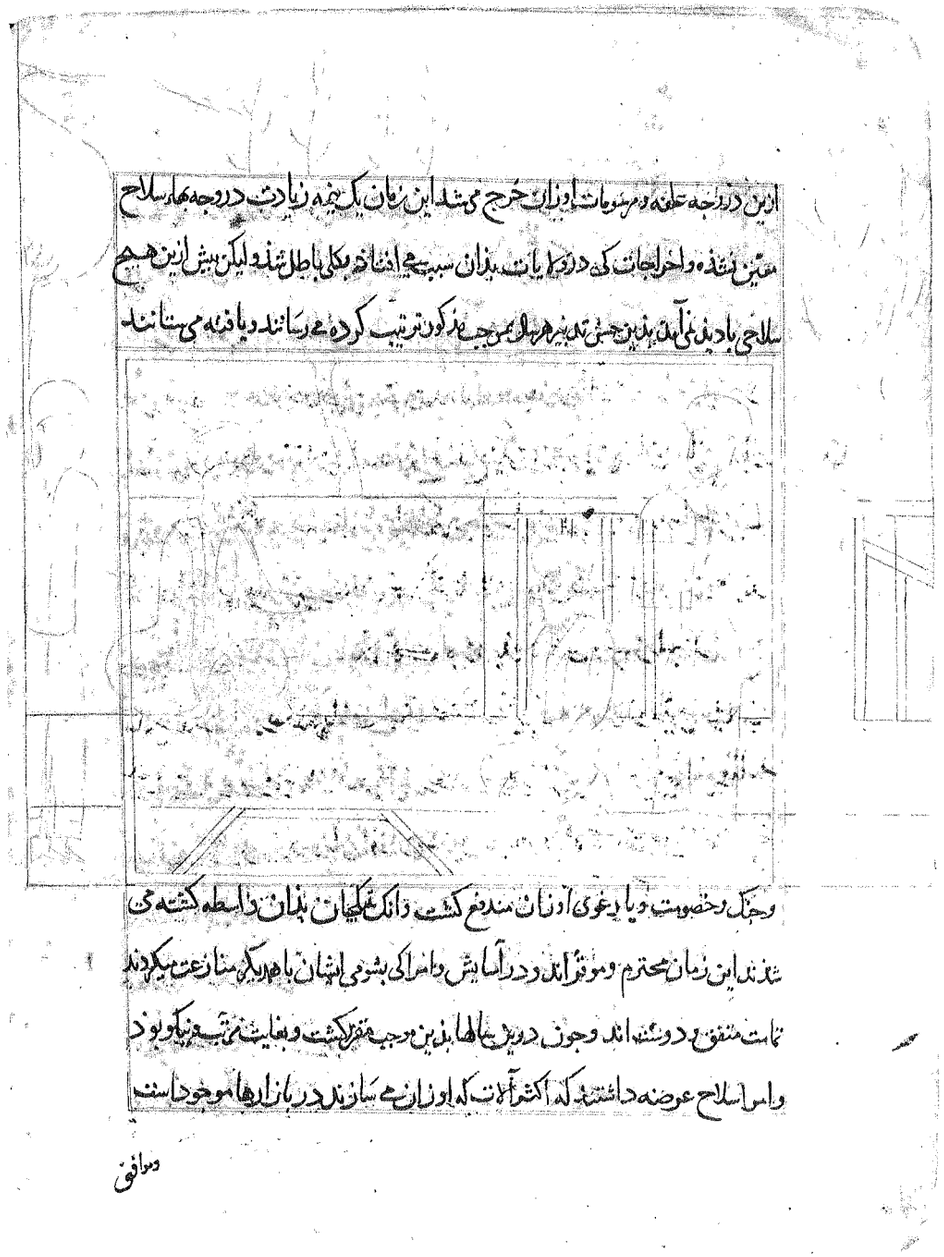
115 'Establishing the stemma: fact or fiction?', *MME* 3 (1988), pp. 90-92. 116 'The unintentional repetition of a letter or series of letters or words by a copyist,' *OED*, s.v.; see Muzerelle, *Vocabulaire*, p. 120, s.v. 'dittographie'. 117 'The unintentional writing of a letter or word, or series of letters or words once when it should be written twice,' *OED*, s.v.; Muzerelle, *Vocabulaire*, p. 120, s.v. 'haplographie'. 118 An error associated with *homeoteleuton* in which, when a word or phrase occurs twice in close proximity, the scribe copies the text directly after the second instance straight after the first, omitting the intervening words; see Muzerelle, *Vocabulaire*, p. 120, s.v.; J. J. Witkam records two such cases in Qur'ānic fragments from the Yemen (op. cit., p. 158, no. 5 and p. 159, no. 14). 119 Muzerelle, *Vocabulaire*, p. 121, s.v. 'interversion'. 120 'To introduce (words or passages) into a pre-existing writing; esp. to insert spurious matter in a genuine work [...]', *OED*, s.v. 'interpolate vb.'; see Muzerelle, *Vocabulaire*, p. 121, s.v. 'interpolation'. 121 This page is reproduced in Witkam (*Cat.* 5, p. 512). 122 Pedersen, op. cit., p. 53.

Painters and illuminators

The professional and cultural environments in which illuminated or ornamented manuscripts were made differed widely. Economic factors weighed heavily on the types and distribution of talent and materials available, as well as impacting on patrons and affecting the remuneration on offer – all issues that surely deserve more thorough investigation in future studies. A brief outline of the variety of copying conditions has been offered above: a similar diversity applies also to both illumination and ornamentation. Inevitably, information is more plentiful regarding the means marshalled to produce the finest copies than for the great mass of everyday manuscripts. Clearly the most important patrons established their own workshops in which artists, together with their assistants and apprentices, worked under the direction of one or more masters. Several Ottoman sultans produced manuscripts in this manner, and documents preserved in the Palace archives at Istanbul detail the fees remitted to the different contributors to the work. The salary of a first-rank artist could be considerable, but their assistants received no more than a few *aqchas* per day, a paltry wage even at the time. At the height of its splendour, in the tenth/sixteenth and eleventh/seventeenth centuries, the imperial workshop employed many craftsmen skilled in manuscript decoration, each with their own narrow speciality: ruling and marginal illumination, drawing and gilding arabesques, and so on (see illus. 72).

Ateliers working for the open market were generally modest in size, and yet their production, though less spectacular than that of the royal workshops, could attain high levels of craftsmanship. Styles of painting and illumination associated with Shiraz, for example, enjoyed tremendous popularity, and obviously influenced artists in India and other areas – an observation not confined solely to mass production during the Safavid period.[123] As stated above, copyists sometimes also executed the illuminations in a manuscript. In addition to 'Alī ibn Aḥmad *al-Warrāq* and 'Uthmān ibn Ḥusayn *al-Warrāq* al-Ghaznawī, who have already been mentioned, one may cite Sa'd ibn Muḥammad al-Karkhī, whose name appears in a Qur'ān manuscript (London BL Or. 13002, dated 402/1011). The later case of Rūzbihān Muḥammad al-Ṭab'ī al-Shīrāzī shows that this practice persisted at least into the tenth/sixteenth century.[124] Two additional categories may be identified: the first group includes professional copyists operating alone, or 'booksellers' who might provide some of the less ambitious illuminations. The second comprises those who copied out manuscripts for their own personal use and added decoration. Though their work is often unprepossessing, examples displaying a reasonable degree of mastery do exist.

123 Elaine Wright has made a close case study of this type: 'An Indian Qur'an and its 14th-century Model', *Oriental Art* (Winter 1996/1997), pp. 8-12. 124 D. James, *After Timur* (London, 1992), pp. 144-149.



72. Sketch for a miniature painting. End of the 14th century CE. Paris, BNF suppl. persan 1561, f. 111v°.

Bookbinders

The copyist of MS. Paris BNF arabe 6883 of 640/1242, a certain 'Alī ibn Muḥammad *al-Mujallid*, was undoubtedly a genuinely multitalented maker of books, like the men referred to in the preceding paragraphs. Manuscript copying must have represented a welcome complement to his bookbinding business, though it is not known whether he engaged in this sideline on a regular basis or only sporadically. In general, however, it is difficult to acquire a clear picture of the position of craftsmen binders: as will been seen in a subsequent chapter, they rarely signed their works, and available information about them derives primarily from literary sources. There is a paucity of information in the technical treatises[125] too, since they are mainly late works devoted to calligraphers and painters, though in passing they may touch on an exceptional bookbinder.[126]

Of course, the craft did enjoy a certain status, and the passage in the *Fihrist* mentioning masters from the early era (such as Ibn Abī l-Ḥarīsh, who worked for the 'Abbāsid caliph al-Ma'mūn) is well known.[127] Yet, in the last analysis, the conditions under which its practitioners worked remain obscure. Were it not for the marginal drawings in the album of Jahāngīr,[128] it would be well-nigh impossible even to visualise how the techniques were applied, since the very few miniatures specifically representing bookbinders provide no more than a superficial depiction of the workshops or the tools used.[129]

125 For an account of such literature, see A. Gacek, 'Arabic bookmaking and terminology as portrayed by Bakr al-Ishbīlī in his "Kitāb al-taysīr fī ṣinā'at al-tasfīr"', *MME* 5 (1990-1991), pp. 106-113. 126 Qāḍī Aḥmad devoted a note to a bookbinder, Mawlānā Qāsim-Beg Tabrīzī; see Qāḍī Aḥmad, tr. Minorsky, op. cit., pp. 193-194. 127 Ibn al-Nadīm, *Kitāb al-Fihrist*, ed. Flügel, vol. I, p. 10; ed. Tajaddud, p. 12. 128 Reproductions of details depicting various stages of the binding process are published in Chicago 1981, p. 45, fig. 5 and p. 52, fig. 8. 129 *Scribes*, p. 57 (MS. Paris BNF suppl. persan 775, f. 152 v).

Scripts

> "Apart from some remarks on the most obvious peculiarities of the scripts, I have had to refrain from giving a palaeographical analysis of these specimens. This is due to the fact that in this field even the most basic work still remains to be done. No adequate criteria for the description of Arabic handwriting do as yet exist. The mere fact that all scripts presented here may conveniently be called *naskhī* proves that this name is hardly of any use and might just as well be discarded. Not even the roughest guidelines as to provenance and dating of Arabic manuscripts have been drawn, and this work can not be done without taking Persian and Turkish palaeography into account."
>
> J. J. Witkam, *Seven Specimens of Arabic Manuscripts* (Leiden, 1978), p. 18

As briefly mentioned in the introduction, the palaeography of Arabic book hands cannot be divorced from codicology. We have yet to see, however, the development of a serious and coherent body of research in this field. Hence in this chapter we shall simply attempt to familiarise readers with the aims and methods of palaeography, to offer an assessment of existing research, and to indicate potential lines of further investigation.

The aims and methods of palaeography

The word palaeography is roughly contemporaneous with the birth of the field, defined as 'the science or art of deciphering and determining the date of ancient documents or systems of writing.'[1] It was used, in fact, in the title of a book by a French Benedictine scholar, Bernard de Montfaucon, *De palaeographia graeca*.[2] This work was published in 1708, some thirty years after Jean

1 As defined in the *Shorter Oxford English Dictionary*. 2 B. de Montfaucon, *Palæographia græca, sive de ortu et progressu literarum græcarum et de variis omnium sæculorum scriptionis græcæ generibus* (Paris, 1708).

Mabillon's *De re diplomatica*,[3] which latter can be considered the foundation stone of palaeography. It was not long before the term was adopted by Arabists; J. G. C. Adler used it in the late eighteenth century when discussing the Kufic coins he published in his *Museum cuficum borgianum Velitris*.[4]

Empirical knowledge of scripts

Palaeography was nevertheless not a totally unknown practice prior to the publication of the books mentioned above. Reading or copying ancient manuscripts implied a practical knowledge of early scripts on the part of readers and copyists. This deciphering ability is attested to a certain extent, for example, by readers' notes added at a date posterior to the manuscript itself. In a somewhat different way, a copy of the Qur'ān (Istanbul TKS H.S. 17) demonstrates the existence of empirical palaeographical knowledge: the text has been transcribed in a modern hand in the margin.[5] As Jan Just Witkam has noted, the history of the text of Ibn Ḥazm's *Ṭawq al-ḥamāma* supposes that at some point a scribe transcribed an original *Maghribī* version of this work in an Oriental hand.[6] Deciphering old manuscripts did not, on the whole, require particularly advanced technical knowledge, however. In particular, the fact that Arab and Muslim scribes generally made little use of abbreviations in their standard practice (and even then, only at the periphery of the text), obviated many difficulties in reading manuscripts despite the changes in book hands. Reading, in short, normally required nothing more than a good knowledge of the language or languages. Exceptions to this rule include texts written very poorly, whether because of haste or for other reasons (e.g. for the copyist's own use), and those written without the dots by which various Arabic letters of similar form are normally differentiated.

Early 'typologies'

Readers of manuscripts in archaic writing also possessed an empirical typology of early hands. On occasion they might give specific names to these hands, thereby doing the work of the palaeographer, although their meaning may not always be clear. The scribe of MS. Paris BNF arabe 167 specified that the text

3 J. Mabillon, *De Re diplomatica, libri VI, in quibus quidquid ad veterum instrumentorum antiquitatem, materiam, scripturam et stilum ; quidquid ad sigilla, monogrammata, subscriptiones ac notas chronologicas ; quidquid inde ad antiquitariam, historicam forensemque disciplinam pertinet explicatur et illustratur...* (Paris, 1681). As the title suggests, even at this early date there was a clear concern to discuss not only the scripts but material factors too. 4 J.G.C. Adler, *Museum cuficum borgianum Velitris* (Rome, 1782), p. 32. 5 F.E. Karatay, *Topkapı Sarayı Müzesi Kütüphanesi Arapça yazmalar kataloğu* (Istanbul, 1962), vol. I, p. 22, no. 64. 6 J.J. Witkam, 'Establishing the stemma: fact or fiction?', *MME* 3 (1988), p. 90.

he copied was originally 'in Iraqi script (*bi-khaṭṭ 'irāqī*)'.[7] The compiler(s) of the mediaeval inventory of the library in Kairouan made a distinction between 'Kufic', 'Sicilian', *Nabārī* and 'Oriental' scripts.[8] Throughout all the various manuscript traditions, the technical nature of handwriting gave rise to treatises on equipment (reed pen, ink, preparation of the writing surface, etc.), and these treatises sometimes touched on the various kinds of hand in use. The special status of writing in Islamic civilisation favoured the emergence of texts that also discussed the practice of 'calligraphy', including not only the names of scripts but sometimes also examples. Some of these names referred to the hands used by contemporary scribes and calligraphers, and cannot therefore be associated with palaeographical knowledge; others, by contrast, referred to scripts that had fallen into disuse in the more or less distant past, thereby conforming fully to the 'art of deciphering ancient systems of writing.'

At the same time, the production of forgeries of archaic scripts, as seen in the pseudo-al-Aṣma'ī (MS. Paris BNF arabe 6726[9]), confirms that such knowledge was disseminated, a fact corroborated by the attribution of archaic Qur'āns or Qur'ānic fragments to leading figures of the early days of Islam.[10] Despite the highly imprecise nature of this traditional brand of typology, it does represent an early form of empirical palaeography. Care should be taken when applying concepts generated by this practice, if only for reasons related to the transmission of texts, as will be discussed below; but some of them remain to a certain extent functional – the names *Maghribī* and *nasta'līq*, for instance, are still effective labels for scripts.[11] Even a term as vague as *naskhī* provides an approximate idea of the type of script it relates to. The various names used in the Islamic world, long known to specialists in Arabic, make it possible to discuss these scripts, and can even serve as a typology, however imperfect, for anyone prepared to set aside the niceties of chronological or historical accuracy.

The palaeographic method

Compared to traditional knowledge of this kind, the breakthrough associated with the work of Jean Mabillon and Bernard de Montfaucon involved the introduction of expertise on scripts into the realm of the historical sciences in the form of an auxiliary branch of history. Palaeography, which partially

7 *FiMMOD* 30. 8 I. Chabbouh, '*Sijill qadīm li-maktabat jāmi' al-Qayrawān*', *RIMA* 1/2 (1376/1956): see, for example, pp. 346 (*sharqī*), 347 (*nabārī*), 366 (*ṣiqillī*) and passim (*kūfī*, or *kūfī rayḥānī*, p. 346). 9 G. Vajda, *Album de paléographie arabe* (Paris, 1958), pl. 3; F. Déroche, 'A propos du manuscrit "arabe 6726", Bibliothèque nationale, Paris (al-Aṣma'ī, *Ta'rīḫ mulūk al-'Arab al-awwalīn*)', *REI* 58 (1990), pp. 209-215. 10 Ṣ. al-Munajjid compiled many attributions of this kind in his book on early scripts, *Dirāsāt fī ta'rīkh al-khaṭṭ al-'Arabī* (Beirut, 1972), pp. 50–60, 64–76. 11 It is nevertheless important to remain alert to regional variations in the use of these names; for example, *nasta'līq* is generally known in Turkey as *ta'līq* (talik), though *nestalik* is also found.

adopted some of the aims of the empirical approach described above, gave a new and much wider scope to the study of ancient writing. Not only did palaeography endeavour to provide a solid basis for deciphering ancient hand-written texts; it also aspired to lay solid foundations for establishing their authenticity, age, and origin. This goal obviously presupposes that the script in question underwent evolution through time and across geographical distance, which is empirically acknowledged to be the case with writing in the Arabic alphabet.

A crucial first step in the methodology of palaeography must therefore be to establish a system of classification. In order to develop a typology of the various types of writing, palaeographers start by assembling a series of documents preferably dated or datable, displaying similar graphical features; ideally, these documents should also contain reliable evidence of their geographical origin. Once the documentation has been gathered, it must be critically examined with a view to eliminating any items alien to the group. Since this initial phase (the constitution of series) is conducted empirically, its results must be carefully screened. Once this stage has been completed, a palaeographer can define the characteristics of the script, on the level both of overall appearance and individual letterforms. The next step is to set chronological – and, where possible, geographical – limits for each series of documents from clues supplied by colophons, notes (*waqfiyya*s or deeds of endowment, reading certificates, etc.), or material details of the production of the manuscript. The scope of a given series has a bearing on its validity: the greater the number of manuscripts written at roughly the same time in the same region, displaying the same graphical features, the less *ad hoc* the set constituted. Scripts from periods and regions for which only limited documentation exists cannot be identified with the same degree of accuracy as those for which examples abound in various collections.

Applications of palaeography

Once a framework has been set up by this general palaeographic approach, the palaeographer is theoretically in a position to apply his or her expertise to early scripts. The first task is to assign a date and geographical origin to a document, *x*, that bears no direct information as to date or place of origin. The palaeographer must therefore first determine the type of script under study and assign it to a group, *y*, whose chronological and geographical parameters are already known; in theory, if document *x* displays graphical features identical to group *y*, then it also shares that group's chronological and geographical characteristics. Conducting this comparative study with due care, however, requires that one consider the various factors that might militate against the validity of the theory. A scribe might have travelled from place to place, lived to a great age (thereby preserving a style that had otherwise fallen into disuse), or even revived other styles after a gap of generations (sometimes with fraudulent intent). A thorough comparative study must therefore include other aspects of codicology. To take an extreme – and perhaps overly simple – case,

a palaeographer would note that the early 'Abbāsid script found on ff. 4 and 5 of MS. Paris BNF arabe 580 is incompatible, from a chronological standpoint, with the writing material, namely a Western watermarked paper dating from the eighteenth century.[12]

As the preceding paragraph makes clear, the palaeographer's work is based largely on comparative analysis. The search for dated documents displaying the script under study is therefore of prime importance. Physical familiarity with manuscripts themselves is not to be underestimated, because it often helps to improve the precision of analysis, but any library's collections has its limits; fortunately, technology that emerged during the nineteenth century has extended the amount of documentation available for the search for parallels and today the scope is even greater. No less than any other field, palaeography has benefited from technical progress, and is perhaps even more dependent than most on such advances, especially in the realm of the reproduction of documents and image processing. The two centuries since the birth of palaeography have witnessed the replacement of hand-made copies – sometimes the only visual record – by photographs, later abetted by photocopies, and subsequently by computer technology (whose future benefit to palaeography remains to be seen).[13] Thus the quality and quantity of documentation available to palaeographers has grown considerably, even though – as will be discussed below – the study of manuscripts in Arabic script is still a long way from having fully exploited this potential. Also worth pursuing are the laboratory techniques that have increased in number and reliability over the years.

Palaeographers, then, are specialists whose knowledge and methods should in theory make it possible to identify the date and origin of a given piece of writing. But their attributions are more wide-ranging, because they are also historians of writing. Part of their work involves intensive study of the evolution of scripts and placing them in their historical and geographical context, taking into account the various factors which may have influenced their development. The work of classification and analysis briefly described here thus serves as the basis for an historical overview.[14]

12 The folios are facsimiles of the original leaves, held in Copenhagen. See Déroche, *Cat.* I/1, p. 157, no. 294. 13 The possibility of automatic analysis of scripts was discussed as early as the 1970s. For one example, see C. Sirat, *L'examen des écritures: l'œil et la machine, essai de méthodologie* (Paris, 1981). More recently, E. Rezvan and N.S. Kondybaev have pursued developments along these lines: 'New tool for analysis of handwritten script', *Manuscripta Orientalia* II/3 (1996), pp. 43–53; 'The ENTRAP software: test results', *Manuscripta Orientalia* V/2 (1999), pp. 58–64. 14 This seems to be the primary meaning of the term as used by al-Munajjid, op.cit., p. 7: *'ilm al-bāliyūghrāfiya, aw 'ilm taṭawwur al-khaṭṭ al-'Arabī.*

Arabic book hands: preliminary observations

To a large extent, the theoretical and methodological process just described has not yet been applied to Arabic book hands.

Difficulties to date

Up till now, scholarship has been hampered by various obstacles, but only the most serious will be mentioned here: a lack of reflection on principles applicable to the analysis of Arabic writing; the difficulty of assembling substantial documentation; the complexity of determining the change from one style to another; the re-use of a given hand from an earlier period; the absence of clear-cut indications of dating (or the presence of fallacious indications, such as a colophon copied exactly as it appeared in an earlier original); and variations in writing style by the same scribe. Furthermore, the importance of calligraphy, and the far greater attention shown to this subject, have tended to blur the picture by stimulating research and publications in which aesthetic or subjective judgements are hard to reconcile with the exigencies of palaeographic rigour. These are all major stumbling-blocks, but whereas some are inherent in the documents themselves, others are simply the result of an apparent lack of interest and effort on the part of Islamicists and Arabists. To put it bluntly, the palaeography of Arabic scripts remains two centuries behind the work done on Latin and Greek manuscripts. To trace the history of Arabic palaeography is not the role of this handbook, but it is perhaps important to give a clear account of the lines of research followed hitherto, and of the solutions that have been put forward to fundamental questions raised by the study of ancient writing.

As was pointed out at the start of this chapter, palaeography made its appearance in the field of Arabic and Islamic studies a little over two hundred years ago. The Orientalists of the day, perhaps influenced by an awareness of advances in Greek and Latin palaeography, believed that traditional lore concerning scripts, as recorded by Muslim scribes and copyists, would enable them to develop an Oriental palaeography with relative ease.[15] This initial, partial misconception led to later problems, because specialists relied on that lore for too long, while they turned to other urgent issues. The unsatisfactory situation was nevertheless obvious to the more farsighted experts in the field. As early as 1898 the great Spanish Arabist Francisco Codera noted gaps in palaeographical knowledge and suggested new lines of development. 'If palaeography still remains to be established, at least as far as manuscripts are

15 F. Déroche, 'Les études de paléographie des écritures livresques arabes: quelques observations', *al-Qanṭara* 19 (1998), pp. 365–381.

concerned, what should specialists in Arabic do to guide themselves in this research? . . .The most natural procedure, apparently quite simple today thanks to collotype techniques, would be to reproduce the many reliably dated manuscripts, which might then serve as a point of departure for identifying the forms given to letters during successive periods and for defining the external auxiliary signs used in scripts from different regions and eras.'[16]

The working tools: albums of examples in facsimile

The approach advocated by Codera was similar to the one followed by palaeographers in other domains and began tentatively with a series of volumes of facsimiles published in the late nineteenth and early twentieth centuries. The most remarkable album of this kind was certainly the volume published by William Wright, which combined the reproduction of specimens of scripts with a meticulous description of the material appearance of the manuscripts.[17] The title of another compilation, published by Bernhard Moritz, was perhaps overly ambitious – *Arabic Palaeography*[18] – and earned the author some harsh words from Josef von Karabacek.[19] Nevertheless, a significant number of manuscripts held in Egypt were reproduced in Moritz's work, and they were to enrich the study not only of the writing but also of the illumination of Arabic books. Finally, it is worth mentioning the facsimiles published by Agnes S. Lewis and Margaret D. Gibson,[20] as well as by Eugène Tisserant,[21] the latter designed more for educational use. These pioneering publications were followed by several anthologies of plates, compiled by the likes of Arthur J. Arberry,[22] Georges Vajda,[23] Ṣalāḥ al-Dīn al-Munajjid,[24] and Jan Just Witkam.[25] Finally, mention should be made of the *Fichier des manuscrits moyen-orientaux (FiMMOD)*, a database begun in 1992 which consists of a descriptive file for every manuscript included (all being securely dated to before 1500 CE), and a reproduction of one page of text from the script and of the colophon.[26]

These tools, crucial to the approach described above, are still insufficient in terms of quantity, especially given the enormous number of manuscripts written in Arabic script. True enough, catalogues of collections and of

16 F. Codera, 'Paleografía arabe: dificultades que ofrece; su estado; medios de desarollo', *Boletín de la Real Academia de la Historia* 33 (1898), p. 303. 17 W. Wright, *Facsimiles of manuscripts and inscriptions* [Oriental Series] (London, 1875–1883). 18 Moritz, *Ar. Pal.* 19 J. von Karabacek, 'Arabic palæography', *WZKM* 20 (1906), pp. 131–148. 20 A. Smith Lewis and M. Dunlop Gibson, *Forty-one facsimiles of dated Christian Arabic manuscripts, with text and English translation, with introductory observations on Arabic calligraphy by the Rev. D.S. Margoliouth* [Studia Sinaitica XII] (Cambridge, 1907). 21 E. Tisserant, *Specimina codicum orientalium* (Bonn, 1914). 22 A. J. Arberry, *India Office Library specimens of Arabic and Persian palæography* (London, 1939). 23 Vajda, op.cit. 24 Ṣ. al-Munajjid, *Le manuscrit arabe jusqu'au X^e s. de l'hégire* (Cairo, 1960). 25 J.J. Witkam, *Seven specimens of Arabic manuscripts preserved in the Library of the University of Leiden* (Leiden, 1978). 26 By 2001, 375 manuscripts had been described and reproduced in this series.

numerous exhibitions contain many useful reproductions, but the basic data is all too often lacking, and their wide dispersal makes such material hard to consult. Nothing, in fact, can compensate for the deplorable dearth of catalogues of dated manuscripts.

Theoretical research

Meanwhile, theoretical studies – that is to say, works of scholarship devoted to the dating and classification of the graphic material of existing series of documents – have been largely dominated by an approach adopted by pioneering scholars. One major work, published on the eve of World War II, demonstrates the limits of this approach. Nabia Abbott, in *The Rise of the North Arabic Script and its Kur'ânic development,* focused on a collection of seventeen folios and fragments of old Qur'ānic manuscripts (first/seventh to fourth/tenth centuries) held by the Oriental Institute in Chicago. She intended to address, once again, the issue of scripts in the early days of Islam.[27] According to Abbott, the study of Arabic sources would allow her to identify and classify the different varieties of script found in the manuscripts. Exploiting the many texts published since the days of the great Danish scholar Jacob George Christian Adler, Abbott took Adler's approach to a considerable level of refinement.[28]

But this approach raises a number of methodological problems. First of all, it presupposes that reliable editions of the texts in question had been established, although in fact the situation is far from satisfactory in this regard. Two examples illustrate the difficulties that can arise. The first concerns the transmission of texts: in his *Fihrist,* Ibn al-Nadīm lists the names of early Arabic scripts including – in the edition of the text prepared in the nineteenth century by Gustav Flügel – *mā'il*[29](= 'slanted [writing]'). This descriptive label was adopted by most specialists to designate the script of certain manuscripts from the first/seventh and second/eighth centuries.[30] But a new edition of the *Fihrist,* based on earlier manuscripts, corrects *mā'il* to *munābidh*[31] (= '[script in which the letters are] divergent'?). The second example concerns a brief treatise on calligraphy attributed to Ibn Muqla, a famous calligrapher of the early fourth/tenth century, and covers a problem of textual criticism.[32] Even though

27 N. Abbott, *The Rise of the North Arabic script and its Kur'ānic development* (Chicago, 1939). 28 In the eighteenth century, Adler laid the foundations of a classification of Arabic scripts by systematically examining the Arabic sources available to him in his *Descriptio codicum quorumdam cuficorum partes Corani exhibentium in Bibliotheca regia hafniensi et ex iisdem de scriptura Arabum observationes novæ, Præmittitur disquisitio generalis de arte scribendi apud Arabes ex ipsis auctoribus arabicis adhuc ineditis sumpta* (Altona, 1780). 29 Ibn al-Nadīm, *al-Fihrist,* ed. G. Flügel (Leipzig, 1871), p. 6. 30 J. von Karabacek, 'Julius Euting's Sinaitische Inschriften', *WZKM* 5 (1891), pp. 323–324. 31 Ibn al-Nadīm, *al-Fihrist,* ed. R. Tajaddud (Tehran, 1350/1971), p. 9; see also B. Dodge (tr.), *The Fihrist of al-Nadīm: a tenth century survey of Muslim culture* (New York and London, 1970) vol. 1, p. 11. 32 A.M. Rayef, *Die ästhetischen Grundlagen der arabischen Schrift bei Ibn Muqlah,* Doctoral thesis (University of Cologne, 1974).

the attribution has never been effectively authenticated, many scholars have based their arguments on the text without ever questioning its authenticity. The sphere of Oriental studies in general is aware of the basic methodological problems raised by the use of early sources. A specialist in Arab textiles has warned that in her field 'the most difficult thing is to identify textiles in the context of the Arabic vocabulary used during the period in question; texts never supply descriptions that are sufficiently detailed to allow us to be certain that a given term applies to a given sample from a collection. We are forced to fall back on hypotheses.'[33] It is unfortunate that a similar common-sense observation was not made earlier by those working on scripts, and that they remained unaware that in the absence of clear illustrations of the terminology used it was impossible to resolve the question of the attribution of a name to a given type of writing in anything other than an arbitrary way. Mediaeval writers wrote for their peers; they were not drafting treatises on palaeography.

Although we cannot rely on original sources to identify specific hands, the way mediaeval authors perceived the classification of scripts can provide palaeographers with valuable clues to criteria that might be used to establish relevant typologies. From this standpoint, Adam Gacek's analysis of al-Nuwayrī's approach is extremely helpful.[34]

Studies devoted to early scripts, however, were not invariably based on early sources alone. Almost at the same time that Abbott's book appeared, an article by Eric Schroeder purported to identify a series of coherent scripts, admittedly on a somewhat limited basis.[35] In his desire to give the series a name he had picked up in a marginal note, he ventured into the field of philology armed with relatively weak arguments and he became the butt of some severe criticism from the likes of Abbott.[36] This weakness apart, Schroeder's contribution had the great merit of demonstrating that palaeographic methods could be applied to Arabic writing; unfortunately, it met with little response in its day. Since that time, scholars have tried with varying success to analyse the different scripts in a methodical way. Thus Nico van den Boogert has meticulously analysed the forms found in *Maghribī* writing, and has published a rigorous analysis of its distinctive features.[37]

As regards Qur'ānic scripts from the early days of Islam (primarily from the first/seventh to the fourth/tenth century), direct study of fragments in major collections is now producing findings in typology: as further discoveries are made, a chronology is gradually emerging, and the rules for the use of the

33 G. Cornu, *Tissus d'Egypte, témoins du monde arabe: Collection Bouvier* (Geneva/Paris, 1993), p. 28. 34 A. Gacek, 'Al-Nuwayrī's classification of Arabic scripts', *MME* 2 (1987), pp. 126-130. See also Gacek's 'Arabic scripts and their characteristics as seen through the eyes of Mamluk authors', *MME* 4 (1989), pp. 144–149. 35 E. Schroeder, 'What was the Badī' script?', *Ars Islamica* 4 (1937), pp. 232–248. 36 N. Abbott, 'The Contribution of Ibn Muḳlah to the North-Arabic Script', *American Journal of Semitic Languages and Literatures* 56 (1939), pp. 70–83. 37 N. van den Boogert, 'Some notes on Maghribi script', *MME* 4 (1989), pp. 30–43.

various scripts are becoming clearer.[38] One development is particularly striking: whereas in the past the number of manuscripts studied was generally limited,[39] recent research is based on a far larger body of documents.

Future lines of research

Since the palaeography of Arabic scripts exists only in a fragmentary state, it would be presumptuous to do more than outline some of the findings of research to date and point out lines of research that might enable the field to advance further.

Problems of terminology

The study of Arabic book hands was born in the shadow of Western palaeography, and has been strongly influenced by it. This perhaps explains why the specificities of the Arabic system have received relatively little consideration and why concepts perfectly valid for Latin or Greek turn out to have little relevance to problems encountered in the analysis of Arabic scripts. The concept of 'cursiveness' provides a good example: in the Western sphere, 'cursive' refers to a hand in which the scribe produces more than a single part of a letter – indeed, more than one entire letter – without lifting the pen. This definition is useful in that it distinguishes cursive hands from scripts which require that each part of a letter be produced by a separate stroke of the pen. But in Arabic writing that distinction does not exist, strictly speaking; many letters are produced with a single stroke of the pen in any case, and the writing system itself requires certain ligatures, so that almost all varieties of script may be described as cursive. For this very reason the concept has proved of limited use.

By contrast, there has been little coherent application up to now of a fundamental distinction between 'calligraphic' hands employed by professionals with a concern for an even, elegant appearance, and 'casual'[40] scripts used by

38 Déroche, *Cat.* I/1; see also Déroche, *Abbasid Tradition* and E. Whelan, 'Writing the Word of God I', *Ars Orientalis* 20 (1990), pp. 113-147. 39 This was notably the case with Abbott's book (see note 27 above). 40 To the best of the present writer's knowledge, Houdas was the first scholar to recognize the importance of this distinction, in his 'Essai sur l'écriture maghrébine', *Nouveaux mélanges orientaux* (Paris, 1886), pp. 105 and 110. Abbott introduced a category which she termed *muṭlaq* to designate these casual scripts; see her *Studies in Arabic literary papyri: historical texts* [Oriental Institute publ. 75] (Chicago, 1957), vol. 1, p. 3. As a rule, albums of facsimiles have overlooked this distinction, although it is applied - without being made explicit - in books on calligraphy.

individuals who either did not master penmanship sufficiently well or who felt no need to use a formal hand. In the former case, the present writer has suggested distinguishing two major types, called 'composed' scripts and 'chirodictic' scripts. The distinction between the two is based on observation of the ligature line, which in the first case masks traces of the movement of the hand from one letter to another, while in the latter it leaves such traces apparent.[41]

On certain points, this distinction may dovetail with a concept well known to mediaeval theorists: a codification of the use of scripts was in fact gradually adopted at a very early date, most clearly in the realm of chancery documents but also in the domain of manuscripts. The situation seems relatively straightforward when it comes to Qur'ānic manuscripts with their specific hands (*khuṭūṭ al-maṣāḥif*), and Abbott has stressed the homogeneity of the scripts that appear in early Christian Arabic manuscripts.[42] The question therefore arises as to the usefulness of approaching the palaeography of book hands by allowing ourselves to be guided by the content of the text. In other words, it might, for example, be revealing to carry out a methodical study of the hands used in medical manuscripts or in documents issued by the *dīwān*s.

Ligatures between letters are a fundamental component of Arabic writing, as is the spacing between letters of a word. The former are generally overlooked in analysis, despite major variations which are to be found both in the forms of connection and in the respective positions of letters that they join; closer attention is usually paid to unwarranted ligatures that connect two letters which should not normally be linked. Furthermore, an important role is played by spacing, designed sometimes to separate one word from another, sometimes to isolate an independent letter within a word (certain letters are not normally linked to the following letter). This spacing can be employed in various ways and become a characteristic part of the style of a given period.

Palaeographers need to pay attention to the particular features of letter forms, even though an adequate terminology for describing them accurately is still lacking. Specialists will surely have to come to some agreement on a vocabulary that takes into account the constituent elements. For example, vertical strokes of greater or lesser height might be described, in a decreasing order of size, as 'ascenders', 'stems', and 'denticles'. Given the extreme simplicity of the forms, it is often the minor details that serve to identify a style – the way the top of the letter *alif* is handled is particularly representative of these subtle distinctions.[43]

41 Déroche, op. cit. (1998), pp. 376-378. 42 Abbott, *The rise...*, pp. 20-21; and *Studies...*, p. 2. 43 See A. Gacek, 'The head-serif (*tarwīs*) and the typology of Arabic scripts: preliminary observations', *Manuscripta Orientalia* 9/3 (2003), pp. 27-33.

Defunct scripts from the early periods[44]

Although no manuscript dated prior to the third/tenth century has been published to date,[45] the early period has sparked considerable interest among palaeographers. Qur'ānic scripts, which constitute the bulk of surviving material, have salient characteristics that simplify analysis. For convenience's sake, research has up to now been limited to the identification and dating of coherent groups of manuscripts. This work will need to be taken further as new collections are systematically explored while the identification of regional styles remains to be embarked upon.

Formative period

The oldest style, *Ḥijāzī* (see illus. 11 and 64), is easily recognisable thanks to its visual particularities, already noted by Ibn al-Nadīm in the fourth/tenth century.[46] The precise nature of this script nevertheless remains hard to pinpoint once we go beyond the general criteria set out in Ibn al-Nadīm's *Fihrist* – indeed, manuscripts display significant variations as to letter forms and *mise-en-page*.[47]

The Qur'ānic scripts of the second/eighth and especially third/ninth centuries are better known.[48] They are clearly composed, the base line tending to become one continuous, straight line. These hands can be defined by both the size and shape of their letters,[49] the latter displaying a considerable degree of continuity with few variants for a given letter. Traditionally, these scripts have been given the name 'Kufic'; despite the convenience of this term, it seems dangerous to apply it to a script displaying such wide variation and broad dissemination, and it is therefore suggested here that they be labelled 'early 'Abbāsid scripts' (see illus. 10a, 10b, and 41).

44 This section will deal only with those scripts which gradually fell into disuse; *naskhī*, which is attested in simultaneous contexts, will be discussed later. For descriptions of the various styles mentioned here, readers are referred to the publications cited in the notes. **45** G. Endress, 'Handschriftenkunde', *GAP* I, p. 281 ; F. Déroche, 'Les manuscrits arabes datés du III^{e}/IX^{e} siècle', *REI* 55-57 (1987-1989), pp. 343-379. A broader chronological view can be found in K. 'Awwād (*Aqdam al-makhṭūṭāt al-'Arabiyya fi maktabāt al-'ālam al-maktūba mundh ṣadr al-Islām ḥattā sana 500 h. (1106 m.)* (Baghdad, 1982), although not all his references have been verified. The same comment applies to some of the earliest Qur'ānic manuscripts mentioned by A. Grohmann in 'The problem of dating early Qur'āns', *Der Islam* 33 (1958), p. 216, note 17. **46** Ibn al-Nadīm, *Fihrist*, ed. Flügel, p. 6; ed. Tajaddud, p. 9; tr. Dodge, p. 10. See also G. Puin ('Methods of research on Qur'anic manuscripts: a few ideas', KUWAIT 1985, pp. 9–17) and F. Déroche (*Les Manuscrits du Coran en caractères ḥigâzî* [sic] [Quinterni 1] [Lesa, 1996]). **47** The format of manuscripts may vary, some being vertical and others oblong. **48** Déroche, *Cat.* I/1, passim; Déroche, *Abbasid tradition*, passim; Whelan, op.cit., pp. 113-147. **49** Déroche, 'A propos d'une série de manuscrits coraniques anciens', *Mss du MO*, pp. 101-111; F. Déroche, 'The Qur'ān of Amājūr', *MME* 5 (1990-91), pp. 59–66.

'Abbāsid book hands

Even in the nineteenth century, Western specialists wavered between various names for the scripts forming this group, which shows just how complicated it was to identify them. Firstly, relationships existing between the various forms were not always noticed, so that related forms were often represented as being independent. Secondly, some of the labels employed reveal that classification was not made any easier by the hybrid nature often - and sometimes rightly - attributed to them.[50]

These scripts, attested outside the realm of manuscript books right from the second/eighth century on, are chiefly recognisable by the way they introduce, in varying proportions, sharp angles in features that in *naskhī* would be handled as curves; this is particularly true of the letter *nūn* in an isolated or terminal position, as well as the 'heads' of letters such as *fā'*, *qāf*, and *mīm* (see illus. 42). A greater number of examples survive from the third/ninth century, when the various versions – some clearly related to 'composed' scripts,[51] while others should be described as 'chirodictic'[52] – were in use throughout the world of Islam. With the exception of certain ornamental styles that have survived down to the present in what might be termed a fossilised form, 'Abbāsid book hands are attested in dated manuscripts extending from the third/ninth to the seventh/thirteenth centuries.[53]

Although the main lines of the evolution of this group have been partly studied, its typology remains incomplete; major advances in this field are unlikely to occur until progress has been made in the systematic location of dated manuscripts copied in the given variations of 'Abbāsid book hands. Furthermore, these scripts had an influence on the styles described below; indeed, manuscripts whose hand has been labelled *naskhī* raise the question of the existence of transitional forms.

Later chirodictic hands

Problems

As Jan Just Witkam has pointed out,[54] the group of scripts most widely encountered is also the one most resistant to palaeographic analysis – or at least most successful in discouraging even tentative attempts at analysis. Yet this

50 Suggested names included Naskhī Kufic, Persian Kufic, Oriental Kufic, and broken cursive. **51** MS. Paris BNF arabe 342b; see Déroche, *Cat.* I/1, p. 136, no. 241 and pl. XXI. **52** Fragment Chicago, Or. Inst. No. 17620; see N. Abbott, *Studies in Arabic literary papyri* II, *Qur'ānic commentary and tradition* [Oriental Institute publ. 76] (Chicago, 1967), pl. 1–2. **53** For the earliest manuscripts, see Endress, op.cit. and Déroche, op.cit., pp. 356-365. The latest known example to date (apart from MS. Istanbul TKS R 18, dated 909/1503, which appears to be a calligraphic exercise) is MS. Mashhad Āstān-i Quds no. 84, dated 621/1223; see M. Lings, *The Quranic Art of Calligraphy and Illumination* (London, 1976), p. 19 and pl. 21. **54** Witkam, op.cit. (1978), p. 18.

immense category is ultimately the one to which we must assign the scripts of primary interest to publications dealing with calligraphy, where readers encounter various names designating scripts which imply that a basic typology has been established. The criticism made by A. D. H. Bivar with reference to inscriptions might be applied to manuscripts: 'Arabic manuals of calligraphy, followed by several recent commentators, apply special terms (*thuluth*, *muḥaḳḳaḳ*, *rayḥānī*, *ruḳ'a* and so on) to varieties of *Naskhī* script; yet since the application of these terms to successive periods is inconsistent, and the categories appearing on monuments do not always correspond, it is safer to use only the more general term.'[55] Apart from the bias introduced by the ahistorical nature of these terms, their major drawback is the absence of a clear, widely accepted definition of the styles to which they apply.

For the immediate future, we probably have to resign ourselves to a lack of a typology capable of accounting for the diversity of these scripts. The best method to follow is probably to establish coherent groups, even though this remains no easy task, owing partly to the dearth of catalogues of dated manuscripts and partly to the comparative rarity of indications of geographical origin in manuscripts.

Special domains

The use of one style in preference to another stems, as has been noted, from precise rules. This observation, which pertains to calligraphic scripts, should persuade palaeographers not to overlook approaches based on a specific domain of text. For page layout, analysis of the manuscript traditions for a given technical text in various languages suggests that the relationship between illustrations and text survived the changes wrought by translation.[56] In the case of *al-Nuqāya mukhtaṣar kitāb Wiqāya al-riwāya fī masā'il al-Hidāya*, mentioned above, strong similarities between various versions emerge, which Rudolf Sellheim attributes to the influence of a model.[57] Although continuities of this kind may be brought to light, we cannot exclude the possibility that the 'marker' role sometimes played by Arabic writing translated into the adoption, at a given moment, of a particular style for copies of a text or set of texts relating to the same sphere. The Qur'ān represents a particularly striking example of this tendency (see illus. 40 and 41); given the number of copies available for all periods combined, the Qur'ān constitutes a special palaeographical domain of its own. It is possible that the same approach could be extended to other fields.

55 *EI*², s.v. 'Kitābāt, IX: Iran and Transoxiana', vol. V, p. 230. 56 E. Irblich, 'Einfluß von Vorlage und Text im Hinblick auf kodikologische Erscheinungsformen am Beispiel der Überlieferung der 'Chirurgie' des Abu'l Qāsim Ḫalaf Ibn 'Abbās al-Zahrāuī vom 13. Jahrhundert bis 1500', in G. Silagi (ed.), *Paläographie 1981, Colloquium des Comité international de paléographie* [Münchener Beiträge zur Mediävistik und Renaissance-Forschung 32] (Munich, 1982), pp. 209-231. 57 Sellheim, *Materialen* I, pp. 125–127.

Furthermore, one must remain alert to possible shifts from one use to another, sometimes outside the realm of manuscript books. *Nasta'līq* is a notable instance of this since by some accounts it derives from chancery hands of the late eighth/fourteenth century.[58]

Regionalisms

The typology of Arabic scripts should also take particular regional features into account. Certain features found in the western Islamic world, in Iran, in India and in China are well known, but the question remains as to whether these regional definitions can usefully be broadened;[59] some catalogues, for example, refer to 'Egyptian *naskhī*' without specifying how it differs from "Iraqi *naskhī*". Special types and regional variants are not mutually exclusive, as seems to be demonstrated by *biḥārī*, apparently a largely Qur'ānic script specific to Islamic India between the ninth/fifteenth and the tenth/sixteenth centuries.[60]

Furthermore, groups of scripts that may display a strong identity, such as *Maghribī* (see illus. 37, 38, 39), have not inspired further studies intended to identify major stages or variants; at best it has been suggested that technical particularities explain the various forms of this script.[61] Nor has that suggestion, one linked precisely to the observation of a regional quality, spurred subsequent research, even though it might be profitably related to recent analyses of *nasta'līq*, according to which the structure of Persian and the sequencing of letters specific to it may have influenced the emergence of that specific style[62] (see illus. 65 and 66).

Appendix: diacritical marks and orthoepic signs

The use of diacritical marks and other indications of pronunciation varies considerably from manuscript to manuscript, and from language to language.[63] The text of the Qur'ān, however, was the object of special attention, and

58 Richard, Paris 1997, pp. 61–62, and 'Autour de la naissance du *nasta'līq* en Perse: les écritures de chancellerie et le foisonnement des styles durant les années 1350-1400', *Manuscripta Orientalia* 9/3 (2003), p. 8-15. See also E. Wright, 'The calligraphers of Šīrāz and the development of *nasta'līq* script', *Manuscripta Orientalia* 9/3 (2003), p. 16-26. 59 This approach is implicit in the album of facsimiles, unfortunately without commentary, published by Vajda, op. cit. 60 J. Losty, *The Art of the book in India* (London, 1982), pp. 38–40. 61 Houdas, op.cit., p. 98. 62 V. Atanasiu, *De la Fréquence des lettres et de son influence en calligraphie arabe* [Sémantiques 40] (Paris, 1999). 63 G. Endress has recently put forward a synthesis of the various approaches in 'Die arabische Schrift', *GAP* I, pp. 174-176 and pp. 178-181.

surviving materials reveal the advances made during the early centuries of the *Hijra*. It can nevertheless be difficult to resolve the thorny issue of when such marks were inscribed, especially notations made in a different colour from the main one in which the text is written.

Diacritical marks

Origins

Even the earliest known documents in Arabic script already have diacritical marks to distinguish homographs[64]; although used sparingly, they show that this additional feature was known to Arab scribes from an early date and so may continue a tradition established in the Nabataean and Syriac scripts. The oldest Qur'āns confirm this observation, since the team of copyists who transcribed Paris fragment BNF arabe 328a inserted diacritical marks, though the copyists involved differed as to which letters required dotting.[65]

These marks were considered to be part of the script and were therefore written in the same ink as the text (exceptions exist, but are sometimes later additions).[66] Their form varies; in early, thick-lined hands they may be rendered as fine strokes, but the scribes of the oldest extant Qur'ānic fragments, in *Ḥijāzī* style, used dots. When used in twos or threes, the respective position of the dots may vary: the three dots above *shīn* may not always be placed in a triangle as is usual, but in a line so that each 'denticle' bears a line or dot above it; *tā'* and *thā'* are topped by dots or lines in a vertical or diagonal column, and the same formation may also be found beneath the letter *yā'*.

The letters fā' *and* qāf

Finally, there are different ways to dot the letters *fā'* and *qāf*. In the Maghrib, it is still common to mark *fā'* with one dot below, *qāf* with one dot above. Early Qur'ānic fragments dating from the late first/seventh or early second/eighth century confirm the antiquity of this practice. Although the origin of these fragments has not been determined, it would seem that they were copied outside the Maghrib, which would imply that this dotting system was originally

64 Leaving aside the famous but dubious anecdote about the *mukhannath* of Medina during the caliphate of Hishām (r. 724-743), readers are referred to Vienna papyrus ÖNB PERF 558, dated 22/643, cited by A. Grohmann in *Allgemeine Einführung in die arabischen Papyri* [CPR III, I/1] (Vienna, 1924), p. 70; see also *From the world of Arabic papyri*, (Cairo: 1952, p. 82). 65 Compare, for example, ff. 13v° and 37; see F. Déroche and S. Noja Noseda (eds.), *Le Manuscrit Arabe 328 (a) de la Bibliothèque nationale de France* (Lesa, 1998). 66 There are a few examples of manuscripts whose diacritical dots are not in the same colour as the consonantal script, even though they were supplied at the same time. See, for example, MSS. Mashhad Āstān-i Quds 4316, dated 466/1073–74, and Istanbul TKS EH 42, dated 573/1177-78, reproduced in colour in Lings, op. cit., pl. 11 and 19; for MS. EH 42, see also *FiMMOD* 145.

known well beyond the confines of the Islamic west.[67] Other fragments from the same period use an opposite method, the dot being placed above *fā'* and below *qāf*. [68]To this latter category one should probably add other early fragments in which only *fā'* had a diacritical mark – a line over the letter – so that *qāf* was recognisable by the absence of a mark.[69]

Special cases

Apart from these well known practices, rarer or more complex systems may reflect either regional peculiarities or a concern for precision on the part of scribes. Such cases concern homographic pairs: *dāl–dhāl, rā'–zay, sīn–shīn, ṣād–ḍād, ṭā'–ẓā', 'ayn–ghayn* and *ḥā'–khā'* (the letter *jīm* apparently remaining a case apart). The member of each pair that normally bore no mark might be indicated by a miniature version of the same letter placed above or below it,[70] or by a special sign,[71] or by inverting the position of the diacritical mark.[72] These various systems were not mutually exclusive in so far as they appear to

67 Fragments from Egypt (and copied in Egypt?) reflect this practice; see Chicago Oriental Institute A 6960, A 6963, A 6988, A 6992 and A 7001, reproduced in Abbott, op. cit., pp. 61-67, nos. 3, 7, 8, 10 and 15; also Paris BNF arabe 326b, 330f, 330g, 7193, 7194, 7195 and 7197, in Déroche, *Cat.* I/1, *passim*. 68 Chicago Oriental Institute 6959, in Abbott, op. cit., p. 60, no. 1; Istanbul, TKS EH 4 and M 1, in Karatay, op. cit., p. 8, no. 23 and pp. 1–2, no. 3; Paris, BNF arabe 326a, 330b, 330c, 331, 333b, 334 a, 335, 348b and 379e, in Déroche, *Cat.* I/1, *passim*; St. Petersburg IOS E 20, in E. Rezvan, 'The Qur'ān and its world: VI. Emergence of the Canon: the struggle for uniformity', *Manuscripta Orientalia* 4/2 (1998), p. 24. 69 Istanbul TKS M 3, in Karatay, op. cit., p. 1, no 2; Vienna ÖNB A Perg. 197 in H. Loebenstein, *Koranfragmente auf Pergament aus der Papyrussammlung der Österreichischen Nationalbibliothek* [Mitteilungen aus der Papyrussammlung der ÖNB, Neue Serie, XIV. Folge] (Vienna, 1982), pp. 42-43, no 10. 70 See MSS. Istanbul Veliyüddin Ef. 3139, dated 280/893, in R. Şeşen, 'Les caractéristiques de l'écriture de quatre manuscrits du IV^{e} s. H./X^{e} s. AD', *Mss du MO*, p. 45, fig. 1, A-l and pl. IVa; Leipzig UB V. 505, dated 380/990, in Wright, op. cit., pl. VII and *FiMMOD* 94; Leipzig UB V. 510, dated 472/1080 (*FiMMOD* 151); Oxford Bodleian Hunt. 228, dated 363/974 (?) in Wright, op. cit., pl. LX; and St. Petersburg IOS B-876, dated 587/1191, in New York 1995, p. 46. Gabriel Sionita and John Hesronita describe this system in their *Grammatica arabica Maronitarum...* (Paris, 1616, p. 6): a reduced shape of the letter is written below the *ḥā'*, *sīn*, *ṣād*, *ṭā'* and *'ayn* ; the isolated or final *hā'* is differentiated from the feminine ending (*tā' marbūṭa*) by a small *hā'* written above it. 71 In MS. London BL Add. 19357, dated 398/1008, a semi-circle is placed above the letters *rā'*, *sīn* and *ṣād*. See Wright, op. cit., pl. XLVII. Sionita and Hesronita mention a sign looking like a short *gamma* (ɣ)above the *rā'* and *sīn*, less frequently above the *dāl* (ibid.). 72 The diacritical marks placed above a letter that was normally dotted would be placed below the analogous one that normally lacked them. See MSS. Istanbul Süleymaniye Cârullah Ef. 1508, dated 327/938, published in Şeşen, op.cit., p. 46, fig. 1, B-m; Oxford Bodleian Hunt. 228, dated 363/974 (?), in Wright, op.cit., pl. LX; Leipzig UB V. 505, dated 380/990, in Wright, op. cit., pl. VII and *FiMMOD* 94; London BL Add. 19357, dated 398/1008, in Wright, op. cit., pl. XLVII; and Berlin SB Sprenger 1184, copied in 501/1108 (*FiMMOD* 186). According to Sionita and Hesronita, such a dot occurs below *dāl*, *ṣād* and *ṭā'*. In the Yemen, inverted diacriticals of this type have been attested (see for example *FiMMOD* 333, Zabīd 611/1214-15) and survived until a relatively late date, according to information supplied by G.R. Puin.

be specific, at least in part, to given letters; thus a miniature letter sometimes accompanied *ḥā'* or *ayn*, while a subscript dot identified *dāl*, *rā'* or *ṭā'*. The dated manuscripts in which such marks appear enable us to assign these systems to the period between the third/ninth and fifth/eleventh centuries.

Vocalic and orthoepic signs

By the time Islam arose, the notation of vowels was a problem to which Syriac, a script similar to Arabic in some respects, had already provided some answers. Vocalisation was designed to meet the need to transmit the Qur'ān in manuscript form with precision, and signs foreign to the *rasm* (or 'consonantal skeleton') had to be clearly distinguished from it.

Vowel points

The earliest system used red dots whose position vis-à-vis the base letter indicated the vowel quality: *fatḥa* was indicated by a dot above the letter, *kasra* below the letter, and *ḍamma* slightly to the left (see illus. 41); when duplicated, the dots note the *tanwīn* (*-an*, *-in* or *-un*, according to case).[73] It is hard to determine the period in which this innovation was introduced, because the use of red ink implies that the addition of vowel markings was a separate process from the copying of the consonantal text; and that makes it impossible to determine how much time elapsed between writing and vocalising the earliest Qur'āns in which this system is found.[74] The use of such a system does not appear to have obeyed fixed criteria: manuscripts in a palaeographically homogeneous group may vary considerably in the proportion of letters that are vocalised.[75] A few marginal variants appear, mainly concerning the use of other colours including gold and silver.[76] In one instance, three different colours are used, the dots being gold, green or red depending on whether they denoted

73 The invention of this system is attributed to Abū l-Aswad al-Du'alī (died 69/688); see *EI²* I, p. 106. For an example, see Déroche, *Cat.* I/1, pl. II B. 74 It also raises the question of the identity of the vocaliser; since some colophons specify that the scribe vocalised the text, that may not have always been the case. 75 This can be verified, for example, in the B II group of fragments at the Bibliothèque nationale de France: vocalisation is absent from fragment BNF arabe 329a yet is fairly complete in 340i (Déroche, *Cat.* I/1, p. 70, no. 24 and p. 72, no. 35). The same observation holds for BNF arabe 331 and 6087, although it is impossible to determine whether the first case results from a later addition (Déroche, *Cat.* I/1, p. 67, nos. 15 and 16). By contrast, group D II is relatively homogeneous in its vocalisation: *hamza* in yellow, a modern-style *shadda* in red (Déroche, *Cat.* I/1, pp. 98-99). 76 See fragments Paris BNF arabe 346a, in Déroche, *Cat.* I/1, p. 86, no. 64; Istanbul TKS EH 23, in Karatay, op. cit., p. 25, no. 75. Yasin Dutton has drawn attention to the possibility afforded by the use of different colours for noting variants in a simultaneous fashion; see 'Red dots, green dots, yellow dots and blue: some reflections on the vocalisation of early Qur'ānic manuscripts, Parts I-II', *Journal of Qur'ānic Studies* 1 (1999), pp. 115–140 and 2 (2000), pp. 1-24.

fatḥa, *kasra*, or *ḍamma* respectively.[77] A mark in the form of a more or less regular diamond appears in Paris fragment BNF arabe 334a: the vocalization was written with the tip of a reed pen.[78] Coloured vowel points, probably in use by the second/eighth century,[79] were still being employed in the sixth/twelfth century,[80] and perhaps survived somewhat longer.[81]

Orthoepic points

The system was improved when different colours were assigned to the notation of other aspects of pronunciation. Thus *hamza* was indicated by a dot that was usually green[82] or, more rarely, yellow.[83] Some manuscripts show that *hamza* and vocalisation were combined by positioning the point according to the same rules used for vowels. Indications of *shadda* are less frequent, and that may account for variations in the colour of the dot representing it (which sometimes also had a vocalic value).[84] *Sukūn* (a sign representing the absence of any vowel) rarely figures in early Qur'ānic manuscripts.[85] These more elaborate marks seem to have been employed less often than vowel points themselves, the reason for their lack of success being that competing systems, similar to the ones currently in use, were beginning to spread at the time. Furthermore, in early Qur'ānic manuscripts vocalised with points, *hamza* and *shadda* may also be indicated by a coloured semi-circle,[86] or by the symbol still current today.[87]

77 See Paris fragment BNF arabe 348e, in Déroche, *Cat.* I/1, p. 87, no. 71. MS. Istanbul TKS EH 211 employs gold dots for *a* and *i*, while a gold *wāw* denotes *u* . See Karatay, op. cit., p. 23, no. 67. 78 Déroche, *Cat.* I/1, p. 79. no. 50. 79 Endress, op. cit., p. 179 points out that by the mid-second/eighth century jurists and *qurrā'* were debating the permissibility of these vocalic signs; this would seem to corroborate the manuscript evidence. 80 See MS. Paris BNF Smith-Lesouëf 214, dated 516/1123, in Déroche, *Cat.* I/1, p. 137, no. 247, and *FiMMOD* 2. The earliest dated Qur'ānic manuscripts in *Maghribī* script (398/1008 and 432/1040) are vocalised with red dots; see F. Déroche, 'Deux fragments coraniques maghrébins anciens au Musée des arts turc et islamique d'Istanbul', *REI* 59 (1991), p. 231. 81 A fragment from Yemen, published by J.J. Witkam ('Manuscripts & manuscripts [6] Qur'ān fragments from Dawrân (Yemen)', *MME* 4 [1989], p. 159, no. 19 and fig. 15), is noteworthy for its use of vocalisation points that seem similar to the system used in early Qur'āns even though it is a late copy (sixteenth or seventeenth century CE?). 82 It is green in Paris fragments BNF arabe 325a, 339, 358d, 349a, 349d, 351, 382c, etc. See Déroche, *Cat.* I/1, *passim*. 83 As found in Paris fragments BNF arabe 348a, 6982, and 374d; Déroche, *Cat.* I/1, p. 86, no. 67, p. 74, no. 43 and p. 140, no. 256. 84 It may be indicated by a dot in yellow (Paris fragments BNF arabe 347a and 377a, in Déroche, *Cat.* I/1, p. 113, no. 162 and p. 136, no. 242), orange (Paris fragment BNF arabe 325e, Déroche, *Cat.* I/1, p. 98, no. 113) or blue (Paris fragment BNF arabe 5178f, in Déroche, *Cat.* I/1, p. 96, no. 111). 85 It appears in Paris fragment BNF arabe 368 in the form of a yellow circle when it occurs at the end of a word or as a yellow semicircle when within the word. See Déroche, *Cat.* I/1, p. 117, no. 174. 86 A semicircle might be used to note both *hamza* and *shadda* (Paris fragment BNF arabe 349f; Déroche, *Cat.* I/1, p. 73, no. 36) or *shadda* only (in red, as seen in Paris fragment BNF arabe 6982, or added in green, as in Paris fragment BNF Arabe 337c; see Déroche, *Cat.* I/1, p. 74, no. 43 and p. 109, no. 146). In MS. Istanbul Nuruosmaniye 23, written in Palermo in 372/982–83, *shadda* is indicated either by a red semi-circle or by the modern symbol; see Déroche, *Abbasid Tradition*, pp. 146-151. 87 See London fragment N. D. Khalili Collection of Islamic Art KFQ 89, where *hamza* and *shadda* have modern forms and are marked in green and blue respectively; Déroche, *Abbasid Tradition*, pp. 109-110, no. 57.

The modern system

The vocalisation system in use today was developed rather later on: it first appears during the third/ninth century, as exemplified by a manuscript dated 280/893 (Istanbul Süleymaniye Veliyüddin Efendi 3139).[88] In Qur'ān manuscripts this system was adopted in the following century.[89] Its status as an appendage to the *rasm* was still strongly felt, for in many manuscripts from the Arab Muslim East vowels were still marked in red in the fifth/eleventh and sixth/twelfth centuries[90] (see illus. 42), a tradition that endured longer in the Islamic west.[91]

Other orthoepic signs were introduced in a progressive fashion, as evidenced by the many 'mixed' manuscripts, in which vowel points coexist with modern forms of *hamza*, *shadda*, and *sukūn*.[92] In the Maghrib, these signs sometimes retained the particular colours that had been assigned to them in earlier systems of vocalisation, an approach attested as early as the fifth/eleventh century in the famous 'Qur'ān of the Nurse' (*al-Ḥāḍina*).

88 Şeşen, op. cit., p. 45 and pl. IV A. It is also found in MS. Dublin CBL 3494, dated 279/892; see A. J. Arberry, *The Chester Beatty Library: a handlist of the Arabic manuscripts*, vol. II (Dublin, 1956), p. 108 and pl. 68. 89 Later additions to early copies are always difficult to detect. This situation arises notably in MS. Dublin CBL 1417, written before 292/905, in which both vocalisation systems co-exist; see A. J. Arberry, 'A Koran in "Persian" Kufic', *Oriental College Magazine* 40/3-4 (1964), pp. 9-16, and James, *Q. and B.*, p. 26, no. 12. Other examples appear in Paris fragments BNF arabe 332 and 342a; Déroche, *Cat.* I/1, p. 77, no. 47 and p. 112, no. 158). 90 A fragment dateable to the early fourth/tenth century, Paris BNF arabe 383c, bears modern signs in red, but it is difficult to tell whether or not they are later additions; Déroche, *Cat.* I/1, p. 137, no. 245. 91 See, for example, MSS. Paris BNF arabe 575, dated 1194/1780, BNF arabe 576, dated 1195/1781, and BNF arabe 589, circa 1242/1826-27; Déroche, *Cat.* I/2, pp. 44-45, nos. 325, 326 and 328. 92 The form and use of these symbols were somewhat unsystematic in the early days; Wright, op. cit. pl., XLVII, analyses these variants in his commentary on MS. London BL Add. 19357.

Books and their Ornamentation[1]

The study of decoration: ends and means

Even before the advent of the Muslim religion, decorating manuscripts was already a well-established practice in the birthplace of Islam. Very early on, its practitioners were embellishing the books they copied, a habit that stirred up a lively debate in the community concerning what was permissible and what forbidden. The best-known facet of this argument concerns the representation of living beings: their prohibition did not in practice, however, altogether preclude manuscripts with paintings from being produced. This important question continues to be discussed today and is the object of a great deal of research that has thrown up some extremely interesting findings.[2] It is important to note that whereas in the study of European manuscripts "illumination" often means (or includes) "illustration", in Islamic studies the two are invariably distinguished.

In line with the perspective of the present volume, the following account of illumination aims above all to aid description and further understanding. It is a subject that would benefit from greater uniformity in the application of technical terms. The usage of common expressions – frontispiece[3] or *sarlawḥ*,[4] for example – has not yet been fixed even among specialists; depending on the author concerned, the same word may denote something different. In future it would be helpful to establish conventions governing usage, but in the meantime the guiding principle must be for writers to try to ensure that they apply their own usage consistently.

1 This chapter was written by Muhammad Isa Waley, with contributions from François Déroche. 2 For an initial approach, see J. Wensinck [T. Fahd], *EI²* IX, pp. 889-892, s.v. 'ṣūra'. 3 This term should be reserved for a title accompanied by decoration, though the meanings given it by authors are much more varied. 4 Gacek, *AMT*, p. 67. Certain authorities hold that the *sarlawḥ* is a reasonably large illuminated panel placed at the beginning of a text or section of a text; it contrasts with *'unwān*, a word applied to bands occupying less than a quarter of the surface area of the page. Here, the term *sarlawḥ* refers to a title band or heading.

Manuscript decoration and its importance in codicology

The reader may justifiably be wondering as to the purpose and significance of the study of manuscript decoration for those interested mainly in the manuscripts themselves, and only to a lesser extent (if at all) in art history. As we shall see, however, knowledge of the subject can certainly prove useful, and on occasion even essential, to codicologists. This applies especially to identifying the geographical provenance and date of a manuscript in which this information is not provided by the copyist or by other internal written evidence; and also when evidence is being sought about the later travels and ownership history of a manuscript to which ornamentation was added not at the time of copying but at some later stage.[5]

Moreover, the evolution of the book in Arabic script, at least as regards the very finest examples, is marked by a tendency to impart a unitary decorative scheme: binding and inner covers complete, or at least reflect, the illumination within, even though the means employed – gilding, painting, filigree, etc. – are distinct. This should also be kept in mind when examining how artists approached the task of decorating manuscript books.

The presence or absence of ornamentation also furnishes an indication as to the status of the manuscript as a whole and of the person for whom it was produced. Numerous other parameters have to be taken into account, including the style of script and the type of paper, but there are occasions when the style of ornamentation (often including the binding as well as illumination) constitutes the single most reliable indication of provenance. A note of caution must nevertheless be sounded: it is not unknown for illuminations to be added to manuscripts, often long after they were copied,[6] and there are also examples of illumination (as well as of miniatures) being extracted from one manuscript and inserted into another.[7]

From a codicological point of view, all illumination deserves attention; unsophisticated, even slipshod, examples are far from devoid of interest. After all, these form the majority of surviving decorated works, and can prove invaluable for dating or for establishing the place of origin of a manuscript, as well as for allowing the scholar to gauge more accurately the quality of the production of books in Arabic script of every kind.

In addition, the materials employed in manuscript decoration represent a precious source of information on the places and conditions in which they were produced.[8] Relatively little physical and chemical analysis has been carried out to date, but it is to be hoped that their development in years to come will allow comparative studies to be carried out on larger samples of manuscripts.[9]

5 M. I. Waley, 'Problems and possibilities in dating Persian manuscripts', *Mss du MO*, pp. 7-15. 6 One example among many is a Tīmūrid copy of Jāmī's *Yūsuf va Zulaykhā* (MS. London BL Or. 10903). 7 MS. London BL Or. 13014 (al-Jāḥiẓ's *Risāla fī madḥ al-kutub*) contains a 'borrowed' *basmala*. 8 See Chapter 'Instruments and preparations used in book production'. 9 See also Chapter 'Instruments and preparations used in book production'.

The scope of the present chapter

Manuscript ornamentation can be examined in relation either to the history of decorative art or to the history of the book, and the present survey will tend to concentrate on the latter. As regards the arts of the Islamic book, new fields of study have opened up and discoveries been made which cast new light not only on the craftsmanship and creative processes involved, but also on the nature and ideology of patronage as well as on the structures that nurtured the high art in which specialists in this area are primarily interested. As stated above, in the context of codicology, the examination of manuscript decoration of less exalted quality – including that appearing on commonplace texts designed for everyday use – is no less rewarding. The aim here is to provide a very brief account of the purposes, historic development, typologies and techniques involved.

Because of the centuries-long history and wide geographical diffusion of Islamic illumination, it is of course out of the question to deal with the material in exhaustive fashion in a few pages. Instead, the focus will be on a limited number of examples whose purpose is to illustrate the main thrust of the argument. This chapter will take more account of manuscripts from outside the Arab world than some of the other essays in the *Handbook*. Many significant developments in the art of illumination took place in Iranian and Turkic regions, India and elsewhere; also, great quantities of copies of Arabic texts survive that were written and decorated in these and other regions.

Sources: extent and origin of present knowledge

As specialised research in the field of manuscript studies advances, it may be anticipated that future discoveries will be made that will extend knowledge and improve understanding. Indeed there are grounds for believing that even new sources will eventually come to light. First among written sources come technical manuals and treatises composed by and for the craftsmen. None of the known extant works is more than 500 years old, but they contain valuable information about techniques as well as about noted artists and their oeuvre. Important research has been carried out in this field by Yves Porter and others.[10] In a few cases, such as the celebrated treatise in Persian by Qāḍī Aḥmad,[11] the reader will encounter biographical (or pseudo-biographical) information on distinguished artists and also on the forms and techniques associated with them.

A second important corpus of sources is constituted by archival documents and inscriptions concerning the organisation of the tradesmen and their workshops. Scholars such as Īraj Afshār, Annemarie Schimmel and

10 Y. Porter, *Painters, paintings and books* (New Delhi, 1994). 11 *Calligraphers and Painters*, transl. V. Minorsky (Washington DC, 1959).

Wheeler Thackston have also traced scattered literary references to the production and decoration of manuscripts, in poetry as well as prose, and compared them to extant examples. Such allusions seem to have been more numerous in the Persian-speaking domain, one of the regions where the art of illumination reached a peak of refinement. It may be added, at the risk of stating the obvious, that the predominant means employed by craftsmen in teaching their arts to apprentices under them were direct verbal instruction and practical demonstration; 'trade secrets' were often jealously guarded. Today, knowledge of traditional methods has been deepened by the insights of present-day craftsmen and -women in both the Muslim world and the West, and also through the practical work and growing experience of specialist conservators, both of which have given a new lease of life to age-old techniques.

Perhaps the most important source, though, consists of internal evidence gleaned from illuminated manuscripts themselves and from related documents. As with other forms of art, minute examination and comparative research by specialists has yielded a mine of information. There is a wealth of evidence from colophons and other texts that give concrete details about the activities of individual illuminators (as well as on scribes and other craftsmen) which awaits methodical presentation, analysis and interpretation by scholars.

Manuscripts and the decorative arts

In the following account, the applications, the forms and, so to speak, the genres of manuscript illumination (*tadhhīb*;[12] modern Turkish *tezhip*) will be treated more thoroughly than the history of the art. Nevertheless, it may be appropriate to consider certain aspects of illumination in relation to the decorative arts, since they bear some relevance to the origins of this art form and to the cultural milieu in which it was practised.

The role of decoration

At this point, an elementary yet fundamental question arises: why did – indeed why do – craftsmen add decoration to manuscripts? Account must first be taken of the repute and significance of the book prior to the onset of printing and mass-production. In the sense that it is a handmade artefact, every

12 Gacek, *AMT*, p. 51.

manuscript can lay some claim to uniqueness. Furthermore, even when little illumination was added, in the Middle Ages high-quality copies were considered as luxury objects because of the scarcity of the materials employed and because of the time and skill necessary to produce them. In these days of huge print-runs and global distribution networks, a certain effort of imagination must be exercised to understand the extraordinary mystique that once attached to fine books. This aura was felt not only by connoisseurs but also by many of the illiterate majority – as well as by those who deliberately burnt books. The prestige associated with quality books as artefacts and as vectors of a given text is reflected in patronage, both individual and institutional. To own books or to pay for their production conferred renown on literati and laymen alike. Many fine manuscripts contain illuminated panels commemorating the patron or patroness's ownership or else their bestowal on an institution as a pious endowment.

In a previously published article,[13] the present writer proposed a classification of Islamic manuscript illumination based on function under four categories, according to the type of text or document concerned. Before examining the various forms of illumination, we shall consider this typology only briefly, since such a classification is too restrictive to serve as a basis for more advanced analysis, and many manuscripts fall into more than one of the pre-set categories. It should be borne in mind that beauty and utility do not necessarily represent separate considerations: in illumination, as in all creative enterprises, they often go hand in hand (illus. 39, 40).

In the European manuscript tradition, practical utility figured high among the purposes of ornamentation: headings and initials in colour or gilt and with or without decor helped the reader negotiate his way through the text. The same applies to the Islamic book: the reader of the Qur'ān and other texts, be they religious or profane, has even greater need of signs to indicate the beginnings of chapters or other textual units. However, whereas ornate initial capitals are among the most important decorative elements of Christian book illumination, Arabic script has no capitals. The Muslim reader looks out for, but does not always find, other indicators to aid 'navigation' through the text. Orthography is a further factor. To avoid ambiguity or difficulties in reading, signs were invented to differentiate between short vowels for which no graphemes proper exist in the alphabet; these signs were occasionally made more prominent by the use of colour, and could even be transformed into an independent decorative element. Other manifestations of ornament for the sake of utility will be considered in a discussion of the different kinds of texts to which illumination was applied.

13 M. I. Waley, 'Illumination and its functions in Islamic manuscripts', *Scribes*, pp. 87-112.

Ornamental aspects

This category appears, for example, in literary works where the embellishment of a text may relate to its nature as a work of the imagination. In a collection of narrative poems, for example, the form of the decorative panels on the title page resembles an arched doorway giving access into another world; the frontispiece can thus be compared to a magic carpet that transports the mind to far-flung or make-believe lands. Occasionally a short encomium to the author or his work figures in the illuminated panels of the opening to the text.

Religious aspects

As in the Occident, manuscripts were often decorated in ways designed to imbue the reader or beholder with reverential awe and a sense of the ineffable beauty of the spiritual world. The first works to be illuminated by Muslims were copies of the Qur'ān: mention has already been made of the practical reason behind this choice. Chrysography (writing in gold ink) is not especially rare, and numerous Qur'ānic manuscripts have survived which contain the entire text copied in letters of gold outlined in black. In many relatively modest volumes, important words or phrases, such as Allāh or other Divine Names, are highlighted in gold. Better known and more significant is the utilisation of illumination in decorating the opening of a Qur'ānic text and the margins of each page. Monographs have been devoted to the study and evaluation of illuminations such as these, which have come to epitomise Islamic art.[14]

Socio-political aspects

Thirdly, book decoration can also be a manifestation of political position and/or social standing. Besides manuscripts whose decoration stems from charitable impulses or self-aggrandisement on the patron's part, there is also illumination applied to official documents, decrees and letters of state, whose status as well as beauty is enhanced by illumination. What applies to manuscripts proper is equally true of documents such as royal decrees or correspondence. Since every official letter (or document of this type) was inextricably associated with the personage in whose name or for whose benefit it was issued or promulgated, close links exist between geographic region and decorative style, evidence that helps to determine the spatial distribution and time frame of the illuminations involved.

Practical aspects

Numerous texts were designed by and for professionals in some particular domain: they were occasionally embellished in order to assist in understanding

14 See especially M. Lings, *The Quranic art of calligraphy and illumination* (Westerham, Kent/Brooklyn, NY, 1976).

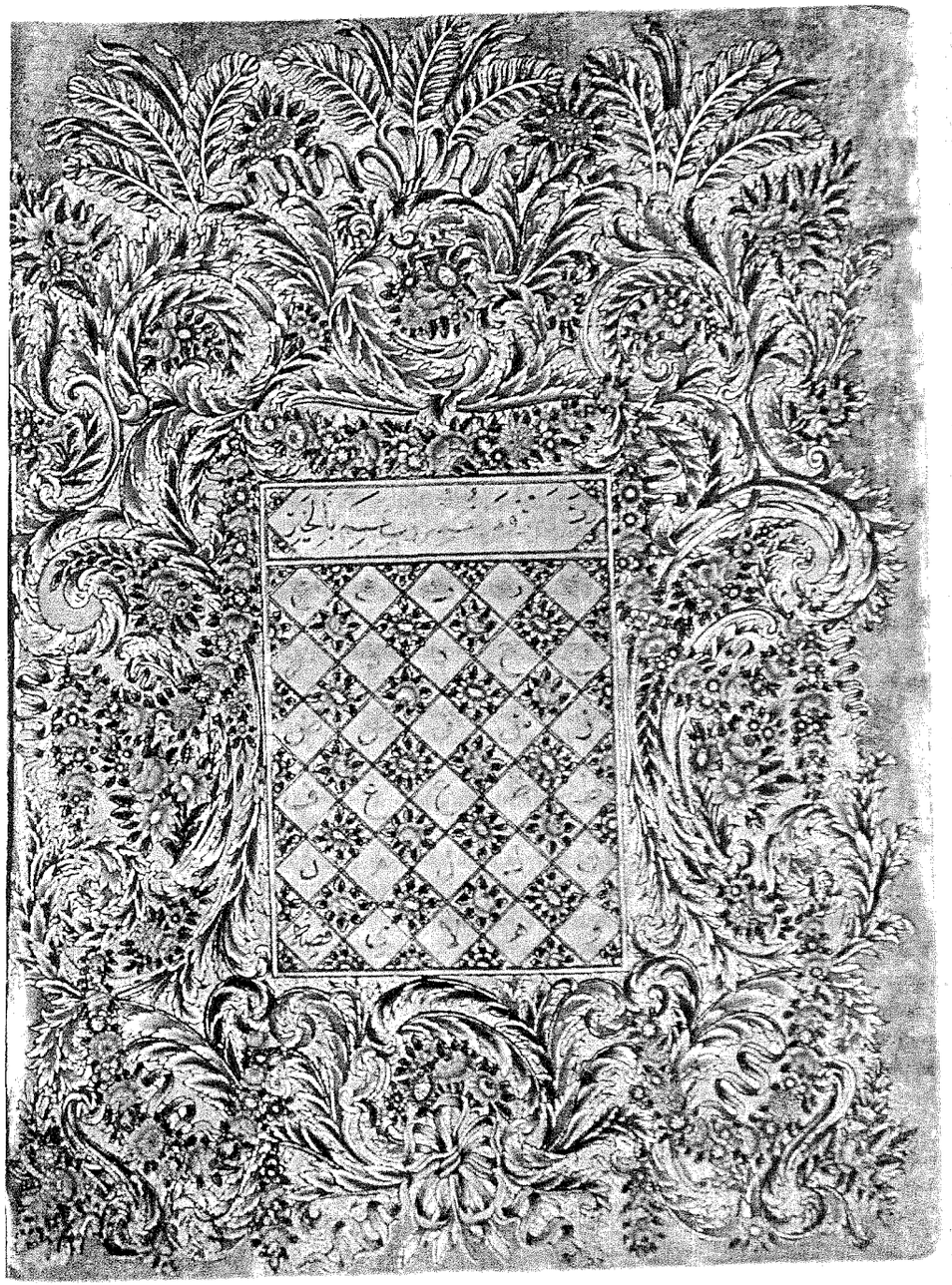
their contents. Examples of this phenomenon include works on scientific or technical subjects, in which decorative elements may make the text and/or the accompanying illustrations easier to grasp. Illuminated diagrams, star charts, terrestrial maps, technical drawings, tables of numbers or other data all fall into this category.

Non-Islamic antecedents and parallels

In discussing Greek and Latin manuscripts surviving from late Classical and Byzantine times containing decorative features, Richard Ettinghausen expresses agreement with Adolf Grohmann's contention that a form of panel found in some of the earliest examples of Islamic illumination derives in fact from a classical prototype, the *ansa* or *tabula ansata*, a shape resembling a kind of tray with wedge-shaped handles.[15] Historians of art have also discerned the influence of wall paintings and artefacts from Central Asia or early Persian book painting and illumination. There is an interesting parallel to Islamic decorated text openings in a Soghdian manuscript from Central Asia preserved at the British Library: a scroll that unrolls to reveal at the very beginning a kind of title-piece design including depictions of ducks. Studies on the Manichaean book and its decoration tend to suggest that there might be a grain of truth in legends that tell of rivers of liquid gold and silver pouring from pyres of lavishly illustrated and illuminated manuscripts burnt by the conquering Muslims. Art historians have also convincingly traced lotus flowers to Indian models and other decorative features, such as cloudbands, to a Chinese origin. The palmette motif in the margins of numerous ancient Qur'ān manuscripts seems to have come from Sassanian Iran. Finally, there exist close similarities between certain motifs in Coptic textiles and in early Qur'āns, a significant example being the eight-pointed star.

Farther west, and a few centuries later, the history and development of manuscript and book decoration in Europe and that of Islamic illumination unfolded along very different lines. Yet, in its formative period, Christian book illustration in the Near East seems to have influenced that of Iraq and Iran. In more recent centuries too, there were times and places where an interchange of sorts occurred, particularly when European rococo elements found their way into the decorative repertoire of Muslim artisans and illuminators (illus. 73). On the other hand, Islamic motifs, like their European counterparts, sometimes exerted palpable influence on the work of Jewish, Armenian and Eastern Christian illuminators generally. Better-known examples include some of the fine Hebrew manuscripts from the Yemen.[16]

15 R. Ettinghausen 'Manuscript Illumination', *SPA*, pp. 1943-1944; see also T. W. Arnold and A. Grohmann, *The Islamic Book* (Leipzig, 1929), p. 25. 16 See for example two folios of the Pentateuch from the Yemen dated 874/1469, reproduced in J. Gutmann, *Hebrew manuscript painting* (New York, 1978), pls. 1 and 2.



73. Illumination of an Ottoman alphabet primer, first half of the 19th century. Istanbul, Topkapı Sarayı Müzesi, EH 435, f. 1v°.

The relation between illumination and other fields of decorative art

The question then arises as to whether the similarities that often appear between elements of design and decoration on manuscripts and in other specimens of Islamic art should be interpreted as coincidences or as deliberate borrowings. If they are indeed borrowings, was the illuminator more often lender or borrower? How are the various ornamental motifs and elements to be 'read' or 'interpreted' in terms of symbolism and cultural ideology? These fascinating questions fall outside the scope of this study, but the curious reader is advised to consult specialised studies on the subject by art historians, in particular those written by Eva Baer[17] (on types of ornamentation, their organisation in applied art and architecture and the connections between the various art forms), and by Oleg Grabar[18] (for the role and the interpretation of ornamental elements in Islamic art).

To summarise, there exist many numerous and often striking parallels – but not at all necessarily causal relationships – between manuscript decoration and ornamentation on ceramics, textiles, and metal objects, on wood or stone sculpture and even on modern posters and lorry bodywork. Ettinghausen[19] has suggested that manuscript illumination was a kind of 'mother art', and as such was often an inspirational source of designs for artisans working in three-dimensional media. Quite apart from the parallels he cites as evidence for this thesis, it is clear that it would have been easier to innovate while working in two rather than three dimensions, if only for technical reasons.

The repertoire of ornament

Unsurprisingly perhaps, considering the time-frame and extent of the geographical area involved, illuminators and decorators of Islamic manuscripts were able to draw on an immense vocabulary of decorative elements. In the embryonic stages of the study of Islamic art, stylistic classification based on dynastic history proved more or less adequate; this is no longer true today, since scholars, in their quest for trends and influences, now focus more closely on minor details while at the same time encompassing broader horizons.

Elements are incorporated into a considerable number of different forms or units, from minuscule text dividers to full-page decorations, As a result,

17 E. Baer, *Islamic ornament* (Edinburgh, 1998). 18 O. Grabar, *The Mediation of ornament* (Princeton, NJ, 1992). 19 Ettinghausen, op. cit., p. 1938.

presentation of the typology and nomenclature of the components will inevitably end up by being rather lengthy in comparison with the treatment of other aspects.

Among other purposes, illumination serves to organise the text; it thus naturally articulates key points of contact between text and non-text, such as the beginning and the end of a manuscript. In these zones, illumination may perform specialised functions complementary to those already mentioned.

In order to simplify the account that follows, reference will be to the foliation of an imaginary 'standard' manuscript. In practice, though, the numbering of the folios can differ from this standard owing to the presence of additional folios before what would in the standard format be f. 1, or else due to the disappearance of the latter. Sometimes only the folio containing evidence of ownership or *waqf* status was removed, leaving (for example) only the left-hand page of the decoration of two facing frontispieces of the manuscript. Unfortunately, instances of this kind of vandalism are not rare.

Elements at the beginning of texts

The approaches adopted by illuminators in the past were highly diverse, as were the tasks they undertook and the means or media they used. Some manuscripts contain only the types of illumination described below, whereas in others the text opening has more than one ornamented page.[20] The forms of decoration described here are therefore not always mutually exclusive. Moreover, a manuscript is not invariably a single textual unity, and it is not unknown for a second or third within it to start at a point other than an initial folio. In order to highlight the new content for the reader, the illuminator may put in the appropriate place a decoration similar to those mentioned below.

Qur'an manuscripts

It is not inconceivable that texts other than the Qur'ān were illuminated during the course of the first centuries of the Hijra, though it must be admitted that documentation available to researchers today for the study of decoration from that period is constituted almost exclusively of manuscripts of the Qur'ān. In later periods, many manuscripts of the Qur'ān were illuminated, with certain styles and formats often adhered to over a considerable length of time. We shall therefore begin with an analysis of manuscripts of the Qur'ān, which have certain special characteristics but are in many ways similar to other manuscripts.

20 See MS. Paris BNF suppl. persan 1525; q.v. Richard, Paris 1997, p. 106, no. 62.

Properly speaking, the Book possesses no title. In general, Muslims have not shown great concern to physically differentiate on the outside copies of the Qur'ān from other manuscripts. Normally it is a matter of having the best quality binding consonant with the quality of the copy within. Also, it is not unusual to keep the Holy Book in a special outer covering such as a rigid box in tooled leather to match the binding; a cloth bag; or (especially in the finer Ottoman libraries) a special wooden case (*maḥfaẓa*; Turkish *maḥfaza*). As part of spiritual courtesy (*adab*), authors such as al-'Almawī recommended that Qur'āns be stored separately, or that if they had to be stacked in a pile with other books they should be placed on top.[21] Moreover, at an early date, a specific format and binding was peculiar to the Book. In later centuries, those handling the sacred text have often been reminded of its status by a quotation from the Qur'ān, LVI, 79, stamped on the binding and/or its outer container, which also served as an allusive substitute for a title.[22]

The same verse is frequently encountered on the recto of the first folio, where it functions as a kind of heading;[23] it is most often written inside a circular or almond-shaped ornament (*shamsa*) in the middle of the page. Radiating out from these motifs emerge short projections (in Persian and Turkish *tīgh*, 'lance'), symmetrically arranged along the periphery (sometimes at the top only) and surmounted by small motifs inspired by geometry or by the plant world. *Tīgh*s were at the outset generally blue, black, or red, though later other colours were used; normally they match the colour scheme of the illuminated text heading. In late Ottoman illumination, the most popular forms have three or more bushy stalks.[24] In multi-volume Qur'āns, the first recto of each volume is sometimes allotted to an illumination indicating its number in the series;[25] more rarely, a deed of *waqf* appears in the same place.

The first double page provided a space that artists readily exploited, with some designs incorporating the beginning of the Qur'ānic text and others omitting it. In early manuscripts, a double page of decoration without text often preceded the text opening,[26] and opening double pages with illumination alone continue to be attested, though less often, in subsequent periods.[27] So far as we can tell at present, the aversion felt by artists (and men of religion) for texts appearing in the initial position seems to have ebbed only during the second half of the third/ninth century, a time when pious formulae were being introduced, and, marginally later, the letter-, word-, and verse-count, etc. of

21 Rosenthal, *The Technique and approach of Muslim scholarship* (Rome, 1947), p. 10. **22** See Chapter 'Bookbinding'. **23** Dublin CBL 1470, f. 1; see James, *Q. and B.*, p. 64, no. 47. **24** A. Ersoy, *Türk tezhip sanatı* (Istanbul, 1988), figs. 22 and 24 (MSS. Bursa Inebey Medresesi, Ulu Cami 26 and Orhan 6). **25** Dublin CBL 1448, f. 1 (see James, *Q. and B.*, p. 37, no. 22); London N. D. Khalili Collection Qur 298, f. 1 (James, *After Timur* [London, 1992], pp. 62-63, no. 14). **26** As in MS. London N. D. Khalili Collection, Qur 372 (Déroche, *Abbasid Tradition*, pp. 72-75, f. 2 a, introduced erroneously as f. 3 a on p. 72). At this period, it was not unknown for two illuminated double pages to precede the text (*Abbasid Tradition*, pp. 123-124, Kfq 70). **27** See MSS. London BL Or. 4945, ff. 1 v°-2 and Cairo DAK 10, ff. 1 v°-2, dated 710/1310 and 775/1372 respectively (Lings, op. cit., pls. 52 and 71).

the Qur'ān[28] – all features that alluded to the special content of the manuscript. It would seem that two basic approaches to decorating the opening double page came to the fore in succession. Initially, illuminators executed a pair of symmetrical but independent decorations, but later they favoured placing a single illuminated design over two facing pages.

Artists sometimes contented themselves with transferring a decoration analogous to that on the recto of the first folio and duplicating it on the double page; the central circular or ovoid motif sometimes remains unchanged,[29] but at others it is integrated into a rectangular ornament covering the two halves of the double page.[30] The quotation from the Qur'ān, LVI, 77-80, was ideal for the purpose: the four verses can be distributed over the four heading bands, leaving the centre of the decoration for Qur'ān, XVII, 88.[31]

The opening of the text of the Qur'ān invariably appears on a double page, be it the very first of the volume or else the first after the illuminated double page; it is often placed in a regular, balanced position within a border. Very frequently, above and below the space reserved for the script, two headings contain either information pertinent to the text (title, volume number), or else a quotation from the Qur'ān. In single-volume Qur'āns, the double page is sometimes reserved for the opening Sūra alone; frequently, however, Sūra I is on the right and the opening of Sūra II (normally the first five verses) on the left. In the first instance, the second folio verso contains the beginning of Sūra II, often preceded by a heading band topped by a sort of dome; in the latter case, the frame is less conspicuous.

At an early period, the openings of presentation or ceremonial Qur'āns, such as those of which fragments have been discovered at Ṣan'ā', were characterised by a full-scale decorative program. The initial sequence covered at least two illuminated double pages containing no writing (featuring a representation of two mosques), and continued over pages of text within a frame that gradually became less heavy.[32] A similar scheme continued to be applied until modern times, except that from quite early on illuminators showed a marked tendency to incorporate textual elements (quotations from the Qur'ān, verse-counts, etc.) into the decoration.

Non-Qur'anic texts

Identification of the text on the recto of the first folio

The recto of the first folio – which serves as a kind of 'main entrance' to the text – commonly includes signs to guide the reader: these often feature the title

28 Dublin CBL 1434, ff. 1 v°-2, dated 361/972 (see James, *Q. and B.*, p. 27, no. 13). 29 See for example ff. 1 v°-2, MS. London N. D. Khalili Collection, QUR 420 (James, *After Timur*, pp. 232-233, no. 56). 30 See for example MS. London, N. D. Khalili Collection, QUR 323, ff. 2 v°-3 (James, *After Timur*, pp. 116-117, no. 30). 31 MS. Paris BNF arabe 418, ff. 2 v°-3 (Déroche, *Cat.* I/2, pp. 128-129, no. 535 and pl. I). 32 H. C. von Bothmer, 'Architekturbilder im Koran: eine Prachthandschrift der Umayyadenzeit aus dem Yemen', *Pantheon*, 45, 1987, pp. 4-20.

of the work, but other information concerning less the text itself than the actual copy the reader holds in his or her hands may also be added. The fact that the first folio possesses no symmetrical counterpart naturally enough governs the composition of its decoration.

The illuminated area around the essential feature of the title of the work gradually became organised.[33] Often, a plain or polylobed circular ornament (*shamsa*) contains the title of the work or works, and sometimes the name of the author. The arrangement most frequently adopted consisted in placing the decoration at the centre of the page. Illuminators sometimes took pains to add pendants to the central circle and these might contain supplementary information relating to the text. Again, the circular decoration might be flanked by flattened ovoids ('mandorlas') whose outlines display various degrees of complexity.

When the decoration is a heading of oblong shape, it appears in the upper half of the leaf. In the most elaborate versions, the illumination occupies a whole page: it is then itself generally rectangular in form, and elements within it can readily be identified that, elsewhere, appear isolated on a page, such as headings or *shamsas*.[34] The content of the manuscript is occasionally given in fuller detail: the *Khamsa* of Niẓāmī MS., Vienna Cod. A.F. 66, begins with a rosette (f. 1) in the centre of which the title *Yūsuf va Zulaykhā* is inscribed, with the titles of the four other poems being likewise contained in four symmetrically arranged cartouches.[35]

Indicators of commissioning patron or library

The recto of the first folio is the ideal place to catch the reader's eye with the name of a patron or other individual, and those commissioning manuscripts are often identified there (illus. 47) in ornaments similar in shape to those found in title headings.[36] More extensive investigation is called for to discover whether the inscription is genuine or has been subsequently altered. In some manuscripts, the space that would have normally contained the patron's name has been left blank; in such cases, it may be that the patron abandoned the commission or died (or was deposed) before its completion.

Beginning the text on the verso of the first leaf

Traditionally, the text would begin on the verso of the first folio; very frequently, an illumination marks the start of the text without being preceded by a double page of illumination. But whereas on the recto an empty field can be filled as the artist sees fit, the decoration on the verso has to coexist with the incipit, so that the illumination takes the form of a band situated in the upper

33 See also Chapter 'Evidence for the history of a manuscript'. 34 See MSS. Vienna ÖNB A.F. f. 84 b, f. 1, and N.F. f. 381, f. 1 (Duda, *Isl. Hss.* 2, pp. 77-78 and fig. 44); Paris BNF suppl. persan 1375, f. 1 (Richard, PARIS 1997, p. 65, no. 24). 35 Duda, *Isl. Hss.* 1, pp. 22-25, fig. 34; the same applies to MS. A.F. 93, f. 1, in the same collection (Duda, op. cit., pp. 33-37 and fig. 107). 36 MS. Vienna ÖNB N.F. 442, f. 2 (Duda, *Isl. Hss.* 1, pp. 95-96 and fig. 22).

section of the page, and commonly set within a frame of simple form. Many such headings (*sarlawḥ*) contain inscriptions (illus. 43): it is not unusual for the title of the work to appear,[37] while pious expressions (such as the *basmala*, or *Allāh wa l-Rasūl*[38]) are also frequently chosen. Some illuminators sought to increase the size of this decoration, which resulted in the invention of purely ornamental elements to crown it. In Ottoman times these generally took the form of a cupola (occasionally more than one)[39] and several *tīgh*s in vertical arrays (illus. 44).

To improve the balance of a page layout which inevitably entails some discrepancy between the right- and left-hand sides of the double page, a generally quite simple frame (one or more gold or coloured fillets) encloses the text. There is therefore no hard and fast division between this type of *mise-en-page* and some of the other varieties discussed below: a copy of 'Aṭṭār's famous Persian poem *Manṭiq al-ṭayr* (Paris BNF persan 348) exemplifies how easy it was to obtain a stable composition over ff. 1 v°-2 by duplicating the frontispiece.[40]

The initial double page

The aesthetic that underpinned the production of books in Arabic script spurred illuminators to make the most of the opportunities presented by the initial double-page of the manuscript and fill it with ornamentation. This approach is typical of the more sumptuous manuscripts. It is hard to determine when exactly this tendency arose. For non-Qur'ānic texts, *Kitāb Khalq al-Nabī wa khuluqihi* (Leiden BRU Or. 437), copied during the second quarter of the fifth/eleventh century, may well number among the earliest examples of the practice;[41] in many ways, the style recalls certain contemporary Qur'ānic illuminations, and the text too deals with religious matters.

The text may begin within two rectangles at the heart of the illumination: the headings are frequently emblazoned with the title of the work, as well as with the name of the author.[42] It is common enough for the title and list of contents alone to be so placed: in this case, illuminators could develop designs inspired by those appearing on the first folio recto with still more panache. In a poetical *Dīwān* (MS. Paris BNF suppl. persan 1469 ff. 1 v°-2), the two almond-shapes are purely decorative: the title of the works features in the headings that surround them above and below, arranged in the same manner as

37 See Richard, Paris 1997, p. 67, no. 26, an example with a pious dedication (MS. Paris BNF persan 276, f. 2 v°). **38** See Richard, Paris 1997, pp. 65 and 67, nos. 23 and 27 (MSS. Paris BNF suppl. persan 1817, f. 18 v°; suppl. persan 745, f. 1 v°). **39** See Duda, *Isl. Hss.* 2, figs. 268-273 and 275-279; Ersoy, op. cit., figs. 20, 21, etc. Turkish authors designate this type of decoration by the term *mihrabiye*. **40** Richard, Paris 1997, p. 109, no. 68. **41** S. Stern, 'A Manuscript from the Library of the Ghaznawid Amīr 'Abd al-Rashīd', in R. Pinder-Wilson (ed.), *Paintings from Islamic lands* (Oxford, 1969), pp. 24-25, figs. 2 and 3. **42** See BNF suppl. persan 1426, ff. 1 v°-2 (see Richard, Paris 1997, p. 156, no. 109). See also Duda, *Isl. Hss.* 1, figs. 30, 31, 36, 37, 72, 151, and 152 (MSS. Vienna ÖNB Cod. Mixt. 1480, ff. 1 v°-2, A.F. f. 66, ff. 1 v°-2, N.F. f. 155, ff. 1 v°-2 and 116, ff. 2 v°-3).

in a BNF *Dīwān* of Sa'dī (suppl. persan 1357, f. 2).[43] The same position can even be occupied by a phrase praising the work itself: a Persian *Kalīla wa Dimna* in London (BL Or. 13506, dated 707/1307-8), which comes from southern Iran, and a copy of *Ǧawīdān-i khirad* by Muḥammad Qazwīnī (St Petersburg Institut Vostokovedeniia Or. C 650) are fine examples.

Less frequently, this double page displays two miniatures laid one opposite the other within an illuminated frame. This solution was chosen for an anthology of Amīr Khusraw Dihlawī (Vienna ÖNB Cod. Mixt. 356, ff. 1 v°-2).[44] The text then has to start on the following double page, either beneath a heading or band, or, in the more sophisticated manuscripts, over an entire double page analogous in conception to that described above.[45]

Internal Divisions

As was remarked above, illuminations within the body of the volume have at least one practical purpose: to act as signposts for a reader searching for a specific point in the text. Before proceeding, it is as well to stress once more that the terminology employed here is not universally accepted, in terms both of meaning and usage. The word *'unwān*, for example, is often taken to designate an illuminated heading band, but both art historians and authors of catalogues also use it to refer to a full-page decoration, with or without incipit; in this case, however, others prefer the term *sarlawḥ*.

Major textual units

The earliest known copies of the Qur'ān (late first/early eighth century) already bear witness to the habit of demarcating the *Sūra*s by leaving a line or part of a line unwritten, as well as of indicating the end of a verse by a marker, or *āya* (illus. 64).[46] It was not long before the space initially left entirely blank between two *Sūra*s began to be decorated: in early times, anepigraphic illuminations were introduced in the rectangular space, but very quickly the awareness of function led artists to inscribe the title, sometimes accompanied by the number of verses in the *Sūra* and an indication of whether it was revealed at Mecca or Medina. This eventually became an essential decorative feature. On occasion, the illumination is confined to gilt lettering, but more often the characters themselves become an intrinsic part of the illumination (illus. 39, 41, 42).

In prose works, however, larger units of text exist (*kitāb*, *bāb*, *faṣl*, etc.): these are at times marked by ornamental headings, some of them illuminated. It appears that illumination is more likely to be found in scientific work, and,

43 Richard, Paris 1997, p. 98, no. 51 and pl. p. 92. **44** Duda, *Isl. Hss.* 1, pp. 178-180, figs. 155-156. **45** See Paris BNF suppl. persan 1357, ff. 2 v°-3 (Richard, Paris 1997, p. 98, no. 51). **46** As in MS. Paris BNF arabe 328 a; see F. Déroche and S. Noja Noseda (eds.), *Le manuscrit arabe 328 (a) de la Bibliothèque nationale de France* (Lesa, 1998).

of course, particularly in copies made for wealthy patrons. In this category may be included collections of treatises, as well as calendars, almanacs, and astronomical or astrological texts, often in the form of scrolls.

A further category of illuminated texts is represented by the long narrative and/or didactic poem or verse garland – genres which are often seen to overlap in Persian, Turkish and Urdu literature. Among the most celebrated of all Islamic manuscripts are outstanding illuminated and illustrated copies of Persian literary classics such as Firdawsī's *Shāhnāma* ('Book of Kings') and Niẓāmī's *Khamsa* (or 'Five Poems'). Few such volumes lack ornamental headings for each separate poem or book, and some have smaller-sized headings for episodes from the narrative or for sage reflection on events. Also in the poetical category come manuscripts containing the collected or selected lyric works of a single author, as well as verse collectanea. The finer copies of such works customarily include illuminated headings for (a) each author in an anthology; (b) each genre of poem, *qaṣīda*s being separated from ghazals, *rubā'ī*s, etc.; (c) poems rhyming on a particular letter; or (d) separating poems of a single author with phrases such as *wa la-hu* (illus. 65). Arranging the collected works (*kulliyyāt*) of an author in verse and/or prose called for consummate skill in devising the *mise-en-page* and in illumination composition.

Subdivisions

In the absence of standardised punctuation, the Muslim scribe customarily had recourse to various devices to indicate the beginning of a new sentence or paragraph – that is, of an intelligible unit we might describe as a sentence or a paragraph. As with vocalisation, this may be no more than a dot of black or red ink, though good quality manuscripts may contain either small vignettes or rosettes resembling Qur'ānic verse markers. Diverse decorations for the latter gradually tended to replace the ink-outlined signs with which it had been usual initially to mark verse separations.[47]

Returning to divisions between units of text, devices separating verses (*bayt*) or hemstitches (*miṣrā'*) should now be considered. Where verses are inserted into a block of prose, either to impart variety or as quotations, they are normally signalled by verse markers of the type described above. When laid out as verse, as in the European convention, however, the division customarily takes the form of ruled columns of one or more vertical lines, most commonly in pairs (illus. 65 and 66).

The exact form and disposition of the columns conforms to those of the text frames or *jadwal* (see below);[48] these are most often single fillets or arrays of several lines marking off the text from the margins, both vertically and

47 Fundamentals of the typology of early manuscripts appear in Déroche, *Cat.* I/1, pp. 27-28.
48 The word *jadwal* designates the ruled margins of a manuscript, often including the gilt and/or coloured lines; another use of the same term covers a list of contents or a table, e.g. in a scientific manuscript.

horizontally – and sometimes even diagonally, when the margins contain lines of text copied at a slant. In numerous literary manuscripts from the ninth/fifteenth to thirteenth/nineteenth centuries, *jadwal*s featured gilding between both coloured and black lines. The art of ruling these frames, known in Persian as *jadwal-kashī*, was held in high esteem, and whole chapters of treatises on the manuscript arts were devoted to the subject.[49]

Special features of Qur'an manuscripts

The special requirements of readers of the Qur'ān and the unique nature of its text resulted in the creation of various forms of ornament in answer to specific needs: ornaments may indicate groups of five or ten verses, ritual prostration (*sajda*), or divisions of the text into units of the same length for devotional reading (halves, sevenths, *juz'*, *ḥizb* or other fractions).[50] Often, these indicators amount to no more than marginal ornaments, though certain more sophisticated copies mark the place of the divisions by extending illumination over the whole page. The midpoint of the Qur'ān was already indicated in this fashion by the eighth/fourteenth century, for example in a Qur'ān in Dublin (CBL 1473, f. 193, dated 723/1323);[51] in tenth/sixteenth-century Persia, decoration took the form of a highly elaborate border. This system was expanded to cover the whole *juz'*, so that certain resplendent manuscripts such as Berlin SB Or. 10450[52] or Dublin CBL 1542[53] contain twenty-nine marginal illuminations of this type, not counting the large-sized initial and final decorations.

Other forms of textual decoration

Frames and marginal illumination

At a very early period, frames made an appearance in Qur'ānic manuscripts – for example, in a Qur'ān from Ṣan'ā' (DaM Inv.-Nr. 20-33.1);[54] they are relatively thick and derive from cable, or plaited, motifs. At a later date, from the ninth/fifteenth to the thirteenth/nineteenth centuries, a lighter form evolved, made up of one or more gilt and/or coloured fillets; this became the standard approach in all kinds of manuscripts (illus. 39, 65, 66). The colours employed often reflect local practice and hence are a rich source of information: the

49 Sayyid Yūsuf Ḥusaynī, '*Risāla-i ṣaḥḥāfī, faṣl 9*', in Najīb Māyil Ḥarawī (ed.), *Kitāb-ārāyī dar tamaddun-i Islāmī* (Tehran, 1372/1993), pp. 481-485. 50 See G. Humbert, 'Le *ǧuz'* dans les manuscrits arabes médiévaux', in *Scribes*, p. 78. 51 James, *Qur'āns of the Mamlūks* (London, 1988), p. 73, fig. 43. 52 F. Déroche and A. von Gladiss, *Buchkunst zur Ehre Allahs: der Prachtkoran im Museum für Islamische Kunst* [Veröffentlichungen des Museums für islamische Kunst, 3] (Berlin, 1999), p. 36, fig. 14. 53 A. J. Arberry, *The Koran illuminated* (Dublin, 1967), pp. 49-50, no. 161. 54 H. C. von Bothmer, 'Architekturbilder im Koran: eine Prachthandschrift der Umayyadenzeit aus dem Yemen', *Pantheon* 45 (1987), pp. 14-16 and fig. 10, 11, 26 and 27. See also MS. Ṣan'ā' DaM Inv. Nr. 20-29.1 (H. C. von Bothmer, 'Frühislamische Koran-Illuminationen', *Kunst und Antiquitäten* 1 [1986], pp. 30-31 and fig. 10).

inlaying of these frames was not left to chance and, in the Iranian world, a number of recipes provided instructions as to their composition. The margins of a eleventh/eighteenth-century Mughal copy of the *Mathnawiyyāt* of Ẓafar Khān (Collection of the Royal Asiatic Society, London) are very much out of the ordinary[55] in that they are illuminated in gilt on every page. From the beginning of the ninth/fifteenth century, colour motifs were produced with the use of stencils,[56] especially in Iran, Mughal India, Transoxiana and the Ottoman Empire. Gold arabesques and colour designs in both the margins and text frames also feature in the *Miscellany* of Iskandar Sulṭān (London BL Add. 27261). In high-quality manuscripts, particularly in Ṣafavid Iran and Mughal India during the tenth/sixteenth and eleventh/seventeenth centuries, figurative images, most commonly chinoiserie birds and animals, both earthly and mythical, were often drawn in two tones of gold and/or silver within the borders. Sometimes such illustrations are stencilled or simply highly standardised; virtuoso examples of free drawing are not rare, however.

Another device in marginal decoration was the technique known as *waṣṣālī* (illus. 15). Tinted or decorated papers offered a wide range of effects which artists exploited with relish.[57]

Insertion of decorative panels in the text area

A number of additional decorative elements appeared from the early ninth/fifteenth century onwards. Associated initially with early Tīmūrid rulers such as Iskandar Sulṭān, whose brief reign in southern Iran witnessed the production of illuminated manuscripts of extraordinary quality, these included triangular panels containing gilt motifs or arabesques on a plain or coloured ground. This formed part of a trend towards more sophisticated and all-embracing design concepts for the illustrated book and of a concomitant concern to co-ordinate the style of illumination on the preliminary pages, frontispieces, title pages, facing pages and, last but not least, binding and doublures (illus. 46). This tendency, already visible in more ambitious copies produced among others, for Seljuk, Injū, Jalāyirid or Mamlūk patrons (seventh/thirteenth and early eighth/fourteenth centuries), became more pronounced from the ninth/fifteenth century onwards in the sumptuous volumes copied for Tīmūrid, Turkmân, Ṣafavid, Mughal and other patrons (from the ninth/fifteenth to eleventh/eighteenth centuries) (illus. 66).

Remaining in the area of *mise-en-page*, ornamentation was sometimes added in panels interspersed among the blocks of text. This was done with the manifest intention of postponing the finishing point of the work (generally poetic in nature) to the end, or at least to the lower half, of a subsequent page.

55 'Margin' is *ḥāshiya* (see Gacek, *AMT*, p. 33); by extension, the word can also denote marginal decorations. 56 See Chapter 'Instruments and preparations used in book production'. 57 See below.

Such precautions are in some ways analogous to avoiding 'widows' and 'orphans', i.e. the lone strings of typographical text preceded at the end or followed at the head of a page by a full line space or more. Illumination panels are sometimes used over several successive pages, part or all of the surrounding text being written diagonally to complement the overall page layout. Careful planning made it possible to ensure that a full-page miniature painting could be placed at exactly the right point in the text, or that the colophon at the end of a poem would fall towards the foot of a page rather than the top. These preoccupations come to the fore, for example, in a *Khamsa* of Niẓāmī from Herat and illustrated by artists of the school of Bihzād, and in the copy made for the Ṣafavid Shāh Ṭahmāsb between 1539 and 1543 (London BL Or. 6810, and Or. 2265). This vein of illumination is widespread in manuscripts from the mid-ninth/fifteenth century executed for Timurid and Turkmen patrons.

Interlinear Decoration

In the fourth/tenth century manuscripts appeared in which lines of text are enclosed in cloud-shaped ribands (that is, long, thin panels with frilled edges) set off on a ground of coloured hatching. In deluxe manuscripts in the following centuries, gilt replaced hatched decors (except for episode or section headings). In many fine-quality manuscripts, the lines of text in the first two pages are enclosed within interlinear gilding, often in the form of cloudbands. In some opulent volumes, every single page is decorated on the same lavish scale. The eleventh/eighteenth-century Mughal copy of the *Mathnawiyyāt* of Ẓafar Khān mentioned above is a fine example.

Decoration at the end of the text

The point where the text ends marks a crucial point of articulation, and is thus often emphasised by various forms of decoration. Some were unique to the colophon, a feature which enjoyed special status; others, on the other hand, seem to be encountered solely in manuscripts of the Qur'ān.

In the main, however, the end of a manuscript is less ornamented than the beginning. In Qur'āns, a deep-seated feeling for symmetry led some artists to conclude the copy in a fashion that matches its opening pages. Full-page decorations[58] and borders[59] multiply, as, more rarely, do circular motifs,[60] pendants to those emblazoning the initial folios.

58 See Dublin CBL 1407, ff. 3 v°-4 (see James, *Q. and B.*, p. 17, no. 4) or the Qur'ān of Ibn al-Bawwāb (Dublin CBL 1431, ff. 284 v°-285; see James, *Q. and B.*, p. 34, no. 19); reference can additionally be made to MS. Dublin CBL 1457, f. 293 v° (see James, *Qur'āns of the Mamlūks*, fig. 28). 59 Paris BNF Smith-Lesouëf 220, f. 1 (Déroche, *Cat.* I/2, p. 58, no. 352); the same device also appears in eighteenth-century Qur'āns. 60 See for example MS. London N. D. Khalili Collection, Qur 420, ff. 373 v°-374, (James, *After Timur*, pp. 232-233, no. 56).

Frequently, decorations at the end of the text seem to function similarly to the panels outlined above, i.e. to occupy a space that script alone would be hard pressed to cover: the process is familiar from an early period since it already surfaces in a Qur'ān from the second half of the third/ninth century.[61] Perhaps the same intention motivated the illuminated circle inscribed with the quotation from Qur'ān, LXXXIII, 26,[62] which is sometimes introduced after the end of the text. The Qur'ān text may be followed by other elements, particularly prayers for acceptance at the conclusion of Qur'ān recitation or *Fāl-nāmas*, divination texts; both provided ample opportunity for decoration at the end of the volume. Although the style of illumination is generally the same throughout, a concern to differentiate between the Qur'ānic text itself and the rest often led artists to ring the changes. The end is also sometimes the place for an illuminated inscription commemorating royal patronage or the deed of endowment (*waqf*).[63]

The ambivalent status of the colophon relative to the text perhaps explains why copyists strove to ensure a particular place for it. Reference has already been made to the question of the special *mise-en-page* for colophons, be it accompanied by an illumination or no (illus. 67 to 71). As early as the fourth/tenth century, different solutions were devised with the aim of emphasising the 'special' character of the colophon, which was made conspicuous by the use of a particular style of script or else integrated into an illumination[64] created more or less expressly for that purpose. The copyist's signature is both clearly separated from the rest of the text and highlighted. In the finest Qur'āns, the colophon is treated independently.[65] When the colophon is shaped like a triangle or trapezium, the pair of right-angled triangles on either side form an empty space which illuminators sometimes decorated.[66]

The chief characteristics of the decorative repertoire

Owing to of the scattered nature of the documentation and the small number of published studies, it would be patently premature at this stage to offer a

61 MS. Dublin CBL 1421, ff. 1 v°-2 (see James, *Q. and B.*, p. 20, no. 7). This procedure should not invariably be laid at the door of mediocre illuminators and copyists: see the fragment Istanbul TKS EH 245 (James, *Qur'āns of the Mamlūks*, fig. 63). **62** As in MSS. Paris BNF arabe 5848, f. 29, and 5850, f. 25 (Déroche, *Cat.* I/2, pp. 56-57 and nos. 350 and 349). **63** See the magnificent illuminated *mise-en-page* of the text commemorating the commission of the 'Mosul Qur'ān' by the Mongol Īl-Khān Ūljāytū Sulṭān, MS. Istanbul TIEM 541 (James, *Qur'āns of the Mamlūks*, fig. 72). **64** As in MS. Vienna ÖNB N.F. 251, f. 25 (Duda, *Isl. Hss.* 2, pp. 124-125 and fig. 108). **65** See James, *Qur'āns of the Mamlūks*, figs. 35, 45 and 65 (MSS. Istanbul TIEM 450; Dublin CBL 1481, f. 310 v°, and Istanbul TKS EH 232, f. 61). **66** As in MS. Vienna ÖNB Cod. mixt. 1002, f. 614 (Duda, *Isl. Hss.* 2, pp. 222-223 and fig. 157).

complete overview of the decorative repertoire. Descriptive inventories such as that of Dorothea Duda covering the collection in Vienna are thus especially valuable;[67] in the same way, certain very richly decorated manuscripts, such as the Paris copy of the theological works of Rashīd al-Dīn Faḍl Allāh (Paris BNF arabe 2324),[68] present a decorative repertoire that deserves more thorough examination.

Architecture

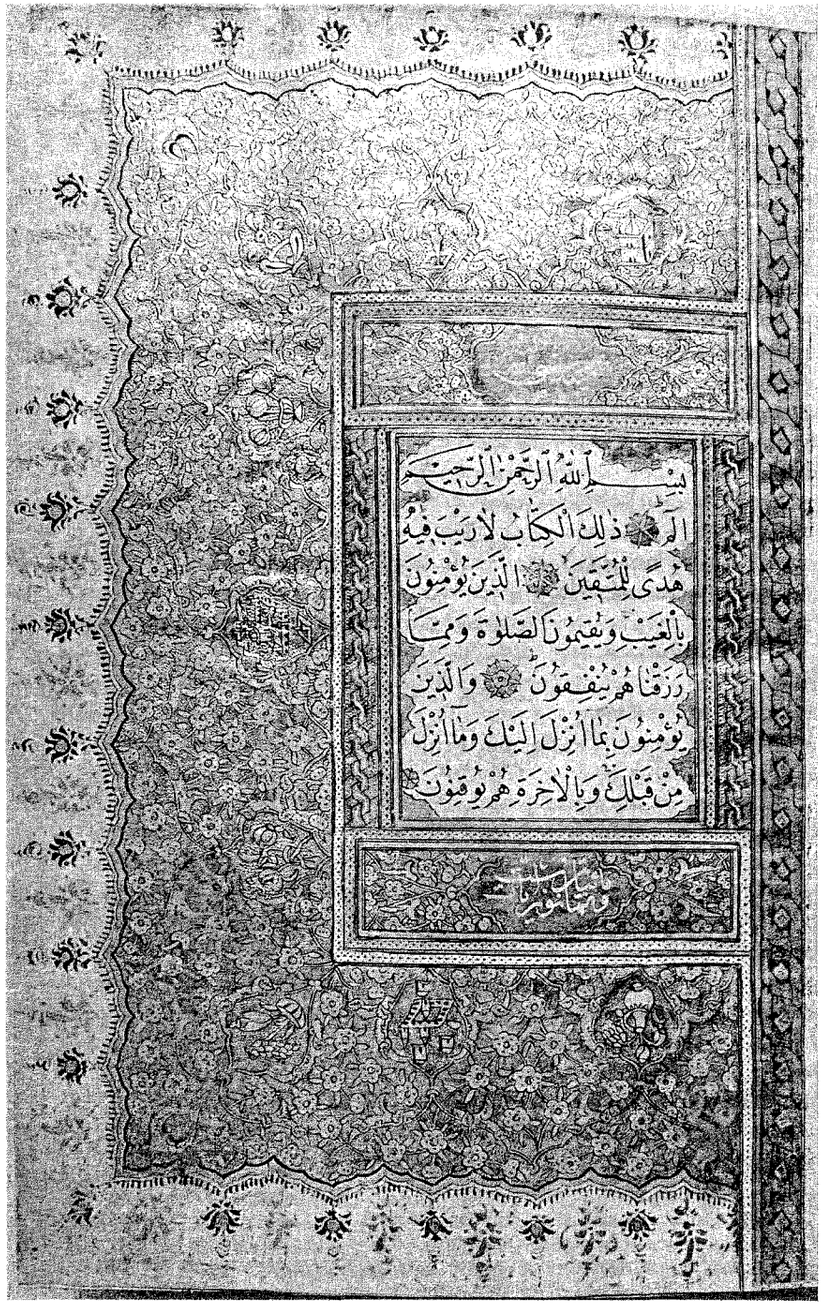
The most spectacular examples of architectural elements appearing in illumination date to an early period. They are not genuine representational decorations, but allusions to a world familiar to all Muslims. Almost contemporary Arab Christian manuscripts also display decorations inspired by architecture.[69] In more recent times, images began to appear that seem to show real buildings: these include depictions of the *Ḥaram* of Mecca and of the Mosque of the Prophet at Medina, as in copies of al-Jazūlī's *Dalā'il al-khayrāt*,[70] for instance, or minuscule illustrations, as in the illumination of a Qur'ān now in Istanbul (MS. Süleymaniye, Pertevniyal 8; illus. 74).[71]

Forms reminiscent of arches, arcades and niches are less specific and appear essentially as frames around an illuminated heading. It is very rare to find them fulfilling that function in a text or list of contents.

Vegetal decoration

Treated realistically or stylised, the plant world provided illuminators with an inexhaustible storehouse of forms. Artists borrowed isolated elements – flowers, leaves and fruits – as well as broader compositions, be they branches or swirling tendrils. Indeed, to Western eyes, 'arabesque' has become a byword for Arab-Islamic decoration, and some years ago Ernst Kühnel traced its development through various arenas of artistic endeavour.[72] The palmette or half-palmette based on the stylised palm flower already featured in early Qur'āns. Following the Mongol invasion of the eastern Muslim world during the seventh/thirteenth century, elements of Chinese origin, such as the peony, lotus flower, burgeoning blossoms and more complex floral motifs, rapidly gained favour. By the end of the following century, artists in Central Asia and Iran had evolved relatively

67 *Isl. Hss.* 1 [*Persische Handschriften*] and 2 [*Die Handschriften in arabischer Sprache*] (Vienna, 1983 and 1992). **68** Richard, PARIS 1997, p. 44, no. 12. **69** I. E. Meïmari, *Katalogos tôn neôn arabikôn cheirographôn tês hieras monês Hagias Aikaterinês tou orou Sina* (Athens, 1985), pl. 20. **70** As in MSS. Vienna ÖNB Cod. mixt. 837, ff. 21 v°-22, and 1554, ff. 21 v°-22 (Duda, *Isl. Hss.* 2, pp. 205-206 and figs. 197-198; pp. 250-251 and figs. 199-200). **71** Ersoy, op. cit., pl. 28. **72** E. Kühnel, *The Arabesque: meaning and transformation of an ornament*, tr. R. Ettinghausen, (Graz, n.d.).



74. Opening page of an Ottoman Qur'ân (1205/1790-1). Istanbul, Süleymaniye Kütüphanesi, Pertevniyal 8, f. 2.

naturalistic floral motifs which they often deployed alongside arabesque forms. This stock-in-trade developed further in succeeding centuries – most spectacularly in the hands of Ottoman artists with motifs such as the *rūmī*, a floral scroll including long, pointed leaves, and the smaller-sized *islīmī*.

Geometry and allied forms

Several early types of Qur'ānic illumination sprung from abstract shapes inspired by geometrical forms, including the coloured circles, triangles, and squares that separate the *Sūras*.[73] Full-page decorations from the third/ninth century betray a desire to devise complex designs that might impart to the whole illumination a more vigorous structure.[74] The finest examples of this geometric vein are without doubt to be found in certain Īl-Khānid and Mamlūk Qur'āns of the eighth/fourteenth century, which give the impression of exhausting the possibilities of the genre.[75]

Geometrical forms coexisted in two genres: firstly as self-contained designs, plain or else with some internal ornament such as hatching or arabesques in the enclosed spaces. In the second type, motifs are repeated or varied and then interlaced, composing either the background or the foreground of complex decors incorporating still more geometric forms and/or floral elements. The most commonly occurring basic figures are squares, lozenges, polygons, triangles, stars and circles (illus. 46). Employing sensitivity and imagination as well as their consummate mathematical knowledge, Muslim illuminators and other craftsmen generated complex ornaments by means of interlace and subdivision or extension of different types of lines (such as those of six- and eight-pointed stars).[76]

Other decorative features

Compared to the three sources of inspiration mentioned above (architecture, the plant world and geometry), borrowings from other domains were somewhat limited. In spite of a vogue for 'Chinoiserie', illuminators generally confined themselves to reproducing cloudbands. A ninth/fifteenth-century poetical anthology from Yazd (London BL Or. 8193) provides a striking illustration of designs that combine plant and animal imagery: its decoration, apparently produced with the aid of stencils, combines not only stylised landscapes

73 See fragment Paris BNF arabe 324 c (Déroche, *Cat.* I/1, pp. 75-77, no. 45); this should be compared to the folios of the same MS. preserved in Cairo (B. Moritz, *Ar. Pal.*, pls. 1-12). **74** See, for instance, the manner in which the decoration in MS. Dublin CBL 1407, ff. 3v°-4 is constructed (James, *Q. and B.*, p. 17, no. 4). **75** James, *Qur'āns of the Mamlūks*, passim. **76** See I. el-Said and A. Parman, *Geometrical concepts in Islamic art* (London, 1976); K. Critchlow, *Islamic patterns: an analytical and cosmological approach* (London, 1976, repr. 1989).

complete with trees and, in one case, fish in a pool, but even a page with stylised heads of men and angels[77] – a type of imagery that represents a striking development of a theme already present in MS. Paris BNF arabe 2324. These cases, like that of the more realistic kind of figurative marginal drawings, are perhaps not strictly part of the domain of illumination as defined above, but belong more to the arts of painting. To some degree, the extremely elaborate lettering employed for inscriptions in illuminations also constitutes a decorative category.

Decorated papers[78]

Illumination was not the only resource book artists had at their disposal in their efforts to endow manuscripts with beauty and grace. In the area of decorated papers, several techniques had been developed over the centuries that resulted in increased rates of production or at least made it easier to decorate leaves of a manuscript already written on, be it in part or in its entirety.[79] Tinting, already much used on parchment, was a widespread practice in the Muslim world and its applications have been noted elsewhere.[80]

'Silhouette' papers

Already attested in ninth/fifteenth-century Persia, the technique of 'silhouetting' applied by stencil to leaves conjured up arabesque, vegetal and animal forms, angels, etc. (illus. 45), most often coloured red or violet. Leaves decorated in this way break the monotony of the volume[81]; copyists preferred in general to avoid transcribing texts directly onto the silhouettes they traced, although in certain Ottoman manuscripts they are integrated into the text area.

Ottoman silhouetted (or 'shadowed') papers of the late tenth/sixteenth[82] and eleventh/seventeenth century[83] (illus. 49), were created by a different

77 O. F. Akimushkin and A. A. Ivanov, 'The Art of Illumination', in B. Gray (ed.), *The arts of the book in Central Asia* (Paris/London, 1979), pp. 42, 48-50; Waley, op. cit., pp. 105-106. 78 This section is by Francis Richard. 79 A more detailed account appears in Porter, op. cit., pp. 41-60. 80 See Chapter 'The Writing surface: Paper'. 81 See MS. Paris BNF suppl. persan 1425, f. 27 v°-28 (see Richard, Paris 1997, p. 100, no. 55 and pp. 88-89). Related decorations figure in twelfth-thirteenth/eighteenth-nineteenth century MSS. from Central Asia: the area of the page intended for the text is sprinkled with tiny drops of vermilion or some other colour. 82 For example, in *libri amicorum* such as MSS. Paris BNF latin 18596 and BNF arabe 3416, or in MS. turc 288 in the same library. See also MS. Paris BNF suppl. persan 770, ff. 16 v°-17 (Richard, Paris 1997, p. 175, no. 121 and pp. 160-161). 83 As in the margins of MS. Paris BNF arabe 169 (Egypt, seventeenth century). Others are still found in the twelfth/eighteenth century, for example in MS. Paris BNF suppl. turc 1144.

technique. The leaf was impregnated through its whole thickness using stamps cut out of felt, both sides being equally saturated with the stain; favourite motifs were trees and green or pink flowers.

Gold-sprinkling and gold-scattering

Another practice in ninth/fifteenth-century Iran was that of gold-sprinkling and -flecking (illus. 48), in which tiny drops of liquid gold are flicked from the brush or laid in (stippled) with the tip over the surface of the leaf prior to or after copying. The margin is often left blank. A second technique relied on dusting minute fragments of gold-leaf from a bag pierced with holes swung back and forth over the leaf. Silver-flecked paper is recorded in twelfth/eighteenth-century India. One technique of applying gold (*zar-afshān*) appeared *ca.* 1460 in Persia before being adopted by the Ottomans. In the most lavish manuscripts, paper gilding served to reinforce the lustre of the leaves, and it presupposed the use of some kind of size.[84]

'Dripped' and marbled papers

A Persian technique, a forerunner of true marbling, is today sometimes called 'dripped' paper (Fr. *papiers coulés*). It would seem that the leaf was decorated by holding it at a slant and slowly and irregularly pouring the colours (ochre, yellow, brown, red or violet) over one side. Occurring in a relatively limited number of manuscripts dating from between 1470 and 1490,[85] such paper was perhaps produced in a single Tīmūrid or, more likely, Āq Quyūnlū Turkman atelier.

Marbled paper (illus. 50), which appeared some time in the middle of the tenth/sixteenth century, is also decorated only on one side of the leaf and is made by laying the paper on the surface of a tank or tub filled with colorant. Initially restricted to two colours, this palette gradually broadened and motifs too became progressively more complex. It should be observed, however, that its beginnings have been ascribed to an earlier era (ninth/fifteenth century), although no extant examples survive to corroborate references to the technique in the literature. Pastel papers served as a writing surface for calligraphy, while other shades appeared in the margins. Marbled papers (*abrī*, meaning "cloudy" in Persian) are to be found in Iran as early as 1540; within a few decades, in the Ottoman Empire, *ebru* was to become immensely successful, to the extent

84 See MS. Paris BNF suppl. persan 485, ff. 2 v°-3 (Richard, Paris 1997, p. 168, no. 111 and pp. 158-159). 85 In the BNF, papers of this type can be found in MS. suppl. persan 1102, 1398, 1417, 1425, 1473 and 1557. See F. Richard, 'Un manuscrit méconnu: l'anthologie poétique de la B. N. illustrée et signée par Behzâd', *Studia Iranica* 20 (1991), p. 269 and fig. 2; and Richard, Paris 1997, p. 99, no. 53 and p. 100, no. 55. The paper may have been already tinted prior to the 'dribbled' decoration being applied.

that by the end of the sixteenth century this type of paper was being imported, and later imitated, in Europe. Like its tinted and coloured counterparts, it was made from the same types of paper on which manuscripts were written.

Manuscript illustration[86]

The figurative illustrations found in manuscripts in Arabic script fall into several categories.[87] Mention should be made of the diagrams that appear in mathematical treatises, including tables, and above all of the constellation charts in treatises on astronomy (for instance, the work on fixed stars by 'Abd al-Raḥmān al-Ṣūfī, illustrated copies of which are known from the fifth/eleventh century), as well as personifications in astrological manuscripts. Other examples of illustrated codices include textbooks on surgery with figures showing the instruments used; diagrams in discourses on military strategy (*furūsiyya*) showing battles; and maps in geographical compilations (illus. 36). Drawings of plants often accompany the text of Dioscourides or the *Theriac*. Stemming from an ancient tradition, such images are closely linked to texts which without their aid might in some cases prove difficult to follow. Works of an encyclopaedic nature, such as al-Qazwīnī's *'Ajā'ib al-makhlūqāt*, placed image and text on almost an equal footing.

The purpose of illustration in literary and historical works was quite different. Not necessarily indispensable for understanding the text, they simply depict scenes recounted in the narrative. In some cases, when the sources of the paintings differs from that of the text itself (generally a matter of two different versions of the same work), they provide as it were a parallel to the main line of the story. Mediaeval Arabic literary culture held illustrated versions of the *Maqāmāt* by al-Ḥarīrī and Bīdpāy's *Fables* (*Kalīla wa Dimna*) in high regard, and the paintings were frequently adapted from models in copies of Dioscourides or the Christian Gospels. From the Īl-Khānid period onwards, Persian literary manuscripts – often produced for a courtly readership that was particularly fond of figurative images – are frequently illustrated, cases in point being the works of Firdawsī, followed by those of Niẓāmī and a legion of other poets who continued or tried to emulate the masters' creations. In certain Persian historical manuscripts, the illustrations that punctuate the narrative fit into a programme that could be carefully contrived for political or ideological

86 By Francis Richard. 87 This is a much-studied area: the reader is referred to the bibliographies of the question in K. A. C. Creswell, *A Bibliography of the Architecture, Arts and Crafts of Islam* (Cairo, 1961); *Supplement* (Cairo, 1973); *Supplement* (Oxford, 1984); a further supplement is being prepared and is to be issued shortly.

purposes. Some royal or princely manuscripts open with a dedicatory painting (of court life or battle, and hunting scenes, for instance, and occasionally of a manuscript being presented to a patron) that appears totally irrelevant to the body of the text but serves to exalt the personage for whom the volume was produced. Ottoman Turkish tradition kept faith with certain elements of Persian practice, though also it possesses specific features, the illustration of official historical chronicles occupying an especially important place.

In illustrated manuscripts, the miniature may be positioned within the text in various ways. It may, for instance, be placed in a rectangular frame or be inserted in the borders prepared for the text – though occasionally no frame appears. Other, more sophisticated page layouts, in which the image overflows into the margins, or in which certain elements of the image creep outside the framing, provide touches of drama and variety. Intricate geometrical constructions allow picture and text to be bound together as closely as possible, and recall the inextricable links between image and calligraphy. Sometimes, though rarely, the paintings may be executed with scant regard for the text or may be misplaced, causing a discrepancy between what the text relates and what the image depicts.[88]

As with many other constituent elements of a codex, careful observation of the illustrations can bring to light precious information concerning the manuscript. A miniature may be incomplete (illus. 72), retouched, or even have been appended decades or centuries after the manuscript was copied; it was not unknown for paintings to be cut out of one manuscript and inserted into another. Codicology is an indispensable aid to iconographical and art-historical study. In order to conduct a scientific study of the image, it is imperative to examine the support meticulously and marshal all the data gathered from the manuscript. In this respect, physical and chemical analysis has opened new perspectives in our approach to manuscript illustration.[89]

On a slightly different tack, details such as the position, number, dimensions and subjects of the miniatures are crucial to the exhaustive description of a manuscript. In Persian, Indo-Persian, Arabic and Turkish miniatures, some calligraphic devices should be compared with the other types of non-figurative decoration occurring in the manuscript: it should not be forgotten that the role of the illuminator is all-important.

It remains to be said that the literature on Arab, Persian and Turkish painting, though immense, remains all too often in the form of disparate and scattered studies that do not always take sufficient account of the manuscripts in which the paintings described appear. This is much less the case now, however, than it was before the 1980s.

88 A recent study describes written instructions to the illustrator, discovered in a whole series of Persian, Indian and perhaps Ottoman MSS. (John Seyller, 'Painter's directions in early Indian painting', *Artibus Asiæ* 59 [2000], pp. 303-318). 89 See Chapter 'Instruments and preparations used in book production'.

Bookbinding

The process of making a codex generally concludes by its being bound, a stage at which the manuscript is encased in a protective outer shell.[1] As will be seen, the various materials and techniques employed in binding offered an extensive range of more or less economical solutions, so that for most individuals having a codex cased did not necessarily represent an undue outlay. Nonetheless, it seems that not every manuscript was in fact bound – at least not immediately on completion of copying.[2] On the other hand, this is a component of the book which, due to its place and function, is cruelly exposed to wear and tear and the need to repair or even replace a binding was common. If such operations took place when the manuscript had been already absorbed into a Western collection, the new binding was most often made in keeping with European practice. This type of cover will be discussed only briefly in the following account, since this study centres on bindings produced in the Arab-Islamic world, knowledge of which is based in the first place on direct observation,[3] supplemented by information gleaned from a specialist literature whose earliest materials are presumed to date from the fifth/eleventh century.[4]

Certain bookbindings among the enormous output of Islamic binderies attracted the attention of specialist book historians at a very early date as they were seen as prototypes for Western bindings. Such early investigations were

1 See e.g. Muzerelle, *Vocabulaire*, p. 183, s.v. 'couverture'. 2 See Chicago 1981, p. 45 and note 156; the authors quote in this connection an anecdote from al-Tanūkhī in which a manuscript is kept as a series of gatherings that those desirous of copying them can borrow. This situation brings to mind the case of MSS. Paris BNF suppl. turc 983, 984 and 986, which gather together in a single more recent binding quires that had originally circulated separately; several of them are protected by a parchment bifolium (see chapter 'The Quires of a codex'; G. Vajda, 'Trois manuscrits de la bibliothèque du savant damascain Yūsuf ibn 'Abd al-Hādī', *JA* 270, 1982, pp. 229-256). 3 It is a matter of regret that there are so few studies on binding techniques. 4 In Arabic, five authors dating from prior to the thirteenth/nineteenth century have so far been recorded: Ibn Bādīs, Bakr al-Ishbīlī, al-Malik al-Muẓaffar, Ibn Abī Ḥamīda and al-Sufyānī. Ibn Bādīs, "Umdat al-kuttāb wa-'uddat dhawī l-albāb', ed.'A. al-Ḥalwajī and 'A. Zakī, *RIMA* 17 (1391/1971), pp. 44-172 (translated in M. Levey, *Medieval Arabic bookmaking and its relation to early chemistry and pharmacology* [Philadelphia, 1962], pp. 13-50); A. Gacek, 'Arabic bookmaking and terminology as portrayed by Bakr al-Ishbīlī in his 'Kitāb al-Taysīr fī ṣinā'at al-tasfīr'', *MME* 5 (1990-1991), pp. 106-113; 'Ibn Abī Ḥamīdah's didactic poem for bookbinders', *MME* 6 (1992), pp. 41-58; 'Instructions on the art of bookbinding attributed to the Rasulid ruler of Yemen al-Malik al-Muẓaffar', in *Scribes*, pp. 58-63; al-Sufyānī, *Art de la reliure et de la dorure*, ed. P. Ricard (Paris, 1925), transl. in M. Levey, loc. cit., pp. 51-55.

inevitably highly selective and not all periods and geographical areas were explored with equal rigour and depth – far from it. As has already been stressed, the adoption of the 'codex' in the Islamic world pursued a natural course, and early techniques for protecting books were most probably handed down in a similar fashion.

Some authorities hold that the roots of Islamic bookbinding are to be sought in Egypt. Berthe Van Regemorter is of the opinion that 'the technique [of bookbinding] is more or less the same over the whole eastern side of the Mediterranean zone and derives from Egyptian techniques [...and] is totally different [...] from the technique of the Islamic book'.[5] Several years previously, Adolf Grohmann wrote that 'early Mahometan bindings show as regards form and technique some relation to Coptic bindings'.[6] Patently, the issue of origins has thrown up conflicting ideas, and it would therefore be somewhat premature to make definitive judgements, since the materials themselves remain poorly known.

Basic principles

By dint, as it were, of its very position, the binding bears the brunt of the external world's assaults on a book, especially those resulting from the use of the manuscript: opening and closing the codex or repeatedly storing and removing it can expose the binding to various kinds and degrees of damage. Over time, a bookbinding can be subjected to a level of wear that may lead to its needing to be being repaired or even replaced. This observation, though self-evident, has important repercussions on the study of the binding of a given manuscript, which can be encapsulated in a single question: 'What connection is there, if any, between a bookbinding and the manuscript it covers?' The answer is sometimes simplicity itself: the MS. Paris BNF arabe 405 – a Qur'ān copied before the mid-fifteenth century – has a red morocco bookbinding in Greek style (with headcaps) bearing the coat-of-arms and monogram of King Henry IV of France. It is of course a replacement and was made in 1602 (most likely in Paris) to cover a manuscript copied at an earlier date, probably in Turkey.[7] When on the other hand a book has an Oriental binding, only

5 B. Van Regemorter, 'La reliure byzantine', *Revue belge d'archéologie et d'histoire de l'art* 36 (1967), p. 102. 6 T. W. Arnold and A. Grohmann, *The Islamic Book* (Leipzig, 1929), p. 34. D. Haldane (*Bookbindings*, p. 13) takes the same position. 7 Déroche, *Cat.* I/2, pp. 88-89, no. 450.

attentive examination can sometimes – though not invariably – provide the information required for a satisfactory answer to the question. The study of a binding therefore calls for meticulous investigation of all its component parts; to undertake any kind of examination thus requires at least a smattering of technical know-how, even before addressing the issue of decoration.

First, note should be taken of the binding's state of conservation: is it in one continuous piece or are there traces of repair on the spine, for example? The presence of pieces of leather of a different colour may imply that restoration work has been carried out. The dimensions of the outer covers themselves may convey valuable supplementary information: in the Islamic world, the edges of the binding are normally flush with those of the text block. If the latter is perceptibly smaller than the outer covers, or if the boards and/or spine have been enlarged with a band of a different material, the suspicion will arise that the binding was initially made for another manuscript and then salvaged and adapted to fit the book it protects today. In MS. Paris BNF arabe 400, the outer covers are larger than the assembled gatherings, an instance doubtless of a binding originally belonging to another manuscript being re-used.[8] According to Richard Ettinghausen, the original boards of MS. New York Pierpont Morgan Library M. 500 were conserved during restoration work on the manuscript before being applied to a new binding whose dimensions were slightly greater than its predecessor.[9] In exceptional cases of old manuscripts whose binding has subsequently been recycled and reutilised, the covering may instead predate the book block. Similarly, in the course of restoring a bookbinding, a craftsman may save an old and damaged cover and mount it on the inside of a new board.

In grasping the thorny question of the relationship between a manuscript and its cover, an appreciation of the history of binding in the Islamic world is also of advantage. If the boards are decorated, examining the ornamentation may help to assign an approximate date to the bookbinding. The use of one given technique or material in preference to another can also offer clues: it is, for instance, supremely unlikely that a quarter-binding with covers wrapped in marbled paper could be contemporary with a manuscript copied in the fifth/eleventh century.

On occasion, a binding can even be dated by a signature: this happens now and then on bindings from Central Asia or Afghanistan, where the name of the bookbinder and the date are inscribed in the middle of a central motif on the cover or within one of the pendants – as, for example in MSS. Tashkent

8 Déroche, *Cat.* I/2, pp. 138-139, no. 552. 9 'The covers of the Morgan *Manâfi'* manuscript and other early Persian bookbindings', in D. Miner (ed.), *Studies in art and literature for Belle da Costa Greene* (Princeton, 1954), p. 460. B. Schmitz (*Islamic and Indian Manuscripts in the Pierpont Morgan Library* [New York, 1997], p. 10) disagrees with this explanation and considers the binding to be an eighteenth century imitation of the original one.

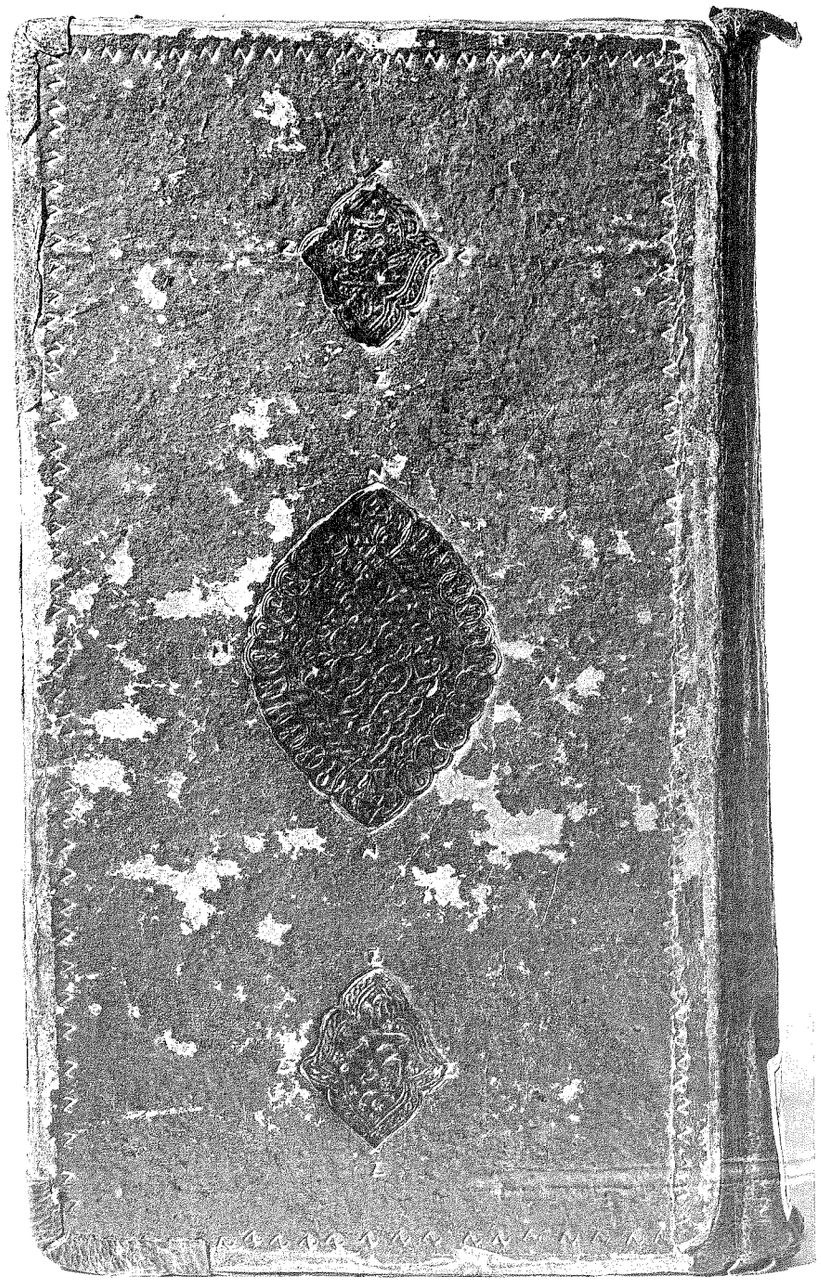
IOB 3105 and Paris BNF arabe 6772 (illus. 75).[10] Such instances, however, are limited to a specific period and region. Overall, signed works seem to be uncommon: on the outer covers, signatures normally figure inconspicuously in subsidiary zones of tooling without any indication of date, though they also occasionally turn up on decorations on the inner cover.[11] Artists who produced lacquered bookbinding decorations were far more likely to sign their work, albeit discreetly, than more 'traditional' craftsmen.[12]

Materials and techniques

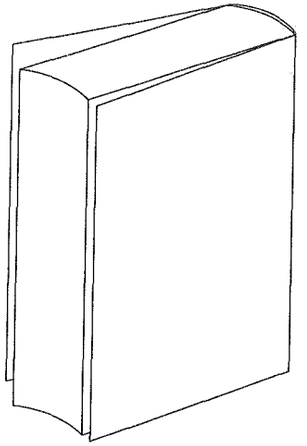
Component parts of the binding

A number of kinds of book covering were known to the Islamic world. These types can be divided for convenience into three major groups (Types I, II and III). All three share certain elements in common, namely covers (or 'sides')[13] and a spine. The 'upper' (or 'front') cover is the one visible when the volume is shut, with the 'spine' (also known as the 'back') equating to the sewn part of the gathering block – lying in the present case to the right for an observer; in this position, the 'lower' ('back' or 'reverse') cover lies beneath the volume. The elements enumerated above are the basic parts of a binding that will be here called Type III (illus. 76).

10 See *FiMMOD* 250; Déroche, *Cat.* I/2, p. 144, no. 564. A reproduction of a tool of this type appears in Witkam, *Cat.* 5, p. 505; Ī. Afshār (ed.), *Ṣaḥḥāfī-i sunnatī* (Tehran, 1357/1978), pl. B&W binding 40-45. According to E. A. Rezvan, O. F. Akimushkin dates the origin of this type of signature back to around 1730 in Kashmir (E. A. Rezvan, 'Yet another "'Uthmānic Qur'ān" (On the history of manuscript E 20 from the St. Petersburg Branch of the Institute of Oriental Studies)', *Manuscripta Orientalia* 6/1 [2000], pp. 65-66, note 8). 11 M. Weisweiler (*Bucheinband*, p. 38) notes several examples; Haldane (*Bookbindings*, p. 11) and Bosch et al. (Chicago 1981, p. 13, p. 87, no. 2, p. 126, no. 30 and 31, etc.) draw attention to a number of similar irons. Names of bookbinders are known through literary sources from Ibn al-Nadīm down to the nineteenth century ce. As in a number of other cases, the problem is to connect them to one (or a number) of surviving pieces. 12 An inventory of 211 reproductions of signatures figures at the end of N. D. Khalili, B. W. Robinson and T. Stanley, *Lacquer of the Islamic Lands*, vol. I (London, 1996), pp. 262-268 (not every signed object is a bookbinding). 13 'The outer covering of a book placed on the text bock to protect it both in use and storage': M. T. Roberts and D. Etherington, *Bookbinding and the conservation of books: a dictionary of descriptive terminology* (Washington, D.C., 1982), p. 67, s.v. 'covering'; see also Muzerelle, *Vocabulaire*, p. 183, s.v. 'couverture'.



75. Central Asian binding, signed by the binder. Thirteenth/nineteenth century. Paris, BNF arabe 6772 (front cover).

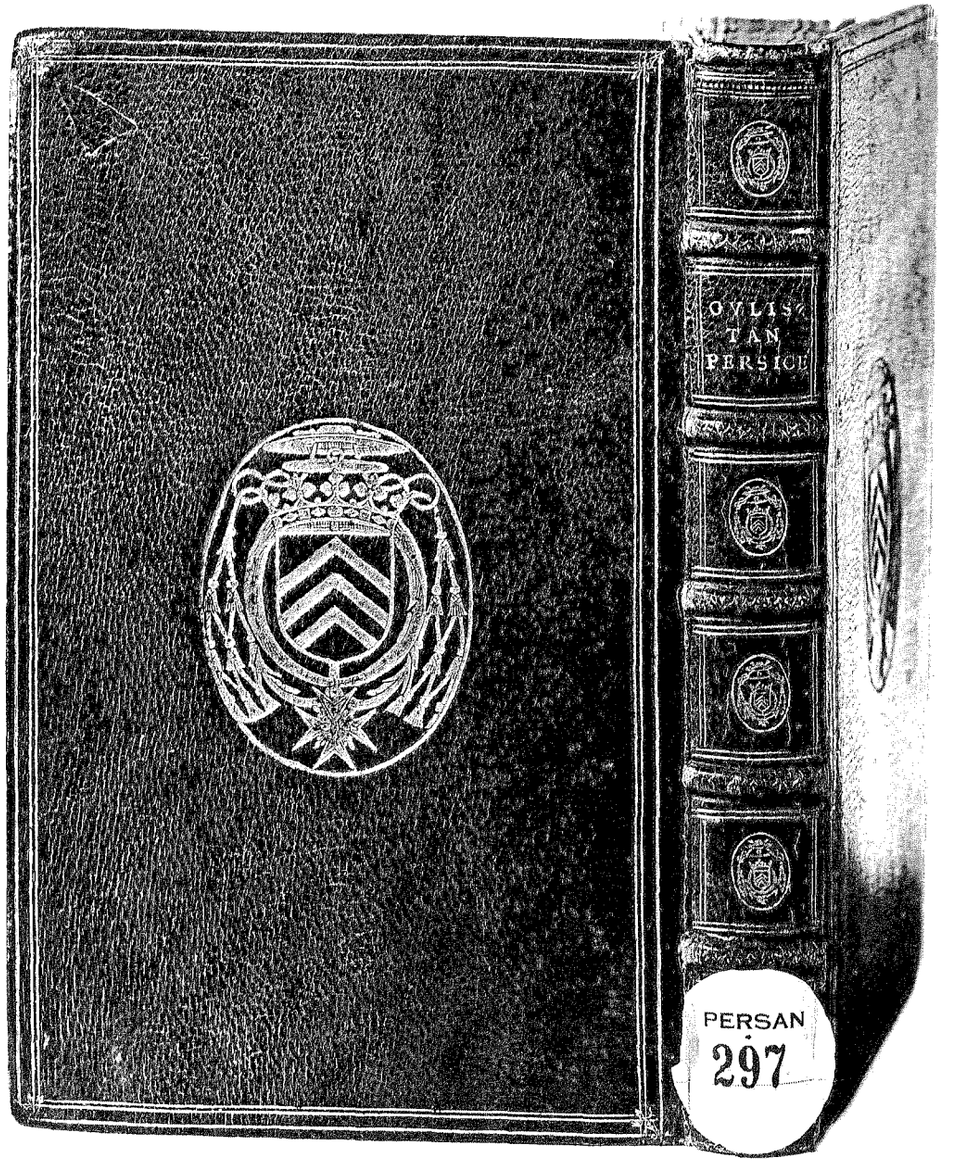


76. Type III binding.

The other components of a Type III binding are substantially the same in all cases and include the 'inner cover', that is to say that section of the cover lying next to the book block, and the 'boards', the rigid element of the cover that can be made of wood, paper or even papyrus pasteboard or cartonnage. Most often, the boards are designed to be covered or wrapped with some other material, the covering.[14] Where the totality of the (outside of the) boards and spine is covered, the term used is 'full binding'; if, on the other hand, the covering is applied only to the spine and adjacent parts of the sides (i.e. without corner pieces), the expression is 'quarter-binding'; if the corners are also covered, the term is 'half-binding'. The inner covers may also be covered or lined: this 'doublure' may be made out of leather, parchment, paper (a 'pastedown'), or fabric. Finally, there exist bookbindings, often known as 'limp' bindings, distinguished by a total absence of boards: ancient examples in leather as well as in parchment have been recorded.

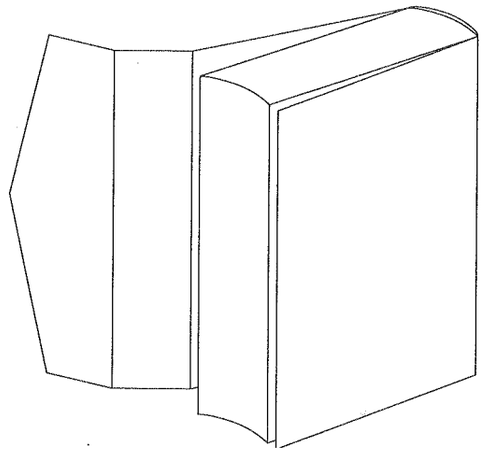
Type III, however, represents only a fraction of Eastern bindings, including in the first place Christian Arabic manuscripts bound in conformity with Byzantine techniques, as well as manuscripts produced in Central Asia – in the broad sense – in later times. For codicologists, technical dissimilarities, particularly in the way cohesion is ensured between the block of gatherings and the covers, distinguish them clearly from the type of bindings made by Western binders and extensively encountered in major Western collections (illus. 77). In fact, the predominant form of bookbinding in most of the Muslim world is Type II (illus. 78). From a technical point of view, it is

14 'The material, such as leather, vellum, cloth, paper or combinations thereof, which cover the spine and usually the sides of a book': Roberts and Etherington, op. cit., p. 69, s.v. 'covering'; see also Muzerelle, *Vocabulaire*, p. 185, s.v. 'couvrure'.



77. Classic seventeenth century Western binding. BnF persan 297.

close to the modern 'pasted down to ends' style in case-binding[15] in which the block is attached directly to the endpapers.[16] Once the gatherings are sewn, the back is lined ('backed') with a strip of cloth (the 'spine lining') wider than the thickness of the volume so that there is enough space to paste the edges down to the boards. Depending on the taste and style of an individual bookbinder, the pastedown[17] consists of the initial (or final) bifolium,[18] or else of a genuine doublure whose extremities are stuck to the first or last leaf, thereby ensuring the coherence of the whole.[19]



78. Type II binding.

The most salient feature of Type II is the presence of the fore-edge flap and the envelope (or 'tongue') flap, two elements connected by flexible hinges, which extend from the long side of the lower cover. Rectangular in shape, the 'fore-edge flap' is that part of the covering which lies over the fore-edge to protect it when the volume is closed. As broad as the book is thick, the fore-

15 'A [...] method of bookbinding [...] in which the case (covers) of the book is made separately [...] from the book (the text block and endpapers) and later attached to it by gluing the board papers of the text block to the inside of the boards of the case': Roberts and Etherington, op. cit., p. 60, s.v. 'case-binding'; see Muzerelle, *Vocabulaire*, p. 185, s.v. 'cartonnage' (the same term is occasionally met with in English). 16 '[..] two or more leaves placed in front and back of a book between its covers and text block': Roberts and Etherington, op. cit., p. 89, s.v. 'endpaper'; see Muzerelle, *Vocabulaire*, p. 96, s.v. 'garde'. 17 'The [...] paper attached to the inside of the board of a book after it has been covered [...]. The pastedown serves several purposes [... including acting as] the hinge between the text block and the board or case': Roberts and Etherington, op. cit., p. 186, s.v. 'pastedown'. 18 In parchment manuscripts, pieces of variable size are also used to the same effect. 19 Such techniques reappear in Oriental bindings of Type II.

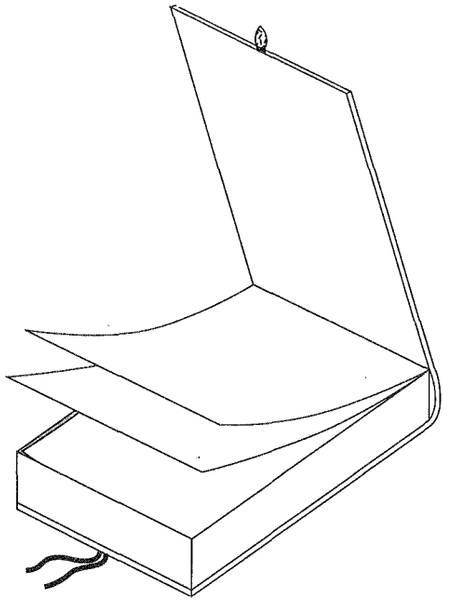
edge flap continues over a second hinge into the pentagonal 'envelope flap', tapering to a point in line with the central axis of the manuscript. (For ease of reference, Type II bookbindings may here be designated by their traditional name of 'flap bindings'.) A further characteristic of this type of bookbinding is the absence of a shoulder.[20] Arabic treatises on bookbinding are adamant that any 'swell' at the jointing must be 'knocked out' with a maul or reduced in the press.[21] Finally, the edges of the assembled sections are practically flush with those of the bookcovers.

Intriguingly, however, the oldest surviving examples of Islamic bookbinding known today belong to another group, Type I (illus. 79). They are as a general rule oblong in format with wooden boards. The chief distinguishing feature is a continuous leather protective wall or strip of the same thickness as the text block glued to three rims of the lower bookcover to form a box or case whose spine constitutes the fourth side.[22] When the book is shut the pages' edges lie snugly within the leather surround. Such a binding-cum-case (or 'box-book') is customarily fitted with some kind of fastening.

Divers types of cases and boxes were produced as book protectors, from the crudest cloth bags[23] to actual rigid boxes.[24] In the Ottoman world, manuscripts, especially small-format Qur'āns, were often provided with a close-fitting envelope made from two pieces of paper pasteboard lined with leather and held together on three sides by a cloth accordion gusset; a fore-edge flap reminiscent of those in bookbindings proper allowed the box to be sealed shut once the manuscript was replaced, and a cloth pull was fixed inside the case so that it could be slid out easily.[25] The leather panels were for the most part decorated in a style close to that observed in normal bindings. Customarily used for Qur'āns, this species of case was in addition utilised for copies of other

20 'That part of the spine of a text block at the outer extremities which is bent over in the backing process to form the projection at right angles to the text block to accommodate the board': Roberts and Etherington, op. cit. p. 255, s.v. 'shoulder'; see Muzerelle, *Vocabulaire*, p. 184, s.v. 'mors'. 21 Swell: 'The additional thickness in the spine of a book caused by the sewing thread [...]': Roberts and Etherington, op. cit., p. 257; Ibn Bādīs, op. cit., p. 158 (Levey, op. cit., p. 42); al-Sufyānī, op. cit., p. 10 (Levey, op. cit., p. 52). 22 The suggestion has been made (CHICAGO 1981, p. 56) that the three sides did not necessarily combine to form a continuous protective barrier; this objection arose from the fact that only in three cases at that time had the element survived in a state allowing it to be observed. Since then, however, other bindings of the same type have come to light. Examination of the best preserved ones has shown that the edges are indeed attached: see the recent observations of U. Dreibholz, 'Some aspects of early Islamic bookbindings from the Great Mosque of Sanaa, Yemen', in *Scribes*, pp. 16-17 and fig. 1. 23 See below. 24 The earliest examples of wooden boxes of this genre are known through deeds of *waqf* (e.g. for the Qur'ān of Amājūr, see F. Déroche, 'The Qur'ān of Amājūr', *MME* 5 [1990-1991], p. 61); an element – with an inscription – of a box that housed the 'Qur'ān of the Nurse' survives: see B. Roy and P. Poinssot, *Inscriptions arabes de Kairouan* (Paris, 1950), pp. 27-28, fig. 6 and pl. 2. Numerous pieces in metal and wood have been preserved from later periods (see e.g. James, *Qur'āns of the Mamlūks*, fig. 13 and 14; BERLIN 1988, pp. 173-174, no. 99-101). 25 See e.g. the reproduction of MS. Dublin CBL 1587, dating from 1267/1850-1851, in James, *Q. and B.*, p. 135, no. 112 (A. J. Arberry, *The Koran Illuminated* [Dublin, 1967], p. 70, no. 224).

texts. In West Africa, leather satchels fitted with a strap served to transport Qur'ānic manuscripts or other works of a religious character, providing much-needed additional protection for the text within.[26]



79. Type I binding.

The Materials

The boards[27]

Wood

Bookboards were made out of wood, particularly for 'bindings-cum-cases', the earliest type of binding for Qur'āns (see below). The pieces of wood utilised in these cases are of variable thickness, ranging from 4 to 11 mm.[28] There are

26 In their standard form, manuscripts from that region consist of an unsewn group of leaves or of unsewn bifolia (see pp. 88-89); the box provides added security as regards the order of the leaves. Some good examples are reproduced in James, *Q. and B.*, p. 138, no. 115: MS. Dublin, CBL 1599 (see A. J. Arberry, op. cit., p. 76, no. 241; MSS. 1597, 1598 and 1601 of the same collection appear in the same way) and in A. Brockett, 'Aspects of the physical transmission of the Qur'an in nineteenth-century Sudan: script, decoration, binding and paper', *MME* 2, 1987, pp. 47-48 and fig. 1 (MS. Leeds University Library Arabic MS. 301). See also MS. Munich BSB Cod. arab. 2641 (Munich 1982, p. 140, fig. 24). **27** As has been remarked above, certain bindings do not possess boards. **28** See Marçais and Poinssot, *Objets* 1, p. 15.

some remarkable overall dimensions for these boards: MS. Istanbul TIEM ŞE 43, for instance, measures 29.5 x 40.5 cm.[29] In spite of the frequently modest format of most manuscripts of the early period, the boards were not invariably made as a single piece and may be pegged and glued. There are also cases of timber having been recycled and bearing telltale signs of prior use.[30]

According to research by Georges Marçais and Louis Poinssot, the most commonly used species of woods at Kairouan were white and black poplar (*Populus alba* and *nigra*), Aleppo pine (*Pinus halepensis*), fig (*Ficus carica*), sweet-bay (*Laurus nobilis*) and (common) tamarisk (*Tamarix gallica*).[31] In a bookbinding manual dating from the thirteenth century, al-Ishbīlī also recommends cedar wood.[32] Almost all the wooden-board bindings examined by this author are equipped with coverings; exceptions exist, but their precise significance is hard to assess.[33]

Papyrus

As far as is known, today there exist no Arabic manuscripts whose surviving binding is made of papyrus board; and the tax register London, BL Pap. 1442 dated to the years after 716-7 CE only retains the remnants of a papyrus lining of its leather binding.[34] The technique was well known in Egypt and several early Coptic bookbindings were indeed fitted with boards of this material.[35] In the West, the Sarezzano Gospel preserves a fragment of its original binding with a papyrus bookboard.[36] It is quite conceivable that the same processes

29 No account is taken here of the Berlin pseudo-binding (see below and note 76). **30** Marçais and Poinssot, *Objets* 1, p. 139, no. 62; p. 149, no. 66; p. 190, no. 95; p. 202, no. 101, and p. 207, no. 104; Dreibholz, op. cit., p. 27 and fig. 11. **31** Marçais and Poinssot have compiled a list of the bindings concerned (*Objets*, vol. II, p. 509). **32** Gacek, op. cit. (*MME* 5), p. 107. **33** This is the case in particular of two Qur'ānic manuscripts, MSS. Milan Biblioteca Ambrosiana H 144 and 145: they are protected by a quarter-binding whose wooden boards are only partially covered in the leather on the spine (E. Graffini, 'Die jüngste ambrosianische Sammlung arabischer Handschriften', *ZDMG* 69 [1915], p. 80). **34** J. David-Weill in *Le Djâmi' d'Ibn Wahb*, vol. I [IFAO, Textes arabes, 3], (Cairo, 1939) gives no further details of the appearance of the binding: Cairo Dār al-Kutub Ḥadīth 2123. Grohmann (in Arnold and Grohmann, op. cit., p. 112, note 202) compares it to a probably earlier Coptic binding, which is slightly less briefly described – see V. Scheil, 'Deux traités de Philon', *Mémoires publiés par les membres de la mission archéologique française au Caire*, IX/2 (Paris, 1893), p. 1 – whose covers are reportedly formed from 'several fragments of leaves [*sc.* of papyrus] stuck together'. Haldane notes that the Coptic bindings in the Victoria & Albert Museum have papyrus boards, and adds, without however supporting his thesis with a precise reference, that 'many other [Islamic?] bindings were made of papyrus pasteboards with leather covers attached' (Haldane, *Bookbindings*, p. 11). **35** See J. Doresse, 'Les reliures des manuscrits gnostiques coptes découverts à Khénoboskion', *Revue d'égyptologie* 13 (1961), pp. 34, 41 and 47; *The Facsimile Edition of the Nag Hammadi Codices*, vol. I, Introduction (Leiden, 1984), pp. 75-77 (an example dating from the fourth century CE, MS. London BL Or. 7594 is referred to). **36** See G. Godu, *Codex Sarzanensis, fragments d'ancienne version latine du quatrième évangile* (Montecassino, 1936); E. A. Lowe, *Codices latini antiquiores*, 4 (Oxford, 1937), p. 436 a, b; N. Ghiglione, *L'evangeliario purpureo di Sarezzano (sec. V-VI)* (Vicenza, 1984), p. 26 and fig. 354 and pl. p. 355. The author is indebted to Jean Vezin for these references.

were employed for Arabic manuscripts back in the time when papyrus was still commonly available.

Paper

Undoubtedly the most common material employed by bookbinders in forwarding was paper pasteboard. As described in bookbinding treatises, the manufacture of such boarding was a very simple process and had the advantage of being relatively inexpensive.[37] Paper waste was pasted together to an adequate thickness to make the boarding sufficiently solid.[38] In the Ottoman world and more generally wherever the Ottoman binders' methods predominate, makers of fine bindings occasionally used differences in layer among the various components of a decoration to create pronounced relief effects during the preparation of the pasteboard: the craftsman cut the outline of the ornament he intended to stamp out of a sheet of cardboard and stuck the sheet onto the pasteboard support.[39] Lacquer binding boards, a topic to be addressed below, are traditionally dubbed papier mâché: this term in fact disguises the familiar pasteboard made out of layers of sheets of sized paper.[40]

Other materials

To finish, mention should briefly be made of a few of the more unusual materials used in the making of special bindings and cases: metal as a support for tortoiseshell panels,[41] inlayed plaques of jade, jewels,[42] etc.

Covering materials

Not all the materials listed above were invariably decorated. Depending on the materials concerned, however, decoration might be executed either before the material was applied (as with marbled papers, for instance) or else after it had been laid over the bookboards (as in the case of leather). In the following account, it has not always proved feasible to separate discussion of the raw materials from that of the processes employed in the decoration.

Leather

Leatherworking was widely practiced throughout the Islamic world. Many texts lavish praise on the quality of hides prepared in the Yemen and the Maghrib, while others vaunt the advantages of such and such a method for treating

37 Al-Sufyānī, op. cit., pp. 5-8 (tr. Levey, op. cit., p. 51). 38 In the 'introduction' to the text of al-Sufyānī (op. cit., p. 1), a quotation from Ibn 'Ardūn advises that leaves bearing the name of Allāh or Muḥammad should not be used in the making of boards except for those intended for a copy of the Qur'ān. 39 A. Sakisian, 'La reliure turque du XV^e^ au XIX^e^ siècle', *La revue de l'art ancien et moderne* 51/I (1927), p. 278, note 5. 40 Khalili, Robinson and Stanley, op. cit., p. 10. 41 MS. Istanbul Üniversite Kütüphanesi F. 1426, c. 1560 CE (see BERLIN 1988, p. 134, no. 55 a). 42 E.g. MSS. Istanbul TKS 2/2121 (see ISTANBUL 1983, pp. 230-231, no. E. 200; BERLIN 1988, pp. 102-103, no. 30; VERSAILLES 1999, p. 282, no. 242) and 2/2095 (see FRANKFURT 1985, p. 105, no. 1/86 b; VERSAILLES 1999, p. 281, no. 241).

leather. Dyeing was commonplace, and there is no shortage of recipes and instructions concerning the various ingredients. Ibn Bādīs' treatise has preserved for posterity various processes for dyeing leather black, red, yellow or green,[43] while a still richer palette could be obtained by combining those colours. In Ottoman Turkey, tanners in eighteenth-century Istanbul could supply hides in 'sky-blue, peach-flower, red, yellow and a pure green'.[44] In the same era, the traveller Jean-Baptiste Tavernier recorded that Tokat was renowned for its blue morocco, Diyarbakır and Baghdad for red, Urfa for black, and Mosul for yellow.[45] As for the quality of these moroccos, it is interesting to note the appreciative remarks of specialists virtually contemporary with the two aforementioned accounts. In a memoir of 1727 conserved in a register of morocco leathers purchased for bookbinding in the Bibliothèque Royale, the author remarks that 'hides from Morocco are of a finer grain [than those of Marseilles], but they are small and graze still more easily. At source, they cost only 2 ll. 10 s.[46] Those from the Levant are large, of good grain, brighter in colour and will last much longer without scarring or tarnishing. They cost 3 ll. each. Formerly, we had them shipped in three different colours: red, violet and lemon yellow.'[47]

The commonest skins in the Muslim world were goat, though sheep and calf were also employed.[48] The best method of ascertaining the origin of a piece of leather employed is to examine the 'turn-ins'.[49] Indeed, in describing leather, researchers are advised to concentrate on those features that pertain to the grain of the hide and to avoid terms applying more specifically to Western bookbinding practices. On the other hand, if the binding is indeed a specimen of European craft, then it is perfectly acceptable to discuss it using the appropriate technical vocabulary, which can easily be acquired by consulting the relevant specialist literature.[50]

An interesting question concerns whether an equivalent of shagreen, which is ray- or sharkskin, was ever used by Oriental bookbinders. If one caption in an exhibition catalogue is to be believed, a bookbinding in the University Library of Istanbul (Üniversite Kütüphanesi A. 6570) is indeed

43 Levey, op. cit., pp. 43-45. 44 Evliya Çelebi, *Evliya Çelebi Seyahatnamesi*, vol. I (Istanbul, 1314/1898), p. 595; quoted by Sakisian, op. cit., p. 282. 45 J. B. Tavernier, *Les Six voyages en Turquie et en Perse*, vol. I [introduction and notes by Stéphane Yérasimos] (Paris, 1981), p. 55. 46 Those from Marseilles cost 3 *livres* 10 *sous* (J. Vezin, 'Les reliures de la Bibliothèque du Roi sous Louis XIV, Louis XV et Louis XVI', *Revue française d'histoire du livre* 37 [1982], p. 601). 47 Ibid. 48 According to Marçais and Poinssot (*Objets* 1, p. 16), the majority of Kairouan bindings are covered in '*basane*' – that is to say, sheepskin; on the other hand, bindings with a relief decoration 'on cords' are in kidskin. 49 'The extra length and width of the covering material of a book overlapping the head, tail, and fore edge of the cover, and turned over the edges of the board and glued to the inside surface': Roberts and Etherington, op. cit. p. 268, s.v. 'turn-in' (also known as 'turn-overs'); see Muzerelle, *Vocabulaire*, p. 185, s.v. 'remplis'. 50 Muzerelle, *Vocabulaire*, pp. 188-191 and figs. 326-333, provides a succinct overview and lists in the preliminary bibliography (p. 26) a number of texts to which the reader may refer for further information; Roberts and Etherington, op. cit., also provide a full bibliography.

made of sharkskin. If the binding is contemporary with the manuscript itself (c. 1550), its use here would pre-date not only the production of the material in the West during the eighteenth century, but also its use there.[51] Imports to France from the Middle East did apparently begin at least during the seventeenth century and provided binders with this material.[52]

Parchment

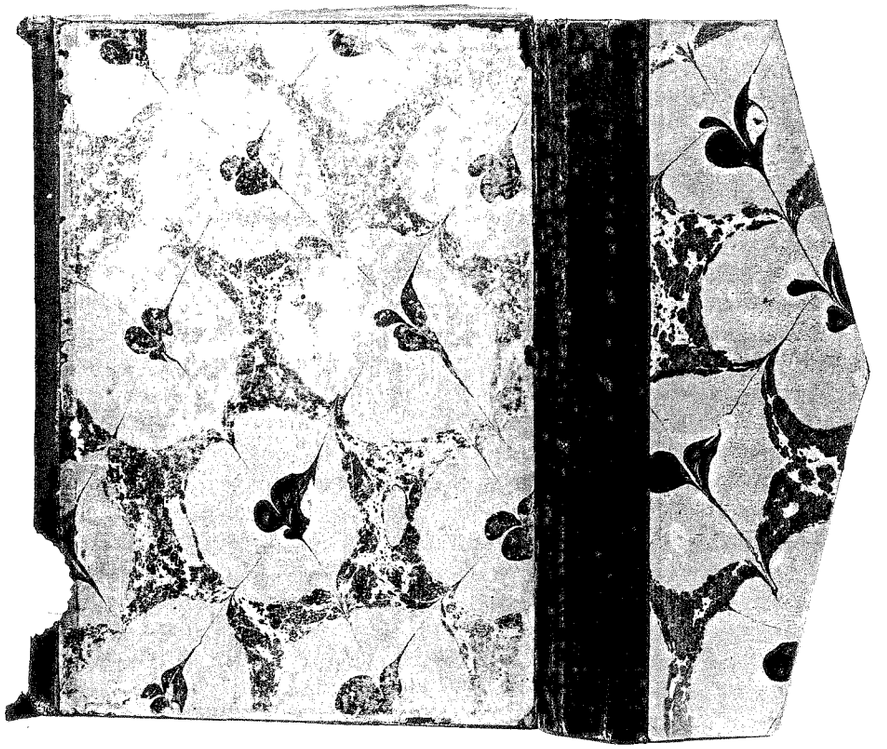
In the West, it is not so very unusual to meet with manuscripts (such as MS. Paris BNF persan 327) that a bookbinder has covered with purpose-made parchment.[53] In the Islamic world, on the contrary, the few examples in which this material was utilised in binding entailed recycling old leaves taken from dismembered manuscripts. The collection of the Museum of Turkish and Islamic Arts at Istanbul contains a small binding stretched with a parchment covering;[54] perhaps an analogous situation is to be envisaged for manuscripts described in the mediaeval catalogue of the Library at Kairouan.[55] MSS. Paris, BNF suppl. turc 983, 984 and 986 contain *ajzā'* (fascicles) composed of a single quire protected by a bifolium made from pre-used parchment: it seems plausible that the latter served the purpose if not exactly of a binding, at least of a protective layer at a time when *ajzā'* were independent and not bound as a single ad hoc collection as they are today.[56] In his treatise on bookbinding, al-Ishbīlī explains how to make a material usable for book-covering out of layering and pasting parchment and paper, which he calls *shidq*.[57]

Paper

For outer coverings, bookbinders seem to have preferred paper already decorated, tinted, or otherwise enhanced (illus. 80). Nonetheless, there exist examples of bindings made out of paper that may have been recycled to that end: MS. Munich Bayerische Staatsbibliothek, cod. turc. 229, for instance, is protected by a page covered with pen trials or doodles.[58] In the Ottoman world, marbled paper began to be used in covers and wrappers during the seventeenth century[59] and frequently appears in quarter-bindings with leather-drawn spines.[60] The introduction of marbled paper more or less coincided with the onset of the economic difficulties that the Ottoman Empire was to increasingly experience in the final phase of its history; the inference is that leather had become too costly and thus was gradually ousted by marbled paper, though

51 Berlin 1988, p. 102, no. 29. 52 See J.P. Néraudau, *Dictionnaire d'histoire de l'art* (Paris, 1985), p. 237. 53 Richard, *Cat.* I, p. 333. 54 Unpublished. 55 I. Chabbouh, 'Sijill qadīm li-maktabat Jāmi' al-Qayrawān', *RIMA* 2 (1956), p. 363, no. 86 : 'six volumes (*safar*) [...] of which one is bound in parchment (*mujallad bi-l-raqq*)'; the situation described below is probably rather different (p. 366, no. 105 : 'forty-three gatherings (*daftar*) [...] *mughashshā bi-l-raqq*'). 56 See Vajda, op. cit. and chapter 'The Quires of a Codex', above. 57 Gacek, op. cit. (*MME* 5), p. 109. 58 Frankfurt 1985, p. 110, no. 1/92. 59 See chapter 'The Writing Surface: Paper'. 60 See e.g. Chicago 1981, pp. 218-219, no. 92.

the vagaries of fashion cannot be totally ruled out. In Central Asia and Iran, glossy tinted papers were employed in bookbinding from the eleventh/seventeenth century; they may even be stamped in the same fashion as leather.



80. Boards covered with Ottoman marbled paper.
Paris, BNF suppl. persan 1500 (back cover and flap).

Textile

Fabric too was put to use as a book covering (illus. 52); indeed, it would seem that material was employed at a very early stage, since a text dating from 1174 CE mentions that Saladin sent several copies of the Qur'ān opulently bound in satin to Sultan Nūr al-Dīn Maḥmūd.[61] A binding in the Kairouan collection that Georges Marçais and Louis Poinssot assign to the fourth/tenth century preserves a green silk covering over wooden boards, their edges rounded smooth to avoid tearing the fabric.[62] This specimen does not quite match the

61 Arnold and Grohmann, op. cit., p. 32 and note 143. 62 Marçais and Poinssot, *Objets* 1, p. 142, no. 63 b.

lavishness of Ayyūbid Qur'āns, but this does not reduce its historical importance since - if the date can be substantiated - it represents the earliest instance of the use of textile on a full binding in the entire Islamic domain.

Textile coverings became popular in the Ottoman world during the reign of Mehmed II, perhaps to satisfy a demand for bindings that would otherwise have outstripped production in stamped leather decoration.[63] A later manuscript in Istanbul (TKS H. 1365; written in 992/1584) is a well-known example of a gold-embroidered silk bookcover,[64] for which parallels existed in the Safavid world.[65] Embroidery, which was occasionally stitched directly into the leather in decorative compositions, will be returned to below. When cloth is used to wrap the boards, there is normally a thin border strip of leather around the edges.

The combined use of leather and fabric is a better documented phenomenon, attested by bookbindings from the eighth/fourteenth to the ninth/fifteenth centuries, often produced in Egypt. Leather bookcoverings are decorated in cut filigree laid on a silk ground. One *juz'* of a Qur'ān (MS. Paris BNF arabe 5845, late eighth/fourteenth century) belonging to a well-documented series[66] is protected by a bookbinding whose central ornament and corner-pieces executed in cut leather stand out against a green silk ground. The same technique is to be found on a contemporary Qur'ān (MS. Paris BNF Smith-Lesouëf 220), though there the ground is turquoise blue.[67]

Fabric slipcovers were made for various precious volumes, including manuscripts owned by the disciples of the famous Baghdad mystic al-Ḥallāj, as well as the Qur'āns attributed to the Caliph 'Uthmān, one conserved at Damascus, and the other at Marrakesh after passing through Cordoba.[68]

Metal, enamel, gemstones and other precious materials

The use of precious metals for bookcovers also seems to have begun at a very early period in the Muslim domain. This is not the place to address the topic of the fasteners or bosses occasionally met with on cases for books – which can be made of silver[69] – since they are fittings or 'furniture', and the subject here is covering materials in the strict sense. According to one literary source, al-Jahshiyārī's *Kitāb al-wuzarā'*, a secretary to the Umayyad Caliph Mu'āwiya ibn Abī Sufyān (reigned 661–680 CE), is supposed to have owned a Qur'ān with

63 J. Raby and Z. Tanındı, *Turkish bookbinding in the 15th century: the foundation of an Ottoman court style* (London, 1993), pp. 65 and 217. 64 ISTANBUL 1983, pp. 184-185, no. E.124; FRANKFURT 1985, 2, p. 60, no. 1/18 a and pl. XII. 65 Afshār (ed.), op. cit., col. pl. <9>. 66 Déroche, *Cat.* I/2, pp. 54-55, no. 346 and pl. XI A (see MSS. Dublin CBL 1474 and Chicago Oriental Institute A 12159). 67 Déroche, *Cat.* I/2, p. 58, no. 352 and pl. XII A. 68 Arnold and Grohmann, op. cit., p. 32 and note 79 and 144; A. Dessus Lamare, 'Le muṣḥaf de la mosquée de Cordoue et son mobilier mécanique', *JA* 130 (1938), p. 554 and 566. 69 The example cited above of the Qur'āns presented by Saladin mentioned hasps made of gold (or perhaps gold-plated).

a silver bookbinding that he was forced to sell when he fell on hard times.[70] Another text of a later date has it that the *muṣḥaf* attributed to the Caliph 'Uthmān preserved at Cordoba had a binding adorned with splendid decorations in gold embellished with pearls and rubies. After being transferred to Marrakesh in the reign of the Almohad sovereign 'Abd al-Mu'min in ca. 553/1158, this same Qur'ān was rebound in gold and silver ornamented in 'Byzantine vitreous colours', – a phrase denoting enamel.[71] As can readily be appreciated, works of this ilk owe more to the talents of the silversmith than to those of the bookbinder in the classic sense.

To the present writer's knowledge, no early examples of this type have survived. Documentation is relatively plentiful from the Ottoman period, however, and many bindings in precious metals have been preserved from that era; an even greater number must have disappeared in the intervening period, however, if the report recorded by Arménag Sakisian that one hundred and thirty Qur'āns with bindings set with gemstones formed part of the estate of Rüstem Pāshā can be accepted.[72] The Topkapı Sarayı Museum contains a series of bookbindings of this type set with precious or semi-precious stones.[73] The use of unusual materials presented a still wider range of possibilities, as attested by bindings on manuscripts in Istanbul (Üniversite Kütüphanesi F. 1426: tortoiseshell mounted on metal plaques)[74] and in Dublin (CBL 1578, dated 1261/1845, which combines silver with enamel and ivory.)[75]

Wood

The last-mentioned example brings to mind the case of marquetry or inlay as decoration techniques on bindings. Certain fragments conserved in Berlin have been described by Friedrich Sarre and by other scholars subsequently as remnants from a large, inlay decorated bookbinding.[76] In fact, however, these are pieces of a wooden coffer: they are far too heavy to have served as binding, all the more so since, as will be seen below, Arab-Islamic bookbinding techniques had yet to evolve a method of durably affixing a text block to the bookboards. Reference has already been made to two manuscripts now in

70 J. Latz, *Das Buch der Wezire und Staatssekretäre von Ibn 'Abdūs al-Ǧahshiyārī, Anfänge und Umaiyadenzeit* [Beiträge zur Sprach- und Kulturgeschichte des Orients, 11] (Walldorf-Hessen, 1958), p. 79. 71 Dessus Lamare, op. cit., p. 563. 72 Sakisian, op. cit. (52, 1927), p. 151. 73 Several exhibitions have provided ample opportunity to examine such objects: ISTANBUL 1983, pp. 230-235, no. E. 199-E. 202 and E. 204; FRANKFURT 1985, p. 105, no. 1/86 b; BERLIN 1988, pp. 102-104, no. 30-31; VERSAILLES 1999, pp. 281-282, no. 241-242. The Chester Beatty Collection houses miniature Qur'āns of Iranian provenance preserved in metal and precious (or semi-precious) stone caskets (James, *Q. and B.*, p. 137, no. 114; no shelfmark). Similar bindings were doubtless made in other parts of the Islamic world: that of the Maghribi Qur'ān, Istanbul TKS 2/2903, from 1572 CE – whose attribution was much debated – has recently been ascribed to Morocco (VERSAILLES 1999, pp. 280-281, no. 240). 74 BERLIN 1988, p. 134, no. 55 a. 75 James, *Q. and B.*, p. 136, no. 113 (Arberry, op. cit., pp. 69-70, no. 222). 76 F. Sarre, *Islamische Bucheinbände* (Berlin, 1923), pl. I; Arnold and Grohmann, op. cit., pp. 33-34 and fig. 16; J. Pedersen, *The Arabic Book* (Princeton, NJ, 1984), p. 104 and pls. 20-21. Haldane (*Bookbindings*, p. 11) also mentions it.

Milan (Biblioteca Ambrosiana H 144 and 145) whose timber bookboards had no covering: closer study might allow one to determine whether at this early period wooden boards were indeed left bare.[77]

Lacquer

The most widely used technique consisted in executing the decoration on bookboards made of pasteboard (illus. 51), although this had not been always been the case. The earliest known examples, such as the binding of MS. Istanbul TKS A. 1672, copied in 873/1468,[78] demonstrate that craftsmen applied lacquer decoration to leather-drawn boards.[79] This method did not endure long, perhaps because of the many attendant difficulties. The oldest lacquer-painted bookbindings of classical manufacture (illus. 51) date from the ninth/fifteenth century and were made at the court of Ḥusayn Mīrzā at Herat (reigned 873-911/1469-1506).[80] In terms of decoration, they are closer to illumination or miniature painting than to bookbinding proper. Their ornamentation relies on a process similar to painting; fledgling experiments consisted in combining gilding with a black ground – occasionally in conjunction with mother-of-pearl inlay[81] – though such a solution never proved as popular as genuine polychrome decoration.[82] The latter made its appearance at the beginning of the tenth/sixteenth century and has continued in favour up to the present day.

The doublure

Covering the inner surface of a bookboard fulfilled the purpose not only of enhancing the binding's appearance, but also of strengthening the cohesion between binding and book block; doublures were in fact often set across the 'hinge'[83] that served to reinforce the binding as a whole. It is common to find restoration work in these areas, evidence of the high level of wear to which they were sometimes subjected.

77 Haldane (*Bookbindings*, p. 189, no. 175) reproduces a binding for a photograph album produced in Kashmir a. 1900 (London Victoria & Albert Museum 1763-1951): the carved wooden boards were decorated with birds on a ground of vegetal ornamentation. Parallels may well be found in other traditions, for example in that of the Tibetan book; nonetheless, to the present writer's knowledge there are no bindings of this type among manuscripts in Arabic script. **78** Raby and Tanındı, op. cit., pp. 154-155, no. 18. **79** This technique, which appeared shortly before the examples produced at Herat, seems to be Ottoman: see Khalili, Robinson and Stanley, op. cit., p. 232. **80** See Khalili, Robinson and Stanley, op. cit., pp. 16-17, with reference to MSS. Dublin CBL 155 (dating from 1478), Istanbul TKS H 676 (dated 902/1496-1497) and EH 1636 (dated 897/1492). **81** MS. Istanbul TKS H 676, dated 902/1496-1497 (see O. Aslanapa, 'The art of bookbinding', in B. Gray (ed.), *The arts of the book in Central Asia* [London/Paris, 1979], pl. XVII). Notwithstanding the information given in the text, the illustration shows the lower board with covering. **82** Gilt decoration over a black ground, instanced by the three bindings noted above, seems to have dropped out of fashion around the mid-sixteenth century; but the technique continued to be employed in Iran until the nineteenth, though only sporadically. Khalili, Robinson and Stanley (op. cit., p. 18) accept that it enjoyed more durable success in the Ottoman Empire in connection with the non-figurative repertoire. **83** Muzerelle, *Vocabulaire*, p. 184.

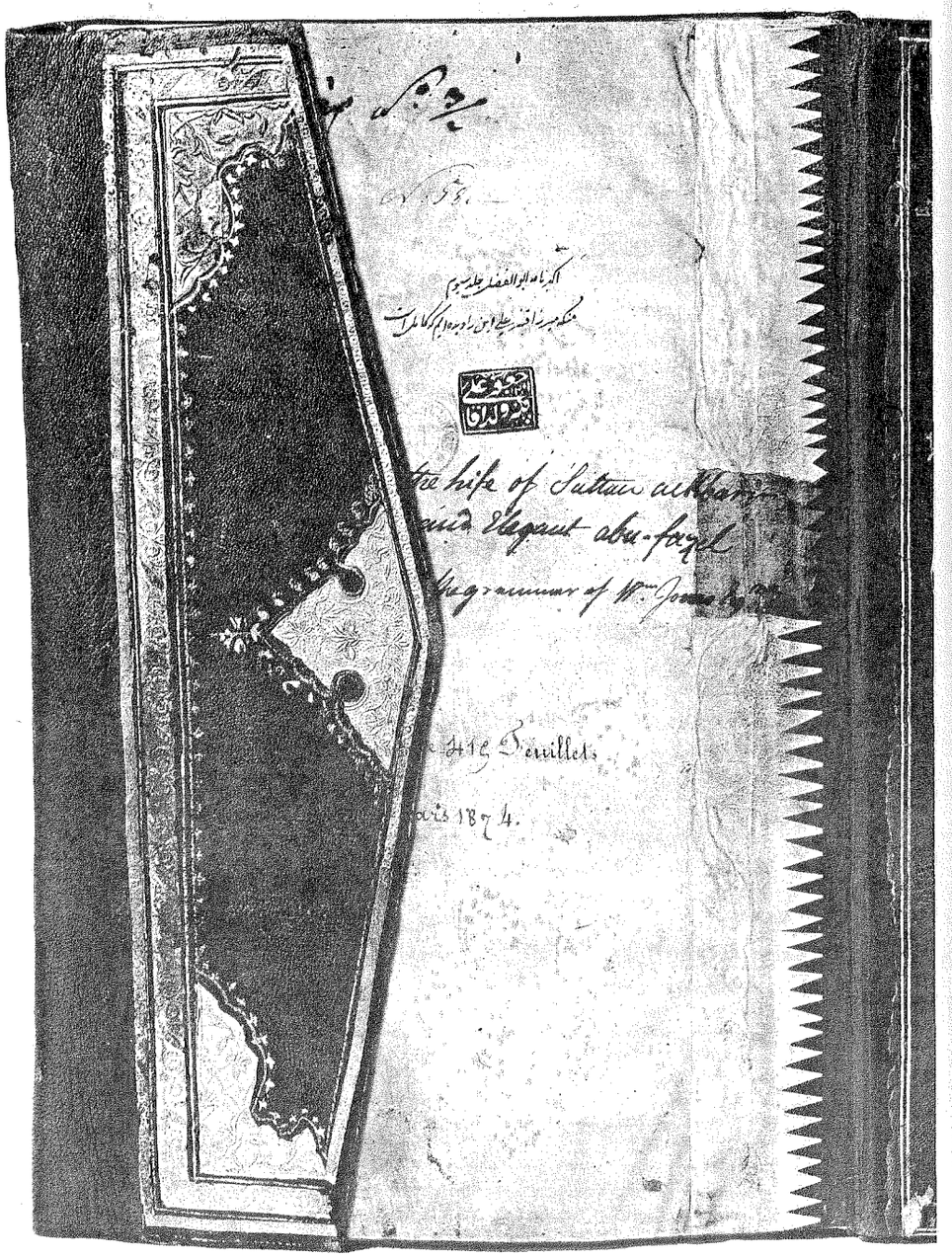
Parchment

Bindings-cum-cases or box-books were commonly lined with parchment as a doublure for the boards. In this instance, the leaf, or piece of leaf, stuck onto the wooden bookboard generally fulfils a dual role: as well as that of a normal lining, it also contributes to ensuring continuity between the binding proper and the text block since its edge forms an integral part of the first or last gathering. Occasionally, half a bifolium from the manuscript is thus co-opted as a doublure, though leaves from discards were also regularly re-used. In MS. Istanbul TIEM ŞE 2196, the parchment bore a Qur'ānic text that had not been even scraped clean before being pasted on to the wooden board.[84]

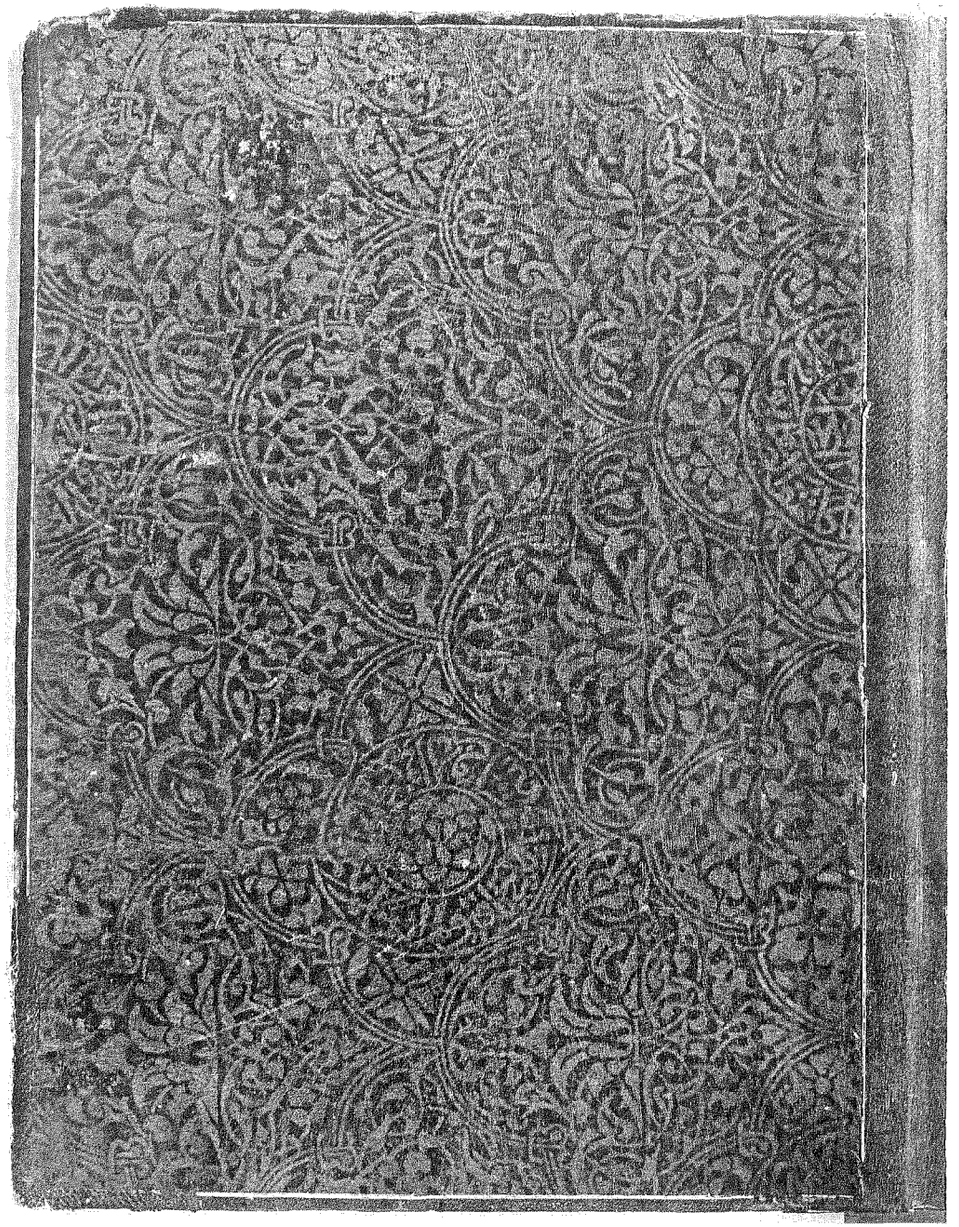
Leather

Very fine leathers might also be used to line the inner cover, and in this instance the edge overlaps slightly onto the endpaper to which the leather is glued. This edge is as often as not ornamentally trimmed (illus. 81). Examples from the ninth/fifteenth century show a liking for tobacco brown, whereas in the Ottoman era the predilection seems to have been for a classic red like that found, for example, on a Qur'ān in Paris (BNF arabe 5839).[85] Occasionally the leather is completely devoid of decoration; if, however, the craftsman or patron desired to ornament this zone, there was a range of methods at his disposal, including all those techniques employed for the outer boards,[86] together with leather gauffering (illus. 82). This latter technique is highly characteristic of mediaeval Islamic production; a repetitive pattern was applied to a very fine skin, generally of a brown colour, using a wooden stamp on which the required motif had been carved.[87] It seems that the matrix was lightly daubed with a stain in order to darken the hue of the ground to contrast with that of the motif.[88] The ornamentation is usually without text and exploits the potential of the arabesque;[89] often, the overall structure too is based on a strongly iterative design.[90] Texts do occur, though rather rarely: a volume of a Qur'ān bearing the signature of the craftsman (Paris BNF arabe 6041[91], illus. 82) can be cited, as can certain manuscripts at Bursa (Inebey K., Ulu Cami 315, 318, 324, and Genel 931[92]; all part of the same series) presenting a wide range of inscriptions: eulogies, signatures and ex-libris.

84 F. Déroche, 'Quelques reliures médiévales de provenance damascaine', *REI* 54 (1986), p. 89. See also Marçais and Poinssot, *Objets* 1, p. 65, note 4 (in particular binding no. 33, p. 104). **85** Déroche, *Cat.* I/2, pp. 63-64, no. 363. **86** Several examples are illustrated in Haldane, *Bookbindings*, p. 145, no. 133, p. 148, no. 135, as well as pp. 158-159, no. 148. **87** A notable exception is the binding at Chicago Or. Inst. A 12108, the doublure of which is in green-stained gauffered leather (Chicago 1981, pp. 164-166). **88** Chicago 1981, p. 66. **89** See for example Haldane, *Bookbindings*, p. 22, no. 1, pp. 24-25, no. 2, pp. 26-27, no. 3; Chicago 1981, pp.130-135, nos. 35-36, pp. 141-142, no. 41, p. 153, no. 48, p. 172, no. 58 and colour plate H, pp. 175-176, no. 61. **90** Chicago 1981, pp. 96-98, no. 9. **91** Déroche, *Cat.* I/2, p. 121, no. 522. **92** Raby and Tanındı, op. cit., pp. 120-125, no. 4.



81. Doublure with the edge, over f. 1, cut in a zigzag.
Paris, BNF suppl. persan 278 A, f. 1 and flap.



82. Doublure of embossed leather. MS. copied at Bust, Afghanistan, in 505/1112.
Paris, BNF arabe 6041 (back cover).

Paper

The methods by which books were forwarded, and more particularly the importance of the endpapers in ensuring that the final product remained robust, inevitably led to paper being favoured as the lining material for inner covers. Be it the same paper utilised for the gatherings or some special material, paper attained a level of popularity that never waned. In the Ottoman world, for example, marbled paper met with enduring success as doublure, while coloured papers with gold decoration also enjoyed a certain vogue. Sometimes, the use of paper was limited to a specific portion of the doublure: a case in point are filigree decorations executed in paper, glued on to a leaf of tinted paper and set in a space cut out of the leather for that purpose (illus. 83).

Textile

The earliest known examples of silk – green in colour[93] – for binding doublures appear in the collection at Kairouan; in the fifth/eleventh century, fabric was stretched across the parchment and wrapped around the entire inner cover.[94] This practice does not appear to have remained in fashion for long, and fabric seems to have been confined to a subsidiary role, as a ground for filigree work, for instance. Around the end of the ninth/fifteenth century, it reportedly gained renewed favour in the Ottoman Empire. Occasionally it was limited to the inner cover, but in several manuscripts both outer covering and inner lining are in textile – either one and the same fabric (as in MS. Istanbul TKS A 3296[95]) or two different materials (MS. Istanbul TKS A 3438[96]). An intriguing case is MS. Istanbul TKS R 880, dated 885/1480-1481, where the doublures are of silk with text headings.[97]

Lacquer

Like covers (see above), inner boards may also be decorated using this technique.

Stitching

It should be observed at the outset that research on stitching remains at an early stage. The relevant texts, however, seem to be at one in describing a type of link-stitch sewing in which a single length of thread serves to secure the entire volume. The gutter (or spinefold) of each gathering contains two sewing stations: each time the thread passing from one to the other within a gathering emerges, the bookbinder loops it over as it enters the preceding gathering, before inserting it into the corresponding sewing holes of the gathering immediately beneath it. As Bosch and Petherbridge have observed, this

93 Marçais and Poinssot, *Objets* 1, p. 142, no. 63 b; the pink silk appears on the inner cover lining. 94 Marçais and Poinssot, *Objets* 1, pp. 181, 183, 185, 186, etc. 95 Raby and Tanındı, op. cit., p. 150, no. 14, illus. p. 152. 96 Raby and Tanındı, op. cit., pp. 176-177, no. 28. 97 Raby and Tanındı, op. cit., pp. 180-181, no. 30.

83. Doublure in leather and paper. Paris, BNF persan 282 (back cover).

technique was practised regardless of the format and weight of the book concerned.[98] From that point of view, sewing at the headband was doubtless a welcome aid to solidity. Notwithstanding, one Persian text does mention sewing with two lengths of thread.[99]

Treatises recommend using a fine thread for sewing so as to minimise swell as it passes through the gatherings. This precaution was designed to reduce the effort required to level out the difference in thickness of the gatherings and eliminate all traces of shoulder at the joint. The obvious disadvantage lies in the fact that the thread is thus less tensile and frequently snaps.

The headband

In Western bookbinding, the headband is defined as 'a functional and/or ornamental band at the head and tail of a book between the sections and the spine covering [...]'.[100] Of course, in the present case there can be no tapes or slips to be taken into account since such elements were unknown in Oriental work (illus. 84): instead, the headband was built over a fine strip of leather or parchment laid flat along the head of the volume and not connected to the boards.[101] This strip was anchored primarily by threads of the same colour as that serving to sew the gathering, the bookbinder embroidering a chevron design in two colours of thread over a core.[102] This component is not purely decorative, however; the headband also improved the cohesion of the volume.

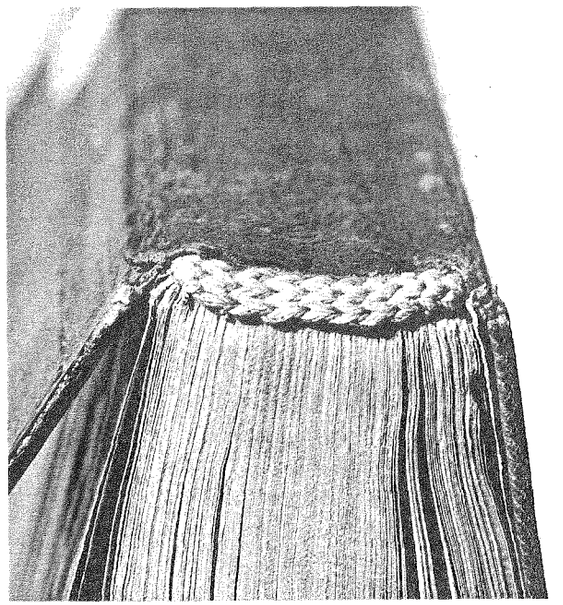
Cover decoration

Stamping

Stamping is far and away the most common decorative technique in bookbinding. For this procedure, the craftsman utilises tools on which whole or partial decorative designs are engraved in relief or intaglio and which are impressed on the surface of the leather either by blows with a mallet or else by means of a hand press.[103] When no gilding is applied with the strike such work

98 Chicago 1981, p. 46. 99 Cited by Y. Porter, *Peinture et arts du livre* (Paris/Tehran, 1992), p. 119. The text is not very clear: it might also be a form of link stitch for two gatherings (see for example Muzerelle, *Vocabulaire*, p. 180). 100 'Coloured threads embroidered around a core and sewn through the section to make up the difference between the top edge of the sections and the edges of the boards'; Roberts and Etherington, op. cit., p. 129, s.v. 'headband'. See also Muzerelle, *Vocabulaire*, p. 181, as well as the description given by al-Sufyānī, op. cit., pp. 17-18 (tr. Levey, op. cit., pp. 53-54). 101 The process followed in making certain early Qur'ānic bindings of Type I proves to have been slightly different (see above). 102 *Les Tranchefiles brodées* (Paris, 1989), pp. 86-89. See also Chicago 1981, pp. 53-54. 103 'A finishing tool, cut in brass, bearing figures or patterns in relief. Stamps range in design from a simple dot to the most intricate [...] designs [...]': Roberts and Etherington, op. cit., p. 245; s.v. 'stamp'; see also 'block-stamping', ibid.; Muzerelle, *Vocabulaire*, p. 198.

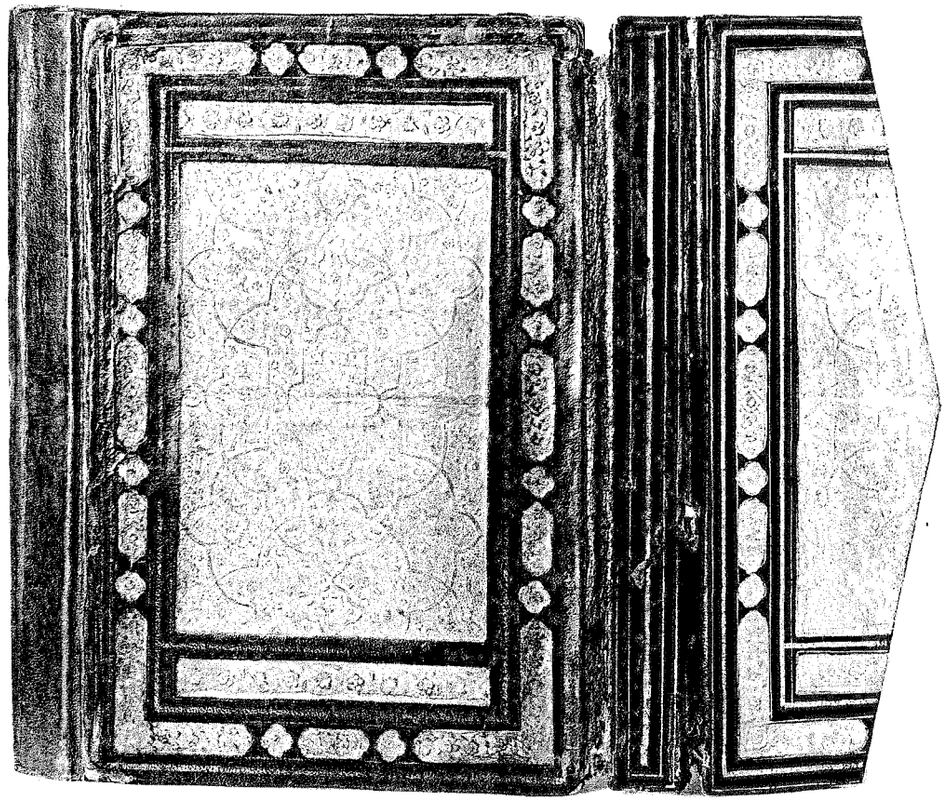
is known as 'blind-stamping'; the tool used by the craftsman may be heated, though as far as early bindings are concerned this remains a matter of debate.[104] Gilding (see below) was frequently applied to Eastern bookbindings, sometimes in conjunction with blind-stamping.



84. Eastern Islamic headband. Paris BnF arabe 4818 (detail).

In the Muslim world, tools utilised for stamping leather left imprints of variable dimensions, from small motifs[105] to large-format panels[106] (illus. 85 and 86). In the former case, the binder would use a combination of tools in the decoration, while the latter allowed him to decorate a large surface in one fell swoop. The use of small irons (*'petits fers'*) or panel stamps has implications as regards chronology and will be returned to below. According to Sakisian, the

104 Blind implies without gilding being directly applied. Dreibholz (op. cit., pp. 18-19) is of the opinion that the precision of the impression on binding C/6 in the Ṣan'ā' collection, datable to the third/ninth century, could only have been achieved by the use of heated tools. Al-Ishbīlī recommends heating the irons and then cooling them in fresh water: see Gacek, op. cit. (*MME* 5), p. 110. 105 See Muzerelle, *Vocabulaire*, p. 199. 106 See Roberts and Etherington, op. cit., p. 187.



85. Binding with large stamped gilded ornamentation. Paris, BNF Smith-Lesouëf 218 (back cover).

blocks used in Iran were initially made of a specially hardened leather, only being replaced much later by the metal blocks that can be seen in various collections.[107]

Once the use of larger stamps became widespread – by the second half of the ninth/fifteenth century – block-stamping was occasionally used in conjunction with preparations designed to improve the end result. Ottoman bookbinders increased the relief effects obtained with panel stamps on boards by

107 A. Sakisian, 'La reliure persane au XV^e siècle sous les Timourides', *Revue de l'art ancien et moderne* 66 (1934), p. 148; besides the few specimens of tools conserved in European museums (for example at the Victoria & Albert Museum, London, see Haldane, *Bookbindings*, pp.12-15, fig.9-17, or at the Linden Museum, Stuttgart), the conservation department of the Süleymaniye Library – and most probably others – possess sets of old tools that it would be instructive to examine more closely. See also CHICAGO 1981, p. 70, fig. 11 and p. 72, fig. 13.

86. Binding with large stamped gilded ornamentation featuring animals. BNF suppl. persan 985 (back cover).

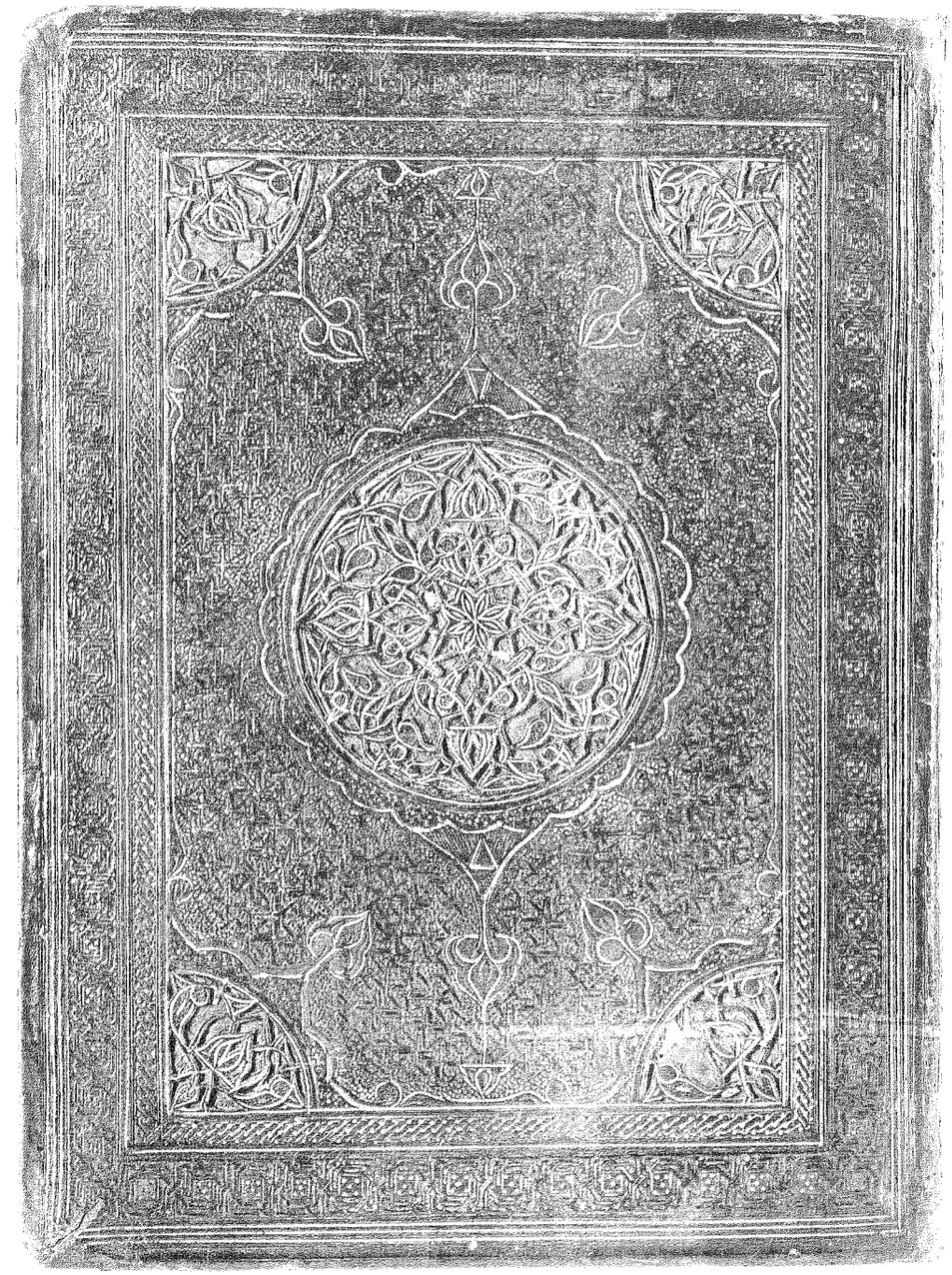
recessing the zone assigned to the motif (see above); the bookbinder laid down a generous coating of paste before stamping the leather on the cover, thereby accentuating the relief.[108] Another process was to obtain contrast effects by applying to the site of the decoration a thin piece of leather or paper cut to the size and shape of the block but of a different hue from the rest of the binding.

Though the title or number of the volume – when the work comprised more than one – may appear on the binding, it is more customarily to be found on the edge. On particularly well-finished codices, these elements are sometimes stamped. The various parts of three multi-volume Maghribī Qur'āns, one published some time ago by Prosper Ricard,[109] the second now in Paris (BNF arabe 389-392), and the third in Jerusalem (al-Ḥaram al-Sharīf Islamic Museum *Rab'a* no. 3)[110] possess a cartouche on the fore-edge flap bearing the volume number spelt out (*al-awwal, al-thānī*, etc.). Similarly, Qur'āns are very often inscribed with a quotation from Sūra LVI: 79,[111] together with lengthier texts to which further reference will be made below.

Cut-work and filigree

The technique of filigree has long been known.[112] It involves creating a decoration by cutting leather into a pattern; the resulting lattice can be set off against a coloured fabric or paper insert (illus. 87).[113] Numerous Mamluk bookbindings illustrate refinements of this process: on one Qur'ānic binding (Paris BNF arabe 5845), the central motif and corner-pieces on the covers were executed in this manner, the decoration emerging from a green silk ground.[114] Paper was also employed in cut-out filigree especially for decorating inner covers, these being less exposed to rubbing and hence more suitable for fragile materials (illus. 83).[115]

108 Sakisian, op. cit. (51, 1927), p. 278, note 5; Raby and Tanındı, op. cit., p. 216. 109 'Reliures marocaines du XIII[e] siècle: notes sur des spécimens d'époque et de tradition almohades', *Hespéris* 17 (1933), pp. 109-126; to the volumes noted at Marrakesh by Ricard, one should add vol. VI at the Royal Library in Rabat (Auction sale, M[e] Le Blanc, Paris, Feb. 26 1990; lot no. 80), vol. VII, MS. London BL Or. 13192 (LONDON 1976, p. 89, no. 158) and vol. VIII, Genoa Collezione Bruschettini (Auction sale, M[e] Couturier et Nicolay, Paris, June 27 1975, lot no. 156). 110 Kh. Salameh, *The Qur'ân manuscripts in the al-Haram al-Sharif Islamic Museum, Jerusalem* (Reading/Paris, 2001), p. 66-73. 111 See CHICAGO 1981, p. 207, no. 82 for an old example. 112 Limiting discussion to the domain of the book, the oldest example appears to be a fragment from a binding found in Central Asia, at Qočo; the fragment, published by A. von Le Coq, dates from the eighth or ninth century CE; it is reproduced in H.-J. Klimkeit, *Manichæan art and architecture* [Iconography of religions, 20] (Leiden, 1982), p. 50 and fig. 56. A Coptic origin is frequently suggested (see e.g. CHICAGO 1981, p. 69). 113 Haldane, *Bookbindings*, pp. 111-113, no. 107. The illustration repays examination, as it displays the various constituents of a late (eighteenth or nineteenth century) Iranian binding stripped down and photographed during a program of restoration. 114 Déroche, *Cat.* I/2, pp. 54-55, no. 346 and pl. XI A. 115 This is still truer in the Persian and Ottoman worlds, where the leather employed for coverings was finer. As Sakisian observed long ago – op. cit. (1934), p. 150 – this meant that filigree work was (with rare exceptions, such as MS. Istanbul TIEM 3282, copied in 1435 at Shiraz) confined for the most part to the inner covers.



87. Leather cut-work over textile. Egypt, end of the 8th/14th century. Paris, BNF arabe 5845 (front cover).

Mosaic ('onlay')[116] binding is another technique involving cut-work decoration: as far as the present writer knows, only one Islamic specimen has been recorded.[117]

Other decorative techniques

Incising

In the past, the question of whether Islamic craftsmen were acquainted with the technique of incising (or engraving) bindings[118] aroused lively debate: in a passage on the issue, Sakisian recounted that L. Gruel had 'asserted categorically that incised Muslim bookbindings simply did not exist'.[119] Artisans in the Islamic world were, however, aware of the technique of incising a leather surface with a sharp point. This method, attested in bookbindings from the third/ninth and fourth/tenth centuries, seems to have been used solely for scoring fine parallel lines built up into a ground or infilling an element of the composition.[120] In a few examples, two incised network patterns overlap and create a design of small lozenge-shapes. The technique might perhaps be compared to a later method in which the ground of the ornament was densely dot-punched, and then either gilded or left blind.[121]

116 'A method of decorating a leather binding by means of thin, variously colored pieces of leather, usually of a different color than the covering leather, which are attached by means of paste [...] to the surface of the covering leather, thus giving it a kind of mosaic effect': Roberts and Etherington, p. 156, s.v. 'onlay'; see also 'inlay'; see Muzerelle, *Vocabulaire*, p. 198, s.v. '[reliures] mosaïquées'. **117** *Arts d'Orient*, F. de Ricqlès, auction sales, April 14-15 1997, lot 660. The binding, which the author has not been able to examine, belongs to a manuscript described as Ottoman and from the first half of the eighteenth century CE. **118** For incised leather, see H. Osborne (ed.), *The Oxford Companion to the Decorative Arts* (Oxford, 1975), pp. 542-543 and Muzerelle, *Vocabulaire*, p. 198, s.v. 'cuir incisé'. **119** Sakisian, op. cit. (1934), p. 149. **120** This has been noted at Kairouan (Marçais and Poinssot, *Objets* 1, p. 81, note 1), as well as in connection with bindings probably originally from Damascus (Déroche, op. cit. [*REI* 54], p. 91: MS. Istanbul TIEM ŞE 2772). The technique persisted for some time: see e.g. MS. Paris BNF arabe 7263 (Richard, PARIS 1997, p. 37, no. 1 b and pl. p. 19) and another in a private collection (F. Déroche, 'Une reliure du v^{e}/xi^{e} s.', *NMMO* IV/1 [1995], p. 4 and pl. IV a). Jean Vezin has remarked on a possible parallel with the lower cover of the binding to a St John's Gospel from the tomb of St Cuthbert. In this instance, the scoring is filled with pigment; see T. J. Brown, ed., *The Stonylurst Gospel of Saint John* (Oxford, 1969), p. 14. Other mediaeval European examples include MSS. Fulda Hessische Landesbibliothek, Cod. Bonifatianus 3, eighth century CE, and Munich BSB c.l.m. 6294, dating from the second half of the tenth century; see J. Vezin, 'Les plus anciennes reliures de cuir estampé dans le domaine latin', in S. Krämer and M. Bernhard (eds.), *Scire litteras: Forschungen zum mittelalterlichen Geistesleben*, [Bayerische Akademie der Wissenschaften, Phil.-hist. Klasse, Abhandl., Neue Folge, 99] (Munich, 1988), p. 394, and notes 11 and 14 for bibliography. **121** Raby and Tanındı, op. cit., pp. 113 and 116 (the ground of the ovoid on the upper cover and that in the envelope flap decoration of MS. Istanbul TKS R 1726, dated 838/1435) and p. 189 (dotted gilt ground on the lower cover of MS. Istanbul TIEM 2031, dated 881/1477).

Nevertheless, there are Yemeni bookbindings with all-over decoration that present analogies with what specialists in Western bookbinding define as 'incising'.[122] Future research on this topic, particularly as regards techniques, will help clarify the question.

Relief decoration using cord

The following highly individual technique of applying ornamentation in relief is attested in a number of early bindings. Designs were applied to the covers by setting (or perhaps pasting) cords on the wooden boards[123] along lightly scored lines in the desired pattern. With the strings in place, the binder would then stretch a piece of damp leather over the boards. As it dried out, the leather shrank and absorbed the design formed by the cords beneath it. The ornamentation could probably be made to stand out by using a tool to emphasise the relief and flatten the remainder of the surface,[124] during burnishing, for example. First known to scholars from the early Kairouan bookbindings, this technique seems to have spread quite widely through the lands of Islam, and was also employed by Christian binders.[125]

Embroidery work

Two bindings in London (Victoria & Albert Museum 1945 & 1945A-1981) and also that of MS. Istanbul Üniversite Kütüphanesi A. 6570 represent surviving examples of a technique in which the leather served as a support for embroidered designs,[126] as distinct from the needlework-on-fabric method described above.

Gilding and burnishing

Gilding

Gilt was widely used to embellish bookbinding decorations (illus. 85 to 87). A series of Maghribī bindings may well provide a benchmark for the date when it

122 See e.g. Weisweiler, *Bucheinband*, fig. 19 (MS. Berlin SB Glaser 195, copied in 991/1583), Duda, *Isl. Hss.* 2/1, p. 275 and fig. 237 (MS. Vienna ÖNB Cod. Gl. 60, copied in 1043/1634), and U. Dreibholz ('Unusual and not-so-usual decorations on Yemeni bindings', *Manuscripta Orientalia* 9/4 [2003], esp. pp. 37-39). **123** Binding no. 126 at Kairouan is the sole evidence that this technique was also used on pasteboards: see Marçais and Poinssot, *Objets* 1, p. 243 and pl. XXVII b. **124** Marçais and Poinssot, *Objets* 1, p. 21. **125** See the binding of a Syriac MS., Dublin CBL 2, dated to the eighth or ninth century CE (B. Van Regemorter, *Some Oriental bookbindings in the Chester Beatty Library* [Dublin, 1961], pp. 7-8 and 11, pl. 3 b). Note the comparison Van Regemorter makes between Kairouan bindings and that of St Cuthbert; 'Le Codex relié depuis son origine jusqu'au haut Moyen-Âge', *Le Moyen-Âge* 61 (1955), p. 25-26; for a recent account of the binding, see Brown (ed.), op. cit., p. 13-23. **126** Haldane, *Bookbindings*, pp. 170-171, no. 159 (for the example in London) and BERLIN 1988, p. 102, no. 29. A further instance is MS. London N. D. Khalili Collection QUR 271 (see GENEVA 1995, pp. 66-67, no. 28).

first appeared,[127] though more extensive research is necessary to prove that the technique indeed first entered the Islamic world in the seventh/thirteenth century. Many of the operations undertaken by Muslim binders remain shrouded in mystery. For instance, a recent series of tests performed on the materials concerned has revealed the presence of mercury in the gilding on the binding of a Qur'ān in Paris (BNF arabe 5844). This is likely to be a gold amalgam whose use in leather gilding was unknown before this specimen.[128]

Blue was also employed by binders to enhance decorations, though in smaller areas than gold, being set in fillets outlining the motifs.[129] Analysis shows that in the binding of the manuscript just referred to (BNF arabe 5844), the blue colour was obtained from a mixture of lapis lazuli and azurite, a composition analogous to that observed in the illuminations of the same manuscript.[130]

Burnishing

Sakisian accords considerable importance to this finishing operation.[131] A deep, brilliant sheen was imparted to objects by rubbing them with a burnishing tool of agate or metal, which eliminated surface irregularities.

Lacquer

Lacquer was used on various kinds of objects, including bookbindings: the decoration, for which various techniques were available, was painted on and then coated with a thick, shiny varnish (illus. 51).[132]

Paint

The decoration was sometimes directly painted on the leather; this technique is different from lacquer and easier to apply (illus. 88).[133]

127 Ricard, op. cit.; the author notes the presence of silver in the decoration of certain bindings. Shelfmarks for the various volumes are indicated above. Vezin observes, nevertheless, that Western bindings from the early Middle Ages were sometimes gilded. Examples are MSS. Fulda, Hessische Landesbibliothek Cod. Bonifatianus 3, bound prior to 854 CE, where the scoring is charged with gold and silver powder; and MS. Munich BSB c.l.m. 6294, perhaps bound at Toul in the second half of the tenth century CE, in which the tooling is gilded with liquid gold. 128 See Chapter 'Instruments and preparations used in book production'. 129 Weisweiler notes this usage on bindings which in his view date from the eighth/thirteenth century: see *Bucheinband*, p. 171, no. 329, MS. Istanbul Süleymaniye, Şehit Ali 1740, from 686/1287. 130 See Chapter 'Instruments and preparations used in book production'. 131 Sakisian, op. cit. (1934), p. 149; also the same author, op. cit. (1927), p. 278, note 5. See also Chapter 'Instruments and preparations used in book production'. 132 The problems arising from the use of the term 'lacquer' are discussed in the opening pages of the catalogue of lacquered objects in the Khalili Collection of Islamic Art (Khalili, Robinson and Stanley, op. cit., pp. 10-11). 133 *L'Art du livre arabe, du manuscrit au livre d'artiste* (Paris, 2001), p. 160-1, nº 122 (MS.Paris, BNF arabe 7219). P. Ricard (op. cit., p. 110, n. 3) mentions a binding decorated with this technique which might be dated to the seventh-eighth/ thirteenth-fourteenth centuries; it was then kept in the Batha Museum in Fez.

88. Ottoman binding with painted decoration. London BL Or. 15960.

Types of bookbinding and their decoration

Several studies concerning the history of bookbinding in the Islamic world have already been published. Texts focusing on a specific period or defined region, hand in hand with more general overviews, can be helpful guides for codicologists in their examination of manuscript covers. The following outline is modest in its goals, intending above all to provide a succinct account of the main aspects of the arts of binding, laying the stress on the possibility – indeed, the necessity – of fully classifying book decorations and of studying closely the

tools used by craftsmen. The ornamentation of items of more restricted use (textiles, precious materials, lacquer, etc.) cannot be treated in detail in this discussion. Moreover, very localised traditions, such as those which evolved in Subsaharan Africa and South Asia, will only be touched on briefly in the paragraphs below.[134]

Type I

Structure

This first Type encompasses the oldest surviving examples of Islamic bookbinding. Their format, more commonly oblong than vertical and their box-like structure, are characteristic (illus. 79). In the closed position, these bookbindings look like a casket or box – a resemblance accentuated by the fastening system by which they are secured, comprising a thin leather strap fixed to the lower board and twisted round a peg set into the upper cover. These were probably rather different from more everyday contemporary bookbindings.[135] As far as can be judged,[136] they were designed for Qur'ānic manuscripts; this would explain the peculiar form that bespeaks above all else a desire to protect the text within.

Spines were highly susceptible to accidental damage: indeed, the weight of the wooden boards alone would have warranted some secure means of fixing text block to binding, though this was practically never provided. At Kairouan and Damascus alike, cohesion between these two elements seems often to have been maintained by simply pasting a piece of parchment forming part of the gatherings to the inner boards: this might be either a conjugate of the outermost bifolium of the first or last gathering or a piece (variable in size) ending in a stub sewn to the outside of one of the terminal or initial gatherings,[137] or else pasted to the inner side of the first or last leaf.[138] In many cases at Kairouan, Georges Marçais and Louis Poinssot observed holes in the midpoint of the boards, near the spine, in which strands of thread could still be seen. They interpreted these holes as evidence of a technique designed to fix the book-block to the binding by securing the boards with the sewing thread.[139]

Once bound, the gatherings were sewn onto a parchment lining or cloth scrim concealed behind the spine. Though it had the advantage of being easy to make, the system had the drawback of being inherently fragile, and the

134 For the former group, see the bibliographical information in note 26 above. 135 Surviving evidence from this period is extremely rare: the binding of the papyrus codex of Ibn Wahb has been referred to above (see note 34). As was noted above, the inlaid wooden plaque in the Museum für islamische Kunst in Berlin cannot have been a bookbinding. 136 A substantial proportion of these bookbindings are no longer affixed to the manuscripts they once protected. For this reason firm conclusions are impossible. 137 Arnold and Grohmann, op. cit., p. 46; Marçais and Poinssot, *Objets* 1, pp. 19-20; Déroche, op. cit. (*REI* 54), p. 93. 138 The latter method is recorded by Marçais and Poinssot, *Objets* 1, p. 19. 139 Marçais and Poinssot, *Objets* 1, pp. 18-19 and figs. 3 a, b, and c.

stresses and strains applied to the poorly reinforced spine of a manuscript soon had the better of it. This fragility explains the large number of spines that required re-backing, even at an early date.[140]

The headband was sewn with coloured thread;[141] a rolled-up piece of leather or parchment embroidered with a fishbone or chevron pattern was secured by a length of thread passing through the gutter of the gathering in a hole near the edge of the leaves. In Kairouan, two distinct methods of fixing the ends of the headband were in use. The first depended on a groove cut into the edge of the board; the threads securing the headband were apparently slipped through a 'hole pierced in the corner [of the latter]', though the diagram as published is not particularly helpful.[142] In the second case, the groove was sawn across the outer face of the board in axis with a line bisecting the corner and terminating in a hole running into the board itself, into which the bookbinder would insert the end of the headband, passing it through to the other side and glueing it to the inside of the board.[143] According to traditional oriental practice, manuscripts were normally stocked flat. Occasionally, bosses were set on to the boards to protect them from the effects of rubbing to which this method of storage inevitably exposed them.[144]

Decoration

The boards of surviving bindings-cum-boxes seem always to have been covered: in cases where the leather covering has vanished, the wood preserves traces of the stamped decoration that it once bore. It is true that the leather could be left free of all adornment: it is not inconceivable, therefore, that some day bare boards might be discovered which bear no trace of decoration and in that case it may prove impossible to tell whether they were originally dressed with leather or not.[145]

At this period, the bookbinder had at his disposal the two decorative techniques outlined above. The less common, but undoubtedly more original, option was that of relief decoration 'on cords' (see above). Using this method – attested by specimens in the collection at Kairouan,[146] as well as by others originating in Syria[147] – binders created plain linear ornaments. Nonetheless,

140 E.g. MSS. Istanbul TIEM ŞE 23 and 2196 (Déroche, op. cit. [*REI* 54], pp. 86 and 89). Marçais and Poinssot (*Objets* 1, p. 16) appear to be of the opinion that occasionally three pieces of leather were used for bindings at the outset; in our view these are in fact the result of restoration work at an early stage. 141 This seems to be the rule, stitching with ordinary thread being limited to clumsy restorations (Marçais and Poinssot, *Objets* 1, p. 20). 142 Ibid.; also figs. 3 d and e. 143 Ibid. 144 Déroche, op. cit. (*REI* 54), pp. 88-89. 145 Two bindings recorded in the Biblioteca Ambrosiana in Milan may in fact be isolated examples of work with unadorned boards (see E. Graffini, loc. cit.). It has unfortunately not proved possible to examine these manuscripts to determine whether they really represent original plain board bindings or, less interestingly, the disappearance of a covering followed by limited restoration work. 146 Marçais and Poinssot, *Objets* 1, pp. 21-22 and 228-243, pls. XXVI to XXVIII. 147 Déroche, op. cit. (*REI* 54), p. 87 and fig. 3. This discovery is to be seen in conjunction with the binding of a Syriac MS., Dublin CBL 2, published by B. Van Regemorter, op. cit. (1961), pp. 7-8 and 11, pl. 3 b.

one cover found in Kairouan demonstrates that craftsmen could occasionally produce more complex compositions that covered the entire surface of the sides in a satisfactory manner.[148]

The majority of bookbindings, however, were decorated by stamping. It was not unknown for a bookbinder to use no more than three or four tools to compose a complete decoration; it may well have been that these were the only ones available. In the third/ninth and fourth/tenth centuries, the irons employed are characteristically limited in number and lack sophistication. The inventory drawn up by Marçais and Poinssot shows that they came in a series of basic shapes[149] and that it was in combination – particularly with the use of special types of unit tools – that complex effects might be obtained.

Certain bookbindings are of remarkably modest appearance, with no decoration at all or simply a few fillets that the bookbinder traced out with a folder. The same tool was also used sporadically to lightly lay in the main outlines of the decoration of a central panel before stamping it with the irons.[150] However, carefully executed bindings suggest that there was a preference for ornamenting the whole board. This ambition was only partly fulfilled by one approach found in some bindings from Kairouan[151] and Ṣan'ā'[152] where pious invocations cover the area somewhat irregularly. In contrast, two other methods successfully fill an entire cover. The first involves extending a pattern across an area bounded by a generally substantial border design;[153] in the second, the bookbinder stamps a central ornament onto a field of modest size.[154]

As well as the boards, the protective walls of cases might also be embellished. In the majority of preserved examples, the narrow surface limited decoration to a sequence of fillets lying perpendicular to the boards, at times grouped in twos or threes.[155] On the leather rim protecting the short side of a manuscript in Cairo (Dār al-Kutub *Maṣāḥif* 188), the volume number has been embroidered with a silk thread,[156] though it is hard to determine with certainty whether the inscription is actually contemporary with the binding. With thicker manuscripts, the decoration of the side walls might become more complex; for instance, three bookbindings or fragments thereof discovered at Kairouan,[157]

148 Marçais and Poinssot, *Objets* 1, pp. 230-233 and pl. XXVI. In fact this specimen proves to consist of a cover and two fragments. The Tunisian collection includes other less accomplished examples, though these too demonstrate a desire to cover the entire field. 149 Marçais and Poinssot, *Objets* 1, pp. 322-362 and pls. XLVIII-LI. This inventory encompasses more recent tools as well as historic specimens. 150 This observation is also valid for an earlier period (Marçais and Poinssot, *Objets* 1, p. 20) as well as for more recent bindings (e.g. London Victoria & Albert Museum 366/29-1888, dating from the fourteenth or fifteenth century CE, in Haldane, *Bookbindings*, p. 29, no. 5). 151 Marçais and Poinssot, *Objets* 1, pp. 62-69 and pl. XV. 152 Dreibholz, op. cit., pp. 22-28, fig. 6-7. 153 Marçais and Poinssot, *Objets* 1, pls. I-XIV and XVI-XXIV. 154 Marçais and Poinssot, *Objets* 1, pl. XXIX. 155 Marçais and Poinssot, *Objets* 1, p. 125, no. 54, pl. XIV (see also nos. 40 and 75 A, pls. VIII a and XLI). 156 Marçais and Poinssot, *Objets* 1, p. 48 and fig. 14. The binding is described by Grohmann though he did not record this detail; Arnold and Grohmann, op. cit., pp. 45-46. 157 Marçais and Poinssot, *Objets* 1, pp. 125-126 (no. 54) and pl. XIV.

Ṣan'ā'[158] and Damascus[159] – the two latter examples being later in date – demonstrate that the flexible surface could be embellished in accordance with principles similar to those governing decoration on boards.

The decorative principles applying to Type I bindings did not vanish at the same time as the type: early examples of Type II (fifth/eleventh century) show that decoration with repeated strikes of a hand tool[160] persisted and that, more generally, bookbinders continued decoratively stamping the entire surface of covers.[161]

Type II

The second type of binding is undeniably the most widespread and best-known in the Islamic world, to such an extent that it has become the archetype. As explained above, it incorporates two characteristic elements traditionally designated globally as the 'fore-edge flap' – a continuation of the lower cover, comprising the fore-edge flap properly speaking together with the 'envelope flap' (or 'tongue-flap'), ordinarily an irregular pentagon in shape (illus. 78). When the volume is closed, the fore-edge flap conceals the fore-edge gutter while the envelope flap folds either over or under the upper cover. Book covers of this kind are commonly known as '(fore-edge) flap bindings'. Research shows that the hinges between the various components allowing their mobility are subjected to considerable wear and tear, to the point that one or more of them may have given way: depending on the circumstances, one or other of the covers, and a part of or even the whole fore-edge flap, may have been repaired more or less skilfully in the past, or may have simply been lost. No less than the spine, the fore-edge and envelope flaps should be meticulously examined for traces of splitting or repair.

Particular features

The early date of Type II is amply demonstrated by the numerous Coptic bindings closely associated with it, which can be attributed to a period before the appearance of Islam.[162] These latter bookbindings differ from Type II in

158 Dreibholz, op. cit., pp. 28-31, fig. 12-13. 159 Unpublished. 160 F. Déroche, 'Une reliure du v^e^/xi^e^ siècle', *NMMO* IV/1 (June 1995), pp. 3-4 and pls. III and IV b. The same applies to the binding of MS. Paris BNF arabe 7263 (Richard, Paris 1997, p. 37, and reproduced pp. 19-20). 161 Ibid. The binding of MSS. Dublin CBL 1434 (James, *Q. and B.*, p. 28, no. 14; Chicago 1981, p. 119) and London, N. D. Khalili Collection, QUR 150 (Déroche, *Abbasid Tradition*, p. 170) illustrate the persistence of the technique of the repeated use of the same tool to decorate an entire cover. 162 B. Van Regemorter, 'La reliure des manuscrits gnostiques découverts à Nag Hammadi', *Scriptorium*, 14, 1960, pp. 225-234; J. Doresse, op. cit., pp. 27-49; *The Facsimile edition of the Nag Hammadi Codices*, vol. I, Introduction (Leiden, 1984), p. 78. According to the dating of the manuscripts themselves, the bindings can be dated between the end of the third and the beginning of the fifth century; only three out of eleven have no flap.

the classic form, however, in that the envelope-flap is unquestionably intended to fold *over* the upper cover. In fact, a strap running from the tip of the flap and wound several times over the manuscript keeps it shut.[163] This option was by no means totally unfamiliar to the Islamic world: a few survivors from the fourth/tenth and fifth/eleventh centuries still bear, on the pointed end of the envelope-flap, traces of a strap that has long since vanished but whose purpose is unmistakable.[164] 'Sudanese' bookbindings, for their part, incorporate a tongue flap of ogival form whose large overall dimensions mean that it covers the whole volume (illus. 89 and 90).[165]

The oldest known binding of an Arabic literary manuscript would seem to be that belonging to a volume in Cairo (Dār al-Kutub *Ḥadīth* 2123[166]) which has not yet been the object of thorough, still less of a published, study. Grohmann, who was supplied with a photograph, states that it showed 'on one side the remains of an additional three-cornered piece'.[167] He refrained from further comment on the position this element might have adopted when the volume was closed.[168]

In the majority of cases, the two flat covers of a binding both display the same decoration, but it is not unusual at an early period to find upper covers decorated very differently from the lower ones. Weisweiler maintains that several manuscripts, for example Berlin SB or. quart. 1706 (dated 593/1197)[169] and SB or. fol. 4182 (from 787/1385),[170] whose bindings he feels are contemporary with the copy, featured this very difference. That this tendency is by no means confined to volumes of mediocre craftsmanship is demonstrated by the covers of MS. Istanbul TKS R 1726, executed for the library of Sultan Murad II in 838/1435.[171]

Principles of decoration

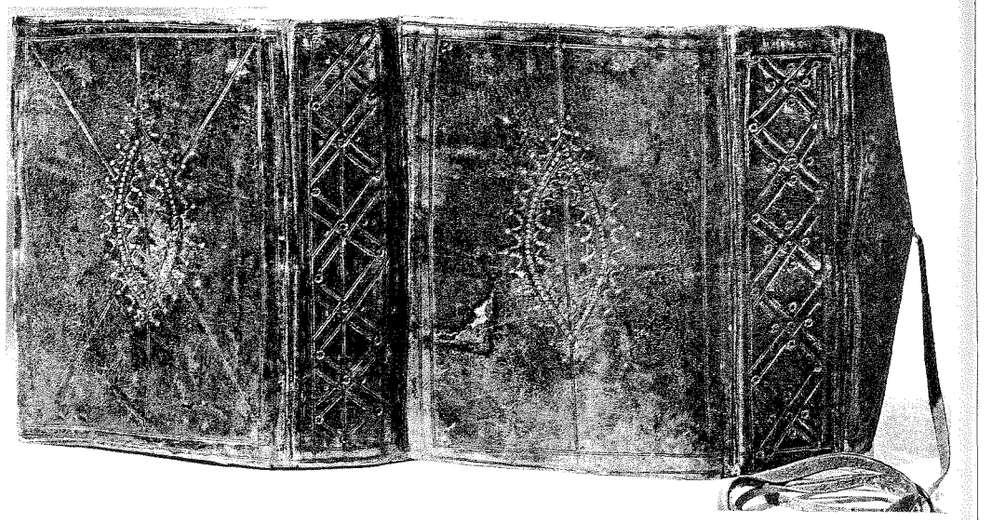
Stamping the covers, in keeping with the principles elaborated for bindings of Type I, persisted for a time in those of Type II. New styles gradually arose, however, though from a technical point of view bookbinders continued to work with irons of small size employed in combination, laying in complex designs just as they had done in the past. These decorations are quite different from subsequent ones produced by the use of stamps of various dimensions.

Be that as it may, two general tendencies as to composition have been discerned: on the one hand, there are decorations that cover the entire available space, while others rely on a contrast between an element stamped in the centre

163 Moreover, the form of the flap is sometimes triangular and sometimes rectangular. **164** Déroche, op. cit. (*NMMO*), p. 4 and pl. IV a; a striking similarity exists between this binding and those described by Van Regemorter (see note above) in the way the thong is held in place by passing through a series of little notches. **165** See MS. Paris BNF arabe 5035 (Déroche, *Cat.* I/2, pp. 50-51, no. 340). **166** See David-Weill, loc. cit. **167** Arnold and Grohman, op. cit., p. 112, n. 202. **168** On this question, see below. **169** Weisweiler, *Bucheinband*, p. 87 and fig. 30. **170** Op. cit., p. 83. **171** Raby and Tanındı, op. cit., pp. 112-115.

of the board and a field left plain. In this second category, furthermore, the composition may be completed by other ornaments around the perimeter (pendants, corner-pieces, and edgings of variable thickness); such auxiliaries will not be addressed in the following survey.

89. Sudanese binding. Paris BNF arabe 5035 (front cover and flap).



90. Sudanese binding. Paris BNF arabe 7226.

Classification of mediaeval Islamic bookbindings

In a text published in 1962, Max Weisweiler proposed a typology for binding decorations. Unfortunately, though it went much further than any previous research,[172] this oft-cited work has to date been inadequately or insufficiently utilised. There follows below a recapitulation of the chief categories of Weisweiler's proposed classification which also highlights the existence of decorative schemes of which that author was not aware at the time but which can be seen as fitting into his classification system. On the other hand, no account will be taken of the wide range of the tools presented in Weisweiler's book[173]: save for the Kairouan bookbindings published by Marçais and Poinssot,[174] no large-scale study has been devoted to this question, though its relevance to issues of dating, for example, is self-evident. Sadly, Weisweiler's description of a hundred or so tools is of less practical utility owing to a lack of illustrations.

As Gulnar Bosch has suggested, an initial distinction can be drawn between bookbindings in which the decoration covers an entire panel and those in which it is confined to a central motif. The first case (Types W 1 to W 16)[175], apparently more often produced by first-rate craftsmen, is represented by a relatively small surviving group of specimens. As the compositions are

172 Earlier, G. Bosch, in 'Islamic Bookbindings, Twelfth to Seventeenth Centuries', doctoral thesis (University of Chicago, 1952), had proposed a classification system based on less extensive material; the 1981 exhibition in Chicago re-used Bosch's parameters (Chicago 1981, p. 85). **173** Weisweiler, *Bucheinband*, pp. 61-78. **174** Marçais and Poinssot, *Objets* 1, pp. 322-362 and pls. XLVIII-LI. **175** W = Weisweiler Type.

extremely involved, it is more difficult to identify and classify them, and in this account preference has been given to a more detailed discussion of the more common types of decoration.

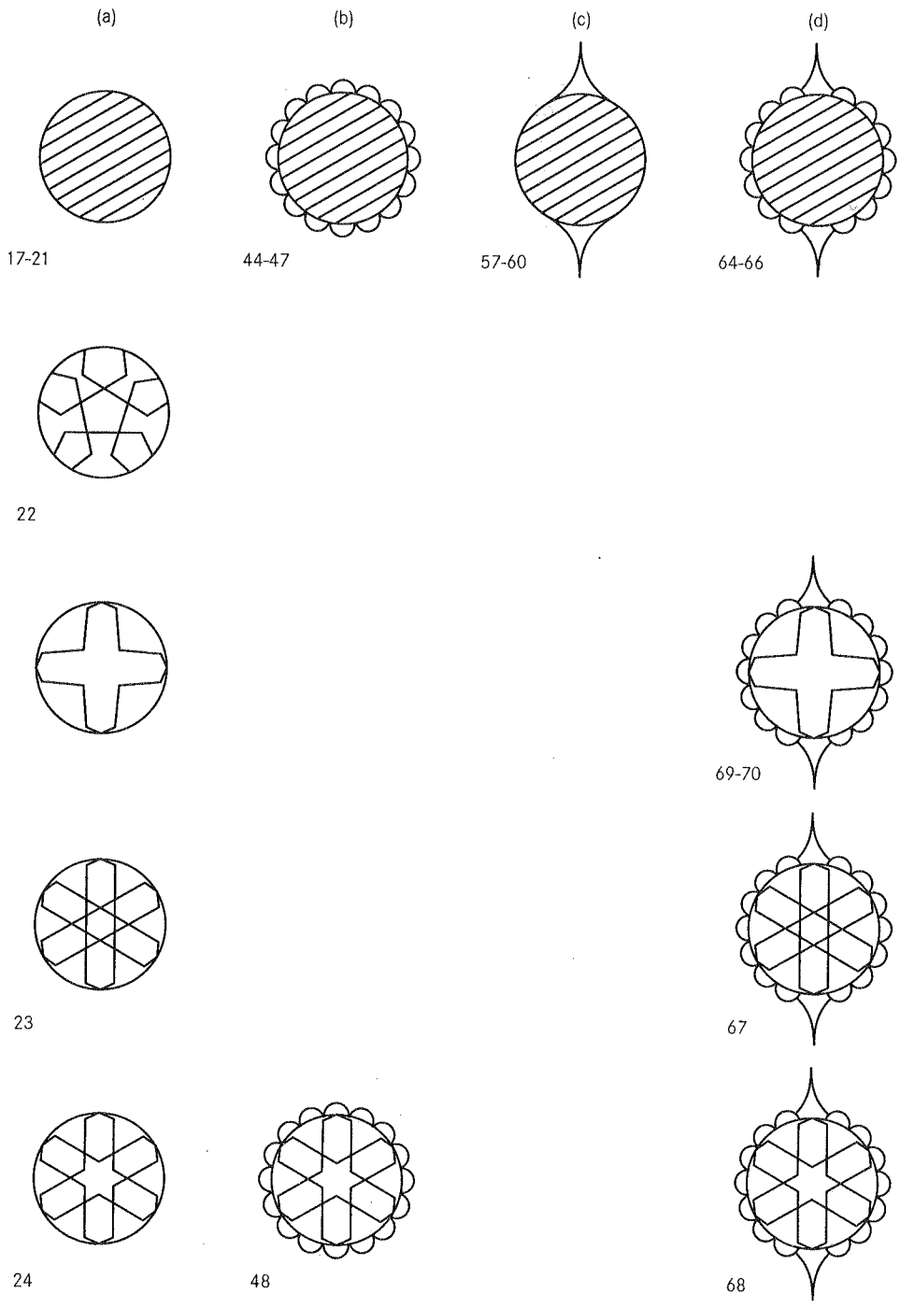
Weisweiler suggested dividing these types into five categories: circular decorations, decorations based on the circle, almond shapes or flattened ovoids, stars, and decorations composed from repeated impression with a tool; in turn, the four first categories can be split into four subdivisions (illus. 91, 92, 93).

Circular decorations

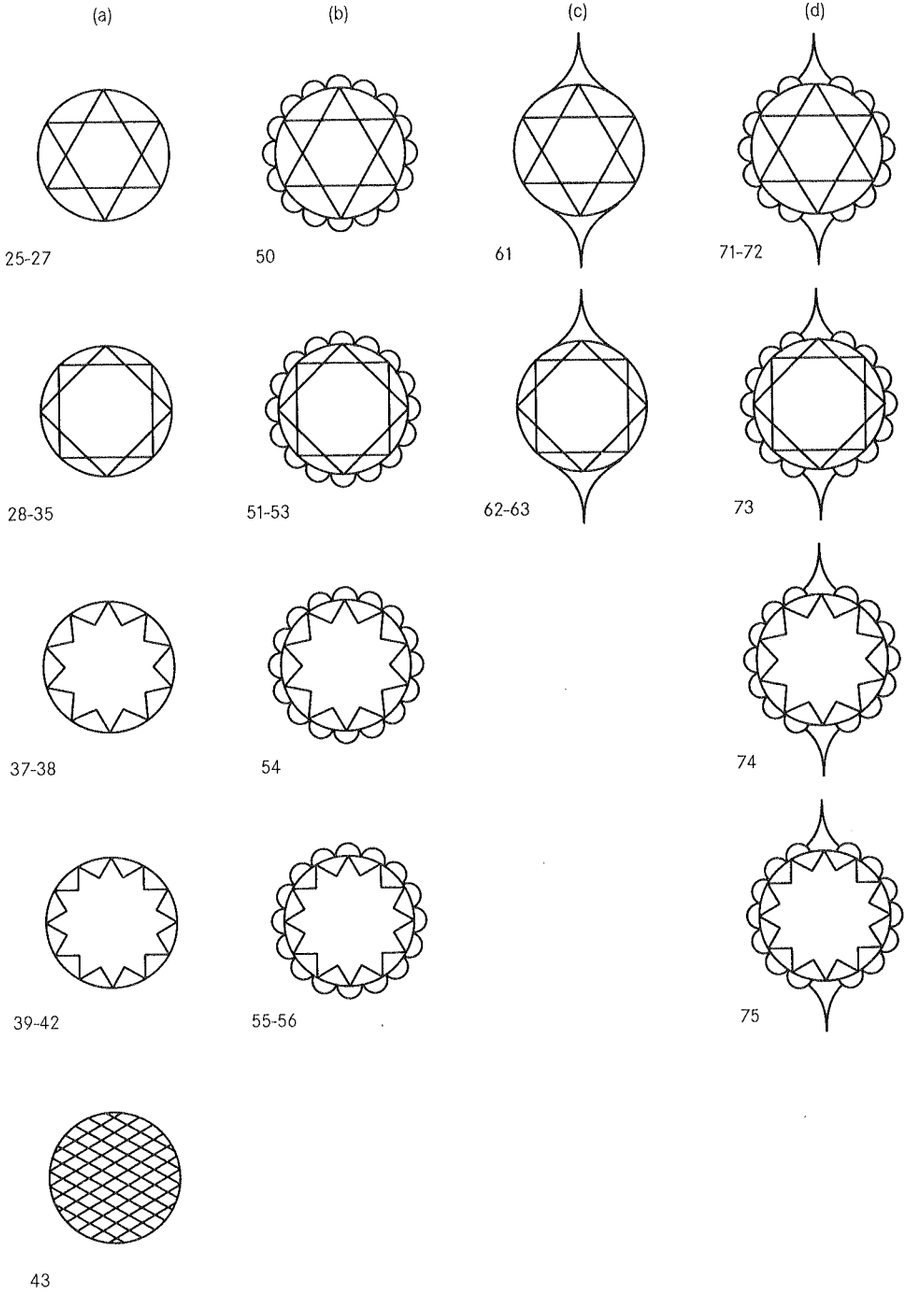
The first subdivision of 'circular decorations' (illus. 91 and 92) includes those with neither lobed edge nor pendants (a). It is unquestionably the broadest category, incorporating Types W 17 to W 43, and can serve as a starting-point for the presentation of the main lines of the whole system.[176] A first set comprises decorations in which the circle is filled either by interlace (W 17-20)[177] or by the juxtaposed use of isolated irons (W 21).[178] Then come compositions based on five pentagons arranged amid the branches of a five-pointed star (W 22).[179] The following two Types are rather close: W 23 is constituted by three elongated, intersecting hexagons[180] and W 24 by three decagons (illus. 94).[181] A second set comprises various star polygons inscribed within a circle: stars with six (W 25-27),[182] eight (W 28-35),[183] nine (W 36),[184] ten (W 37-38)[185] or twelve points (W 39-42)[186] (illus. 95). A last set of decorations (W 43)[187] consists of lozenges arranged in checkerboard fashion.

The three remaining subdivisions of Category I ('circular decorations') differ in the manner in which the perimeter of the circle is decorated: ornamentation may consist of lobes (b), pendants (c), or a combination of both (d) (illus. 96). In the circle itself the same motifs described for the first subdivision resurface, except for one previously unattested type that emerges in subdivision (b), namely an infill of divers geometrical forms (W 49).[188]

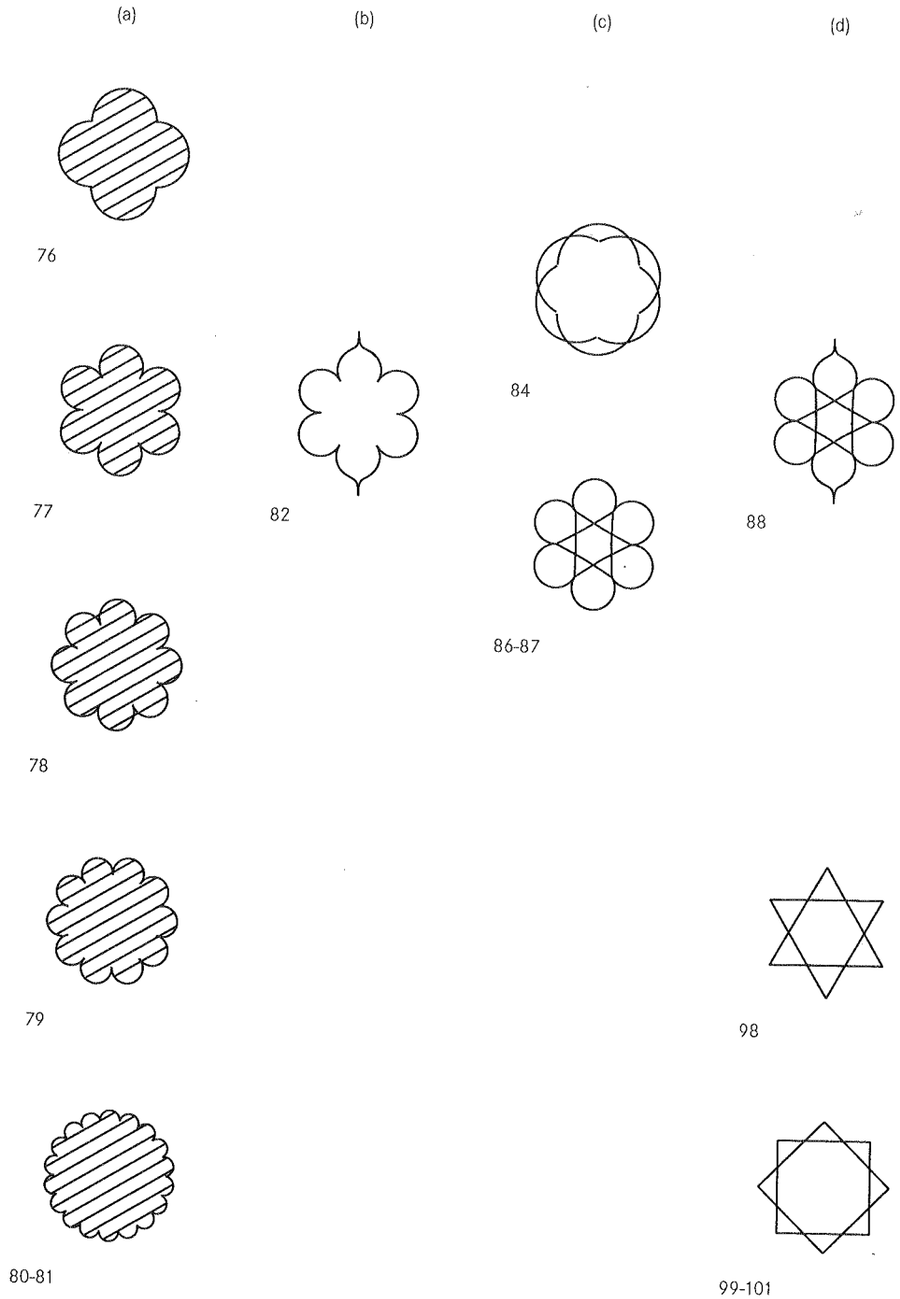
176 Tabulated diagrams showing the different types are provided for the assistance of the reader. For greater ease of use, notes refer to the illustrations provided by Weisweiler, whenever they exist; several additional examples occuring in recent publications complement these references. In all the cases, the descriptions published in Weisweiler, *Bucheinband* should be consulted. **177** W 17: Weisweiler, *Bucheinband*, fig. 23, 25, 26, 27 (see Haldane, *Bookbindings*, pp. 46-47, no. 28). W 18: Weisweiler, *Bucheinband*, fig. 28. W 19 and W 20: no illustration. **178** Weisweiler, *Bucheinband*, fig. 29 (see Chicago 1981, pp. 129-131, no. 34 and 35). **179** Weisweiler, *Bucheinband*, fig. 30 (see Haldane, *Bookbindings*, pp. 56-57, no. 49). **180** See Chicago 1981, pp. 138-141, no. 39 and 40. **181** Weisweiler, *Bucheinband*, fig. 31. **182** W 25 : Weisweiler, *Bucheinband*, fig. 32 (see Chicago 1981, pp. 148-150, no. 44 and 45; Haldane, *Bookbindings*, pp. 52-53, nos. 36 et seq.). W 26 and 27: no illustration (compare W 27 with Haldane, *Bookbindings*, pp. 56-57, no. 51, a decoration that fits into Subdivision b). **183** W 28: no illustration. W 29: Weisweiler, *Bucheinband*, fig. 33. W 30: Weisweiler, *Bucheinband*, fig. 35a. W 31: no illustration. W 32: Weisweiler, *Bucheinband*, fig. 34 (compare Chicago 1981, pp. 178-181, no. 63 and 64). W 33 to 35: no illustration. **184** No illustration. **185** W 37: Weisweiler, *Bucheinband*, fig. 36. W 38: no illustration (compare with Chicago 1981, p. 147, no. 43?). **186** W 39 and 40: no illustration (compare W 40 with Chicago 1981, pp. 142-145, no. 42). W 41: Weisweiler, *Bucheinband*, fig. 38a. W 42: no illustration. **187** No illustration. **188** Weisweiler, *Bucheinband*, fig. 39a. **189** See Haldane, *Bookbindings*, pp. 62-63, no. 69.



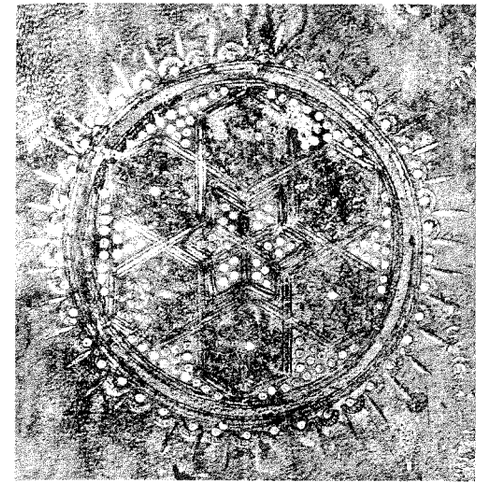
91. Simplified versions of central medallions as described by Weisweiler. The numbers refer to distinct types.



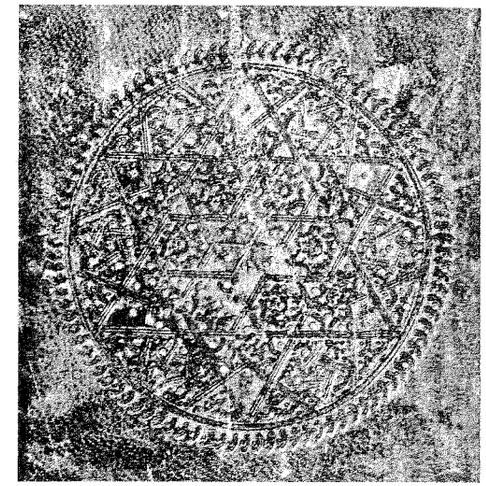
92. Simplified versions of central medallions as described by Weisweiler. The numbers refer to distinct types.



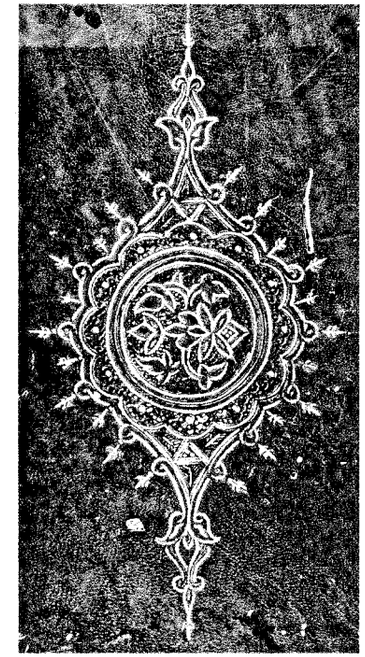
93. Simplified versions of central medallions as described by Weisweiler. The numbers refer to distinct types; oval forms are not included here.



94. Binding ornament, cf. W 24. Paris, BNF arabe 6736 (detail).



95. Binding ornament, cf. W 41. Paris, BNF arabe 1600 (detail).



96. Binding ornament, cf. W 66. Paris, BNF arabe 1604 (detail).

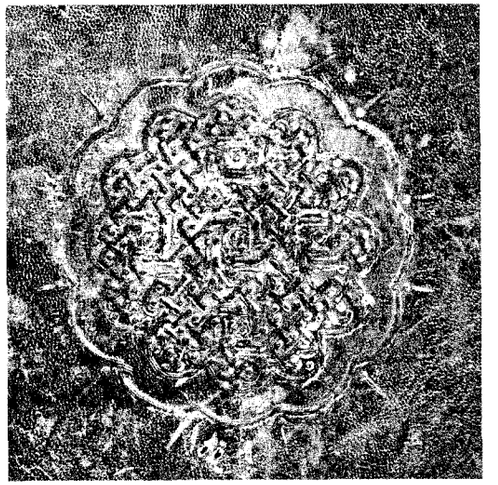
Decorations relating to the circle

Category II comprises lobed circular figures in which the lobes or cusps are not separated from the central disk by a band as was the case in subdivisions (b) and (d) of the 'circular decorations'. As with the preceding category, these types split into four further subdivisions corresponding in part to those listed above: (a) not enclosed by an interlace band or pendants; (b) without interlace band but with pendants; (c) with interlace band but without pendants; and finally (d) with both these decorative motifs (illus. 93). Weisweiler details figures with four (W 76),[189] six (W 77), eight (W 78)[190] and ten lobes (W 79)[191] (illus. 97), as well as a polylobed type (W 80-81).[192] Types with six and eight lobes may evolve into figures with pendants (W 82 and 83).[193] Subdivision (c) is constituted by exemplars in which instead of being made up of a single line the outline features a network of intertwining loops with the same number of lobes. This subdivision includes figures made up of twice three (W 84),[194] thrice two (W 86-87)[195] and thrice four loops (W 85).[196] The final subdivision comprises a single Type derived from W 86: W 88.[197]

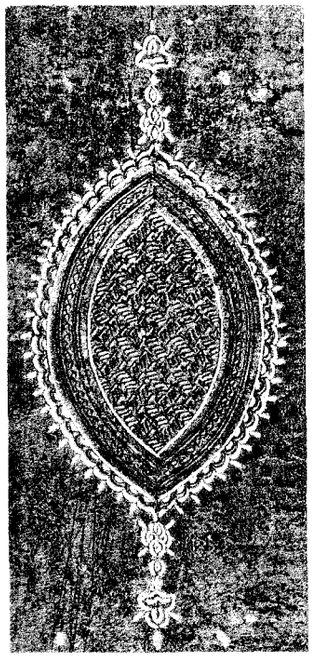
Almond shapes, stars and other decorations made with repeated strikes

Weisweiler discusses nine Types (W 89-97) (illus. 98 and 99) of almond shapes (or 'mandorlas') (Category III): these then split into two main groups, depending on whether they are filled with an interlace pattern (W 89-95)[198] or with arabesque designs (W 96-97);[199] the form of the fleurons extending from the upper and lower extremities of the figure plays an important role in classification. Category IV (illus. 93) is composed of stars with six (W 98)[200] and eight branches (W 99-101).[201] The last subgroup, Category V, encompasses central decorations built up by repeated use of the tool (W 102-110).[202] Readers are also referred to Weisweiler's typology of book envelope flaps, which follows similar lines.[203]

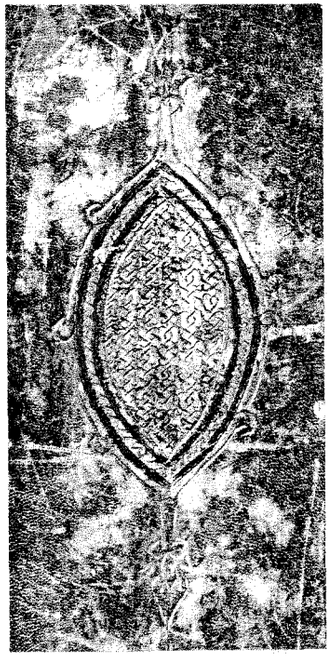
190 Weisweiler, *Bucheinband*, fig. 48 (see Haldane, *Bookbindings*, pp. 56, 58-59, nos. 55, 57, etc; Chicago 1981, p. 173, no. 59). **191** Weisweiler, *Bucheinband*, fig. 49; see Chicago 1981, p. 172, no. 58, and col. pls. G, H. **192** W 80: no illustration. W 81: Weisweiler, *Bucheinband*, fig. 51a. **193** W 82: Weisweiler, *Bucheinband*, fig. 50. W 83: no illustration. **194** Weisweiler, *Bucheinband*, fig. 52 (see Chicago 1981, p. 152, no. 47). **195** W 86 and 87: no illustration (compare W 86 to Chicago 1981, p. 153, no. 48). **196** No illustration. **197** Weisweiler, *Bucheinband*, fig. 53 (see Haldane, *Bookbindings*, pp. 62 and 64, nos. 70 and 71; Chicago 1981, pp. 154-156, no. 50). **198** W 89: no illustration. W 90: Weisweiler, *Bucheinband*, figs. 54 and 55 (see Chicago 1981, p. 198, no. 75). W 91: Weisweiler, *Bucheinband*, fig. 56 (see Ettinghausen, op. cit., figs. 344, 345 and 349). W 92: Weisweiler, *Bucheinband*, fig. 57. W 93: no illustration (see Ettinghausen, op. cit., fig. 357). W 94: Weisweiler, *Bucheinband*, fig. 58 (see Haldane, *Bookbindings*, pp. 35-37, nos. 15 and 16). W 95: Weisweiler, *Bucheinband*, figs. 59 and 60a (see Chicago 1981, pp. 199-200, no. 76, doublure). **199** W 96: Weisweiler, *Bucheinband*, figs. 61a and 63 (see Haldane, *Bookbindings*, p. 38, no. 18; Chicago 1981, pp. 184-185, 194-195 and 200-201, nos. 67, 72 and 77). W 97: no illustration. **200** No illustration; compare with Chicago 1981, p. 122, no. 27. **201** W 99: Weisweiler, *Bucheinband*, fig. 64 (see Haldane, *Bookbindings*, p. 32, no. 8). W 100: Weisweiler, *Bucheinband*, fig. 65 (see Haldane, *Bookbindings*, pp. 30-32, nos. 6, 7 and 9; Chicago 1981, pp. 122-125, no. 28 and 29). W 101: no illustration. **202** W 102: Weisweiler, *Bucheinband*, fig. 66 and 67. W 103 and 104: no illustration (compare W 104 with Haldane, *Bookbindings*, pp. 60 and 62, no. 66). W 105 to 110: no illustration (compare W 109 with Ettinghausen, op. cit., fig. 358). **203** Weisweiler, *Bucheinband*, pp. 57-61.



97. Binding ornament, cf. W 79. Paris, BNF arabe 2898 (detail).



98. Binding ornament, cf. W 92. Paris, BNF arabe 6041 (detail).



99. Binding ornament, cf. W 94. Paris, BNF arabe 1569 (detail).

Towards a classification of panel stamps

Toward the end of the ninth/fifteenth century, technical advances were having a profound impact on the art of bookbinding. Irons had grown larger over the course of the preceding decades, particularly those employed for framing covers; all that remained was to marginally increase their size and it would become possible to apply a whole unit, or even an entire decorative scheme, in a single strike. The two major categories described above (central motifs on the one hand, and ornamentation of an entire cover on the other) remain pertinent to these cases. Although executing large-scale decorations with a single panel stamp had now become feasible, craftsmen never completely abandoned unit tools for laying in borders with plain fillets or interlocking S's.

Panel stamps were initially made out of leather, though metal soon became the rule. Gilt was frequently used and may have been brushed on after blind-stamping.

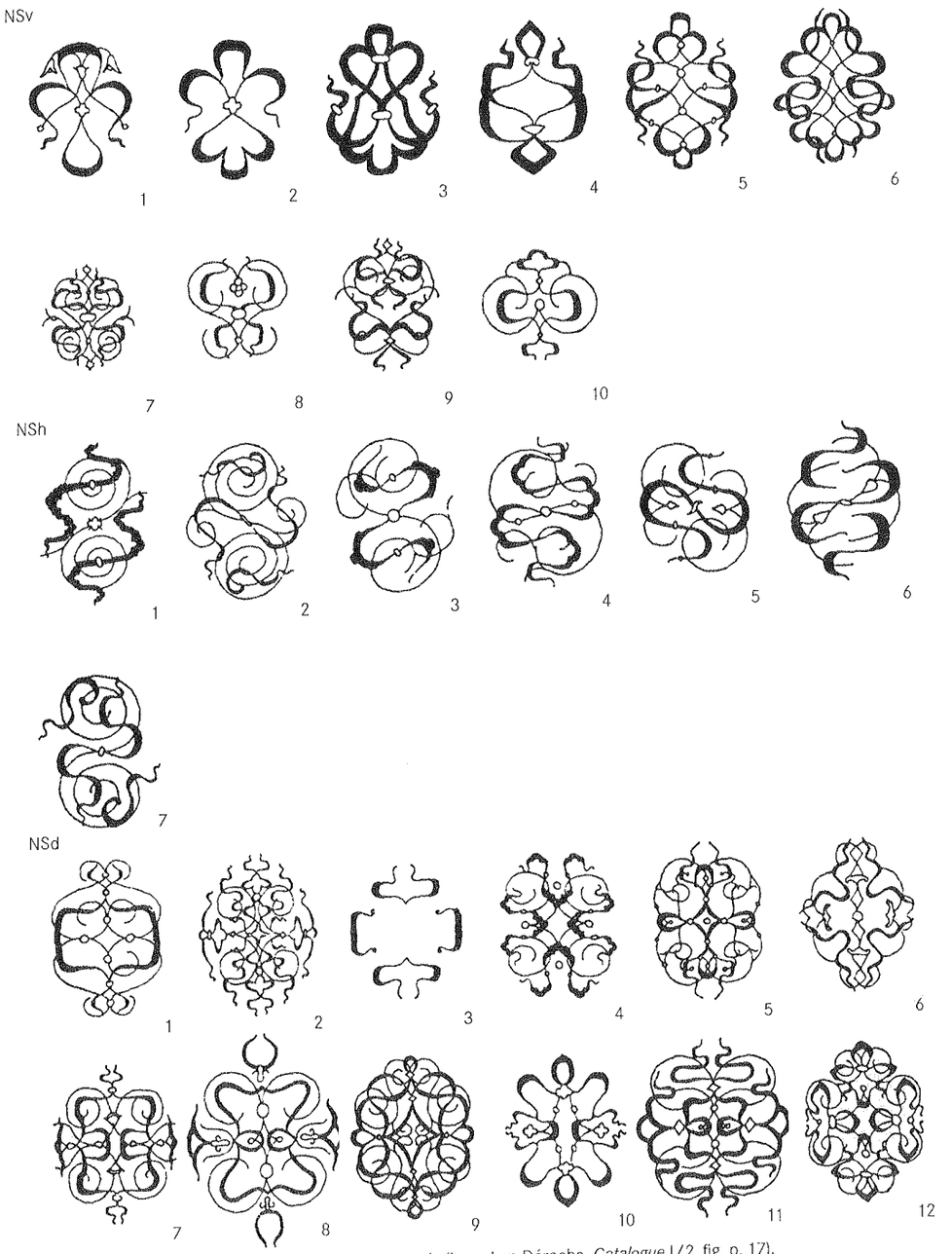
It would be premature to present an account of the types of blocks used in the course of a period extending over several centuries and in widely separated regions. Evidence from various authorities argues for the existence of regional differences: tools with the name of the bookbinder and a date have already been mentioned,[204] but it would not be hard to locate other, similar cases.[205] By way of example, there follows an outline classification of central panels in almond shapes utilised in the Ottoman world[206] – excluding scenes with animals.[207]

Central almond-shaped panels

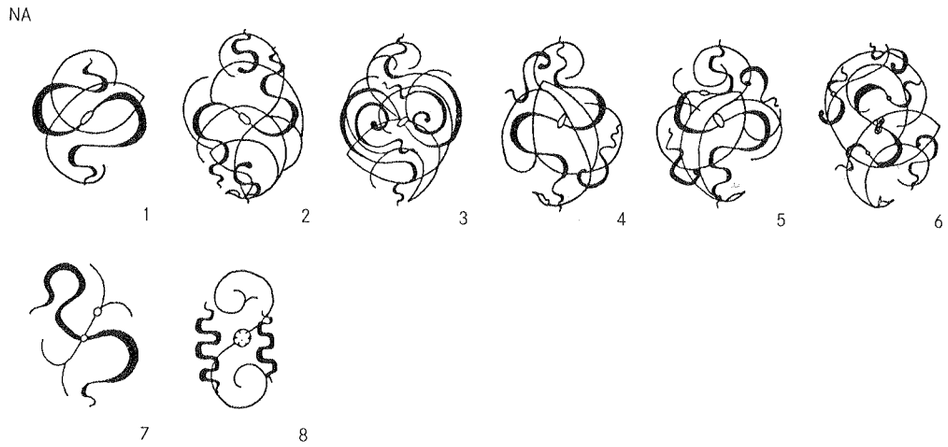
From the tenth/sixteenth century on, Ottoman production played an increasingly important role: its models were widely propagated, prompting local imitations that entail a certain uniformity in binding decoration. The compositions seem to adhere to a limited number of principles and rely on a relatively narrow repertoire. As an initial step in classifying panels at a basic level, it seems preferable to take into account only the structure of the decoration, leaving aside those auxiliary elements, such as leaves and flowers, which were more regularly subjected to variation.

In order to draw up a system of classification of central panels in almond or ovoid form on this basis, an initial arbitrary distinction can be established between panels and plaques that incorporate *chi* clouds (group N; see illus. 100, 101 and 102, 103), and those in which such features are absent (O; illus. 104 and 105, 106, 107). Within each of these two large groups, a distinction can be

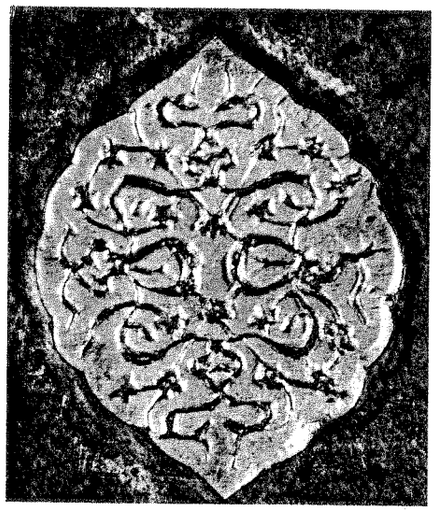
204 See above. 205 Weisweiler for example draws attention to the Yemeni origin of the tools utilised in the framing containing a blessing on the owner of the book (*Bucheinband*, p. 40, for reproductions see op. cit., illus. 19 and 68, and Duda, *Isl. Hss.* 2, pl. 233). 206 Déroche, *Cat.* I/2, pp. 15-26. 207 There also exist almond-shaped panels adorned with short poetical texts. See M. Özgen, 'Klasik cilt sanatımızın özellikleri=Features of the classical bookbinding art', *Antika* 25 [1987], p. 10), although this may well constitute an exceptional case.



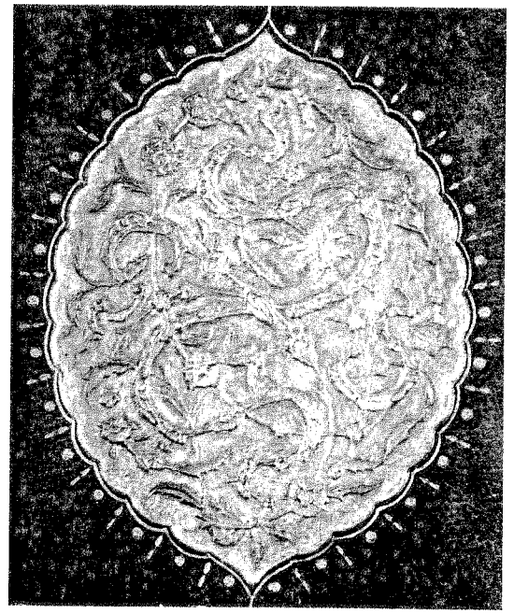
100. Typology of central panels (based on Déroche, *Catalogue* I/2, fig. p. 17).



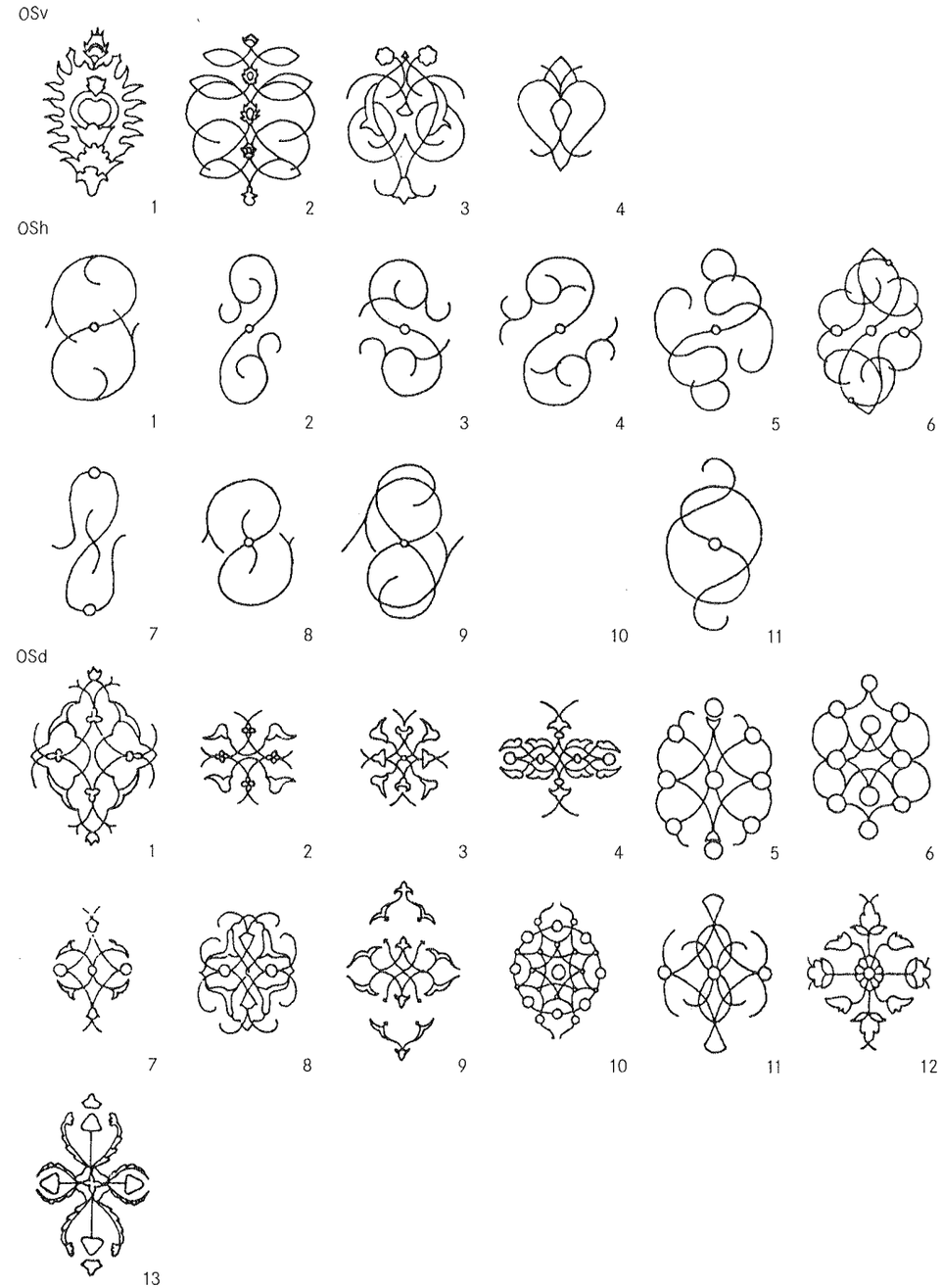
101. Typology of central panels (based on Déroche, *Catalogue* I/2, fig. p. 18).



102. Ottoman panel, to be compared with composition NSd 7. Paris, BNF Supplément turc 838, detail of upper board.

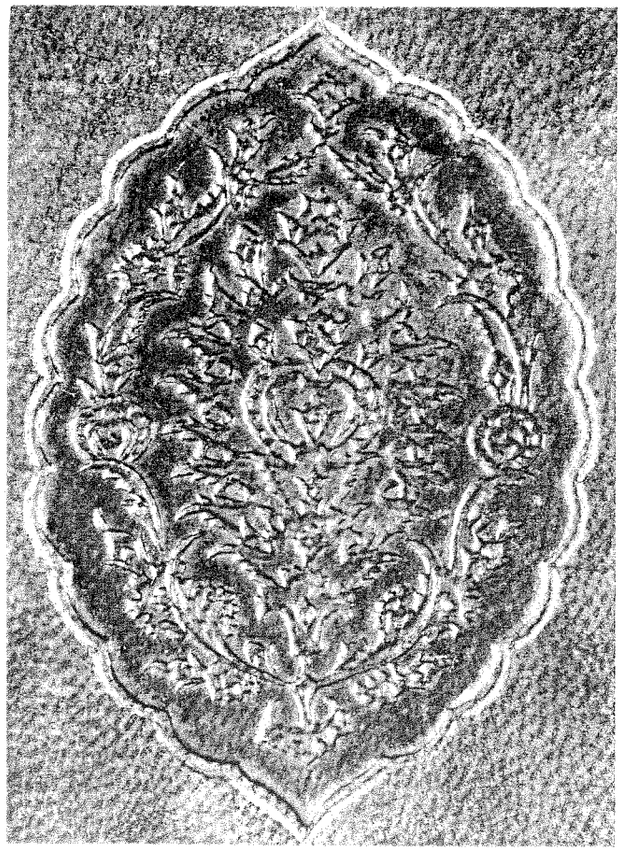


103. Ottoman panel, to be compared with composition NA 5. Paris, BNF Supplément turc 311, detail of upper board.

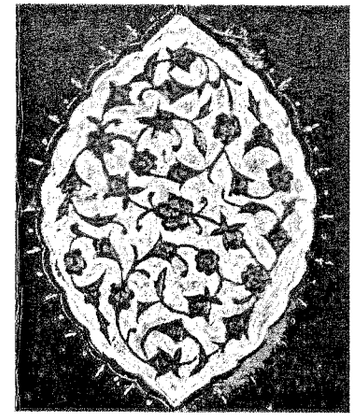


104. Typology of central panels (based on Déroche, *Catalogue* I/2, fig. p. 20).

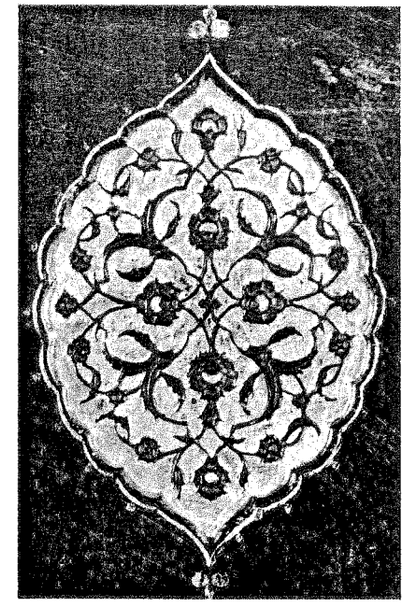
made between symmetrical (S; illus. 100, 104 and 102, 105, 106, 107) and asymmetrical decorations (A; illus. 101, 108, 111 and 103, 109, 112). In the first case (S), there exist three possibilities: symmetry along the vertical axis of the almond shape (v; illus. 105); along its horizontal axis (h; illus. 106); and finally along both axes (d; illus. 107). Craftsmen enjoyed far greater latitude in the case of asymmetrical decorations since they permitted more original compositions. In the latter instance, only two categories can be proposed: decorations that spring from one of the apexes of the mandorla (i; illus. 108, 109, 110) and those that emerge from one of its lateral sides (l; illus. 111, 112). Blind-stamping appears in conjunction with other methods: gilding of the whole ovoid (and its attendant decorations), or inlay of a thin piece of paper or leather differing in colour from the ground, stamped and subsequently gilded to emphasise the relief elements.



105. Ottoman panel, to be compared with composition OSv 1.
Paris, BNF Arabe 448, detail of lower board.



106. Ottoman panel, to be compared with composition OSh 3.
Paris, BNF Supplément turc 1043, detail of lower board.



107. Ottoman panel, to be compared with composition OSd 1.
Paris, BNF Turc 183, detail of lower board.

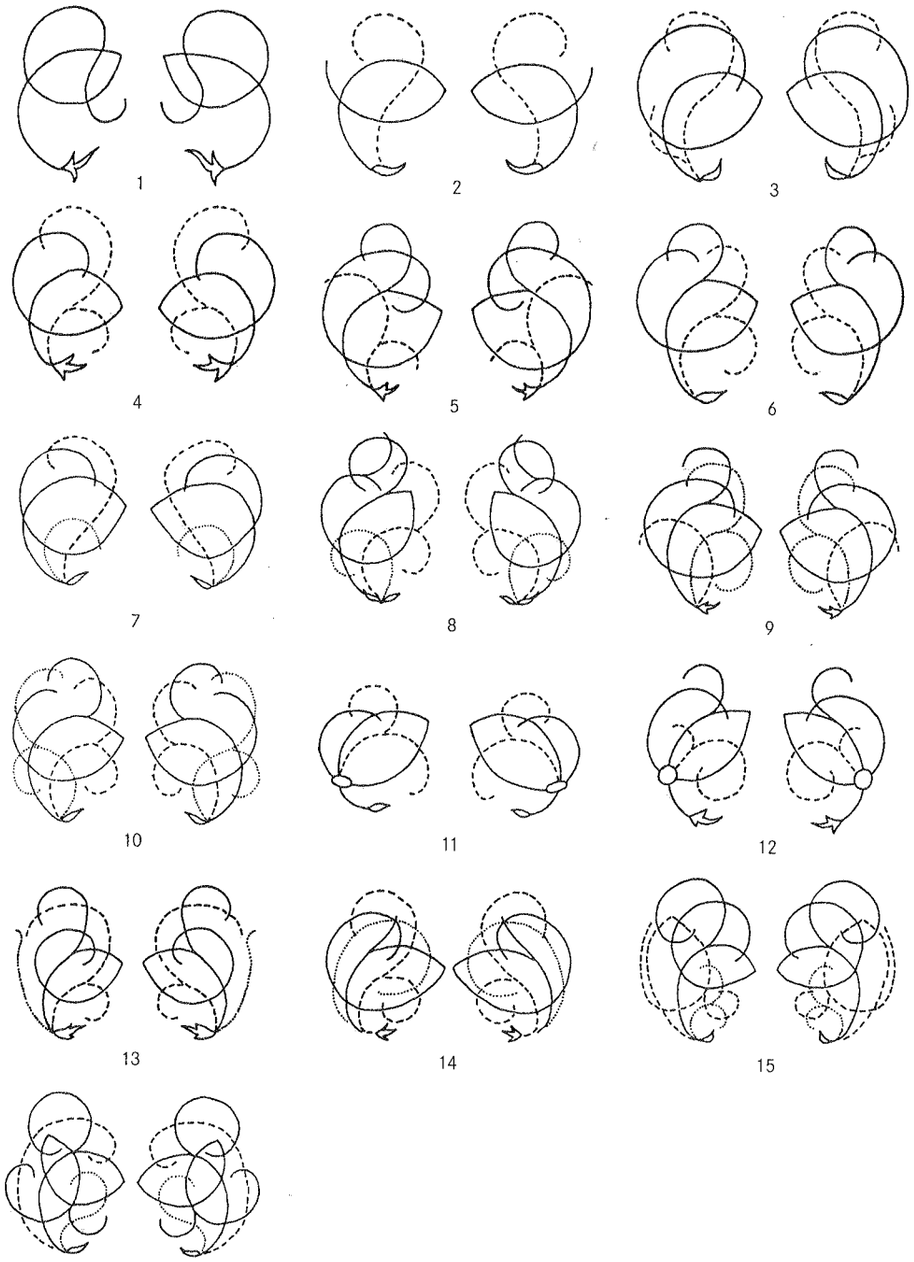
Additional motifs are to be found in binding decoration from other regions, particularly the Iranian and Indian worlds. Though groups of similar inspiration (a reflection perhaps of local tendencies) can be identified here too, they were the subject of so many variations that it has proved impossible to devise a classification scheme analogous to that put forward in illustrations 100, 101, 104, 108 and 111.

Large panel stamps

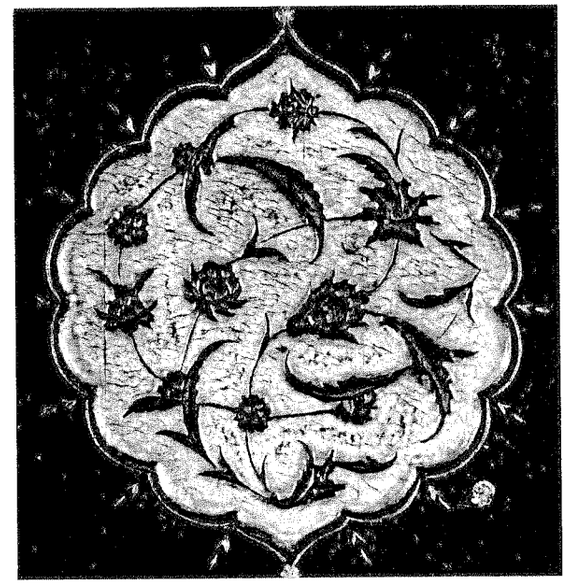
Larger panels, which made it possible to lay in decorations covering the whole of the board, have not yet been adequately classified: they usually associate arabesque with geometrical motifs (illus. 85) or else, though this is less usual, borrow their decorative stock-in-trade from miniatures (illus. 86);[208] once stamped, the decoration was normally then totally gilded. Thanks to this process, it became feasible to apply in a single operation both figurative and non-figurative decoration to the entire cover of a small format volume (excluding the frame if desired).[209] In other cases, the binder had to apply the decoration in two, four, or even eight stages with the same stamp,

208 See Haldane, *Bookbindings*, p. 87, no. 90 as well as p. 104, no. 102. **209** See Haldane, *Bookbindings*, pp. 160-161, no. 149.

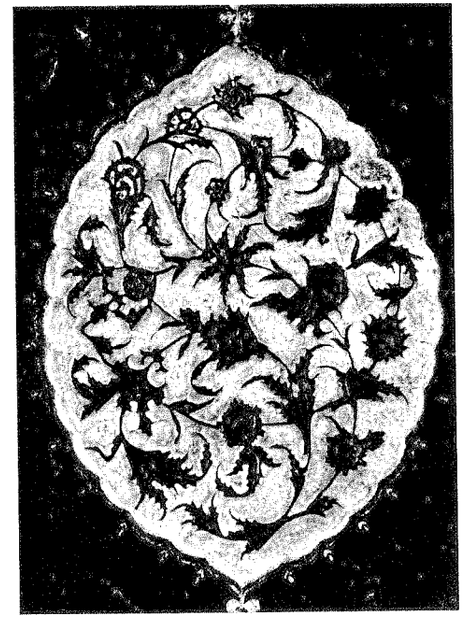
OAi



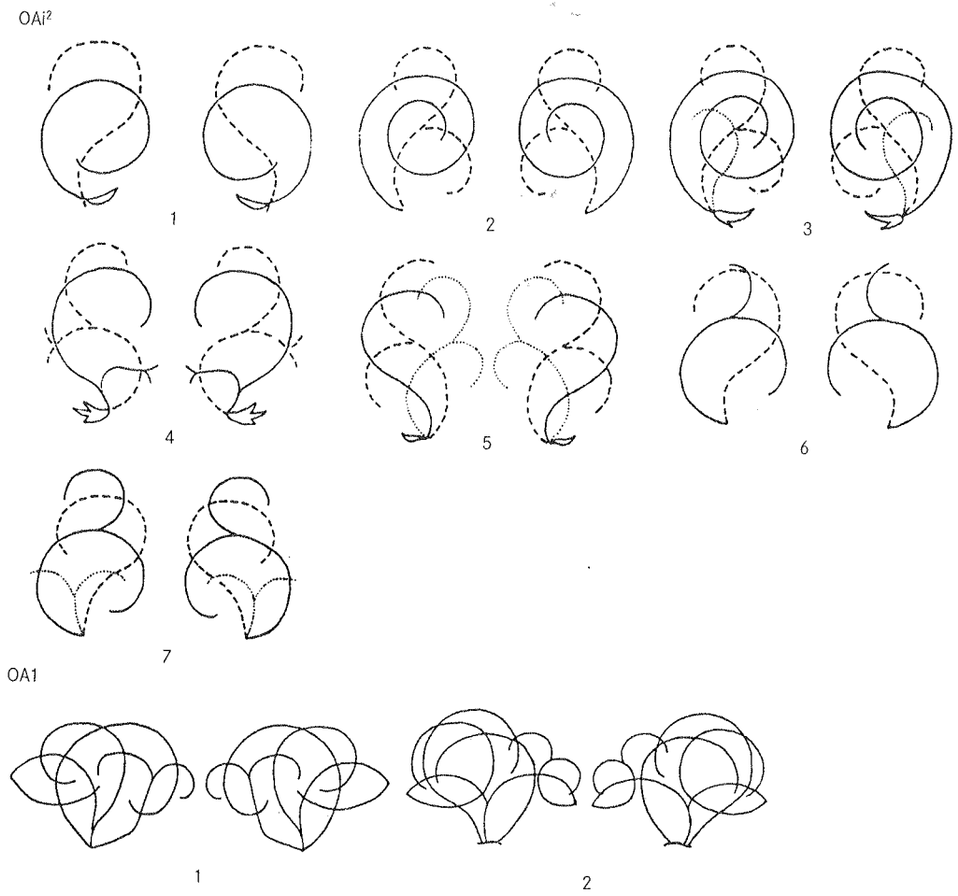
108. Typology of central panels (based on Déroche, *Catalogue* I/2, fig. pp. 22-4).



109. Ottoman panel, to be compared with composition OAi 2.
Paris, BNF Supplément turc 192, detail of upper board.



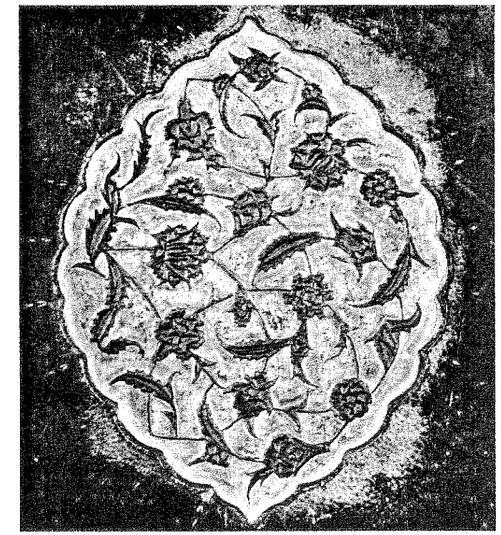
110. Ottoman panel, to be compared with composition OAi 6.
Paris, BNF Arabe 488, detail of upper board.



111. Typology of central panels (based on Déroche, *Catalogue* I/2, fig. pp. 25-6).

corresponding to half (or quarter, etc.) of the surface to be decorated.[210] Ordinarily, the line marking the point of contact between two successive stampings can be readily discerned.[211] Such tools presupposed a measure of consistency in the formats available: occasionally, the binder had to stamp in a band to make up for empty space left between the panel and the edge of the cover.[212]

210 F. Déroche and A. von Gladiss, *Buchkunst zur Ehre Allahs: der Prachtkoran im Museum für Islamische Kunst* [Veröffentlichungen des Museums für Islamische Kunst, 3] (Berlin, 1999), pp. 74, 78, 82. **211** See e.g. Haldane, *Bookbindings*, p. 118, no. 113. **212** Haldane, *Bookbindings*, p. 79, no. 82; Duda, *Isl. Hss.* 1, pp. 73-74 and pl. 97; Déroche, *Cat.* I/2, pp. 132-133, no. 541, pl. XII B.



112. Ottoman panel, to be compared with composition OAI 2. Paris, BNF Supplément turc 1462, detail of lower board.

This technique also made it easier to apply stamps bearing more or less lengthy texts. This possibility has already been referred to in connection with mandorlas, but here texts are encountered in the borders as well as in the field itself. In both instances, panel stamps of a relatively small size containing an element of the text were impressed successively onto the leather.[213] The frame on the cover of Qur'ān bindings would contain verses from the Scripture[214] or, more rarely, from *Ḥadīths*;[215] verse LVI 79 of the Qur'ān often appears in a central position on the fore-edge flap.[216]

Type III

Type III consists of bookbindings which originally comprised solely a front and back cover together with a spine (illus. 76). These were often made in the West and therefore incorporate technical features or other elements, such as raised

213 Haldane, *Bookbindings*, p. 109, no. 105; Ī. Afshār (ed.), op. cit., black and white pls. bindings <36> and <37>. **214** London 1976, p. 93, no. 164; James, *Q. and B.*, p. 82, no. 63 s. **215** London 1976, p. 93, no. 163; James, *Q. and B.*, p. 122, no. 99; Haldane, *Bookbindings*, pp. 151-152, no. 140. Even before this technique had been developed, texts of this kind had already appeared (see Chicago 1981, p. 112-113, no. 19). **216** London 1976, p. 93, no. 164. As the binding of MS. Dublin CBL 1486 (from 896/1491) shows, the use of the quotation in question in this place predates the introduction of the panel-stamping technique (Chicago 1981, pp. 206-207, no. 82).

bands and clasps, omitted from the foregoing account. The bindings of early Christian Arabic manuscripts long adhered to a model that was closely akin to Greek bindings. A detailed exposition of their features can be found in specialised manuals.

On the other hand, there exist bookbindings from certain parts of the Muslim world that possess neither fore-edge nor envelope flap. They seem to have enjoyed a considerable vogue in Central Asia and Afghanistan up to relatively recent times (eleventh-thirteenth/eighteenth-nineteenth centuries). Bookbinders here kept to the techniques of their traditional craft, particularly as regards the manner of attaching text block to covers. Their decorative schemes, too, seem to have been rather idiosyncratic. Several are covered in paper, while the decoration of the boards – sometimes incorporating the bookbinder's signature[217] (illus. 75) – also presents special features in respect of both overall form and ornamental motifs.[218]

217 See F. Afkari, 'Jihd-sāzān-i Mā-warā'-al-nahrī az sada-hā-yi 13 wa 14-i hijrī=The book covers' makers in Transoxiana from the 13th and 14th cent. AH/19th-20th cent. in the manuscripts collection of the Ministry of Foreign Affairs', *Namah-yi Bahāristān* 6 (Autumn – Winter 2002 – 2003), pp. 474-459 (in Persian). 218 Such ovoid shapes were to evolve towards more diamond- or lozenge-like forms.

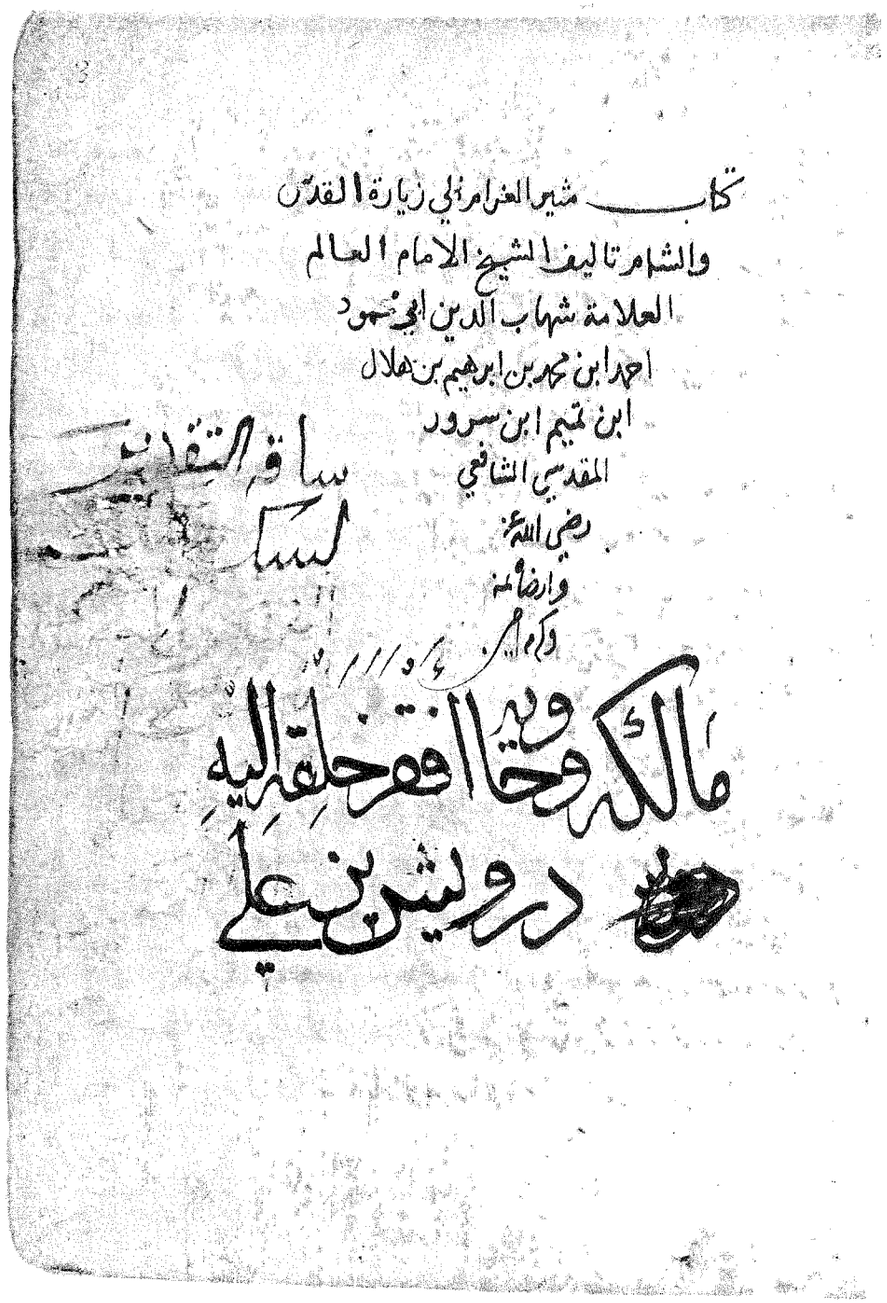
Evidence for the History of a Manuscript

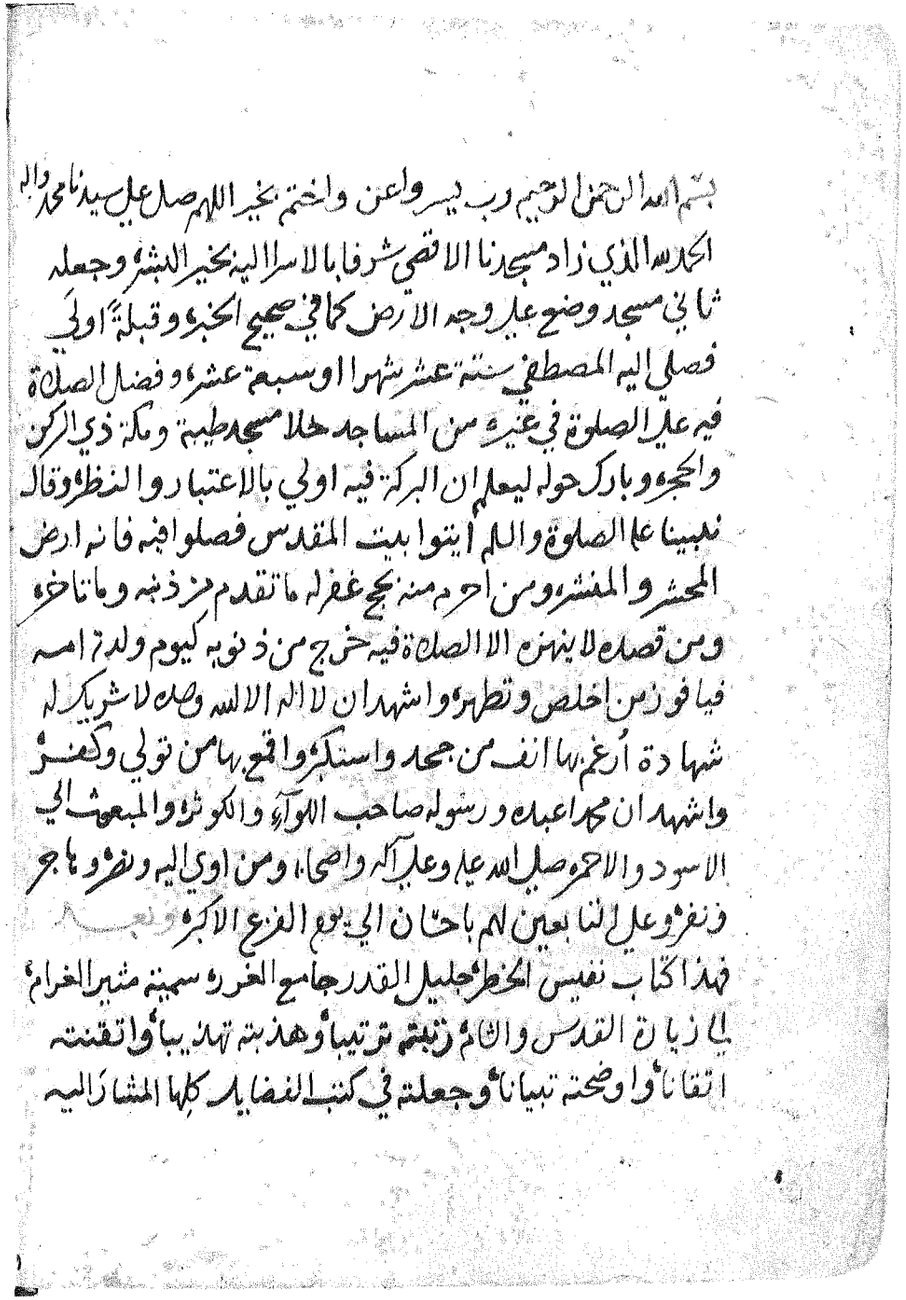
Throughout this handbook, readers have been presented with various methods for assessing the age of a manuscript: analysis of the writing surface, the script employed, the way quires are collated, and so on. Sometimes these techniques provide the only clues – apart from any possible linguistic evidence – as to the date at which the copy under scrutiny was written. But a manuscript may also contain more precise clues to dating, such as a colophon, statement of patronage, or other mark of ownership.

Title page

In manuscripts written in Arabic script, the title of the work, sometimes accompanied by the name of the author and various notes that can guide the scholar in reconstructing their history, often appears on the recto of the first folio[1] (see illus. 113a, 113b, 114a and 114b). Because this leaf is in a particularly vulnerable position, in many manuscripts it is no longer extant (or may have been replaced at a later date). Thus whenever a manuscript with a title page is being examined, special care must be taken to study the condition of this leaf, bearing in mind that the information found there, beginning with the title of the work, may be erroneous or falsified.

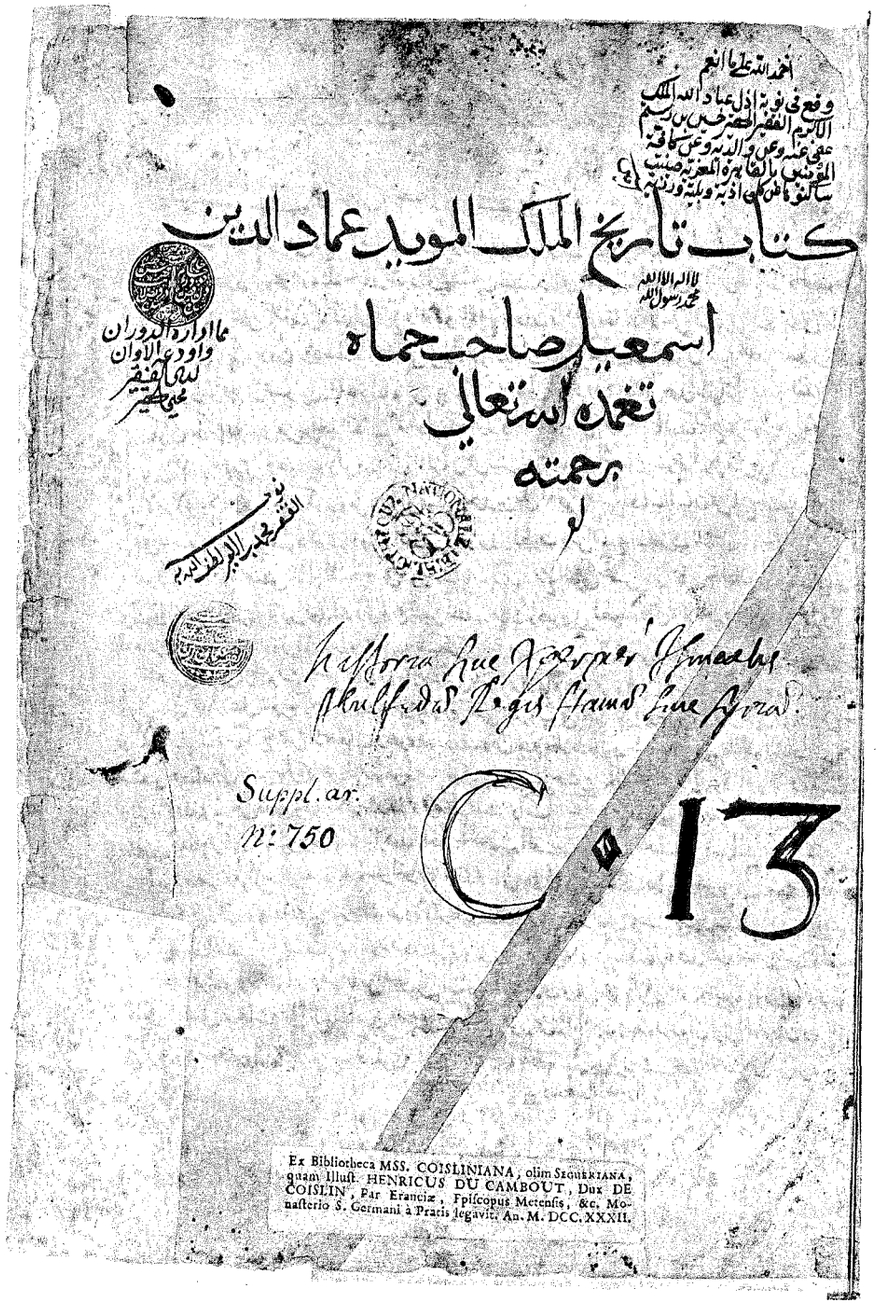
1 As in the Chapter 'Books and their ornamentation', the 'first' folio refers here to the first 'useful' leaf of the manuscript, even if foliation or pagination sometimes designates it by another number. As a general rule, the first useful folio will be labelled 'fol. 1' or 'fol. 1 v°' in this chapter, except when a specific manuscript is involved. 2 The title may also appear in other places: the top edge or lower edge of the book (visible when the manuscript is stored flat, in accordance with Oriental practice), or the fore-edge flap of the binding, or even on a label glued to the upper board.


كتاب مثير الغرام الى زيارة القدس
والشام تاليف الشيخ الامام العالم
العلامة شهاب الدين ابي محمود
احمد ابن محمد بن ابرهيم بن هلال
ابن تميم ابن سرور
المقدسي الشافعي
رضي الله عنه
وارضاه امين
وكرم



113a. Title page with ownership inscription. MS. copied in 874/1470. Paris, BNF arabe 1667, f. 3.

113b. Text opening. MS. copied in 874/1470. Paris, BNF arabe 1667, f. 3v°.



114a. Title page with owners' inscriptions, seal impressions and library marks.
Paris, BNF arabe 1508, f. 2.

114b. Text opening.
Paris, BNF arabe 1508, f. 2v°.

Title[2]

In the early days, title pages were sober: many manuscripts present just the title inscribed in large, carefully traced letters, with no ornamentation whatsoever. MS. Vienna ÖNB Cod. A.F. 340, dated 447/1055–1056, provides an Oriental version of this type of presentation,[3] while the title page of a volume of *al-Mudawwana,* given in endowment (*waqf*) in 424/1033 by the Zīrid monarch al-Mu'izz ibn Bādīs, shows that Western Islam followed the same rules.[4] This simple approach was long followed, in a more modest form, in copies made for ordinary use. In elaborate manuscripts, however, illumination soon began to enhance the basic information. For example, in two Vienna manuscripts (ÖNB Cod. A.F. 4. f. 1, dated 746/1345, and A.F. 75, f. 1, from the eighth/fourteenth century)[5] a gilded border frames the area containing the title. Together with the title, one sometimes finds the name of the patron who commissioned the copy, according to more or less elaborate formulas; this combination plays a double role by linking the title to information that serves as an ex-libris. Such signs of ownership usually begin with traditional phrases: *bi-rasm, ḥasb ishāra, bi-'ināya, tuḥfatan li-,* and so on.[6] The first folios of MSS. Vienna ÖNB Cod. N.F. 278 and A.F. 84a, dated 785/1384, present two variants of the same arrangement: the title is set within an illumination, and the ex-libris of an unknown Mamlūk dignitary is written just below in gold lettering.[7] On the first folio of an almost contemporary manuscript (Vienna ÖNB Cod. N.F. 381), both pieces of information are contained in a decoration that is integrated into an overall composition; it is perhaps significant that this copy of the *Burda* originally belonged to the library of the Mamlūk Sultan Qalāwūn.[8] While this may appear a logical place for such information, the name of the patron who commissioned the copy, as well as the title of the work, may also be given in the colophon.[9]

Copies of the Qur'ān bear no title page, strictly speaking. Instead, a quotation from the Qur'ān or, in the case of Qur'āns in several volumes, an indication of the number of the volume, may appear on the recto of the first folio. The first leaf of MS. Paris BNF arabe 6041, written at Bust in Afghanistan in 505/1111–1112, includes both the ordinal number 'the seventh' and verses LVI, 77–78 of the Qur'ān.[10] At that early date, folio 1 was still undecorated, but the following double page was followed, in some high-quality

3 Duda, *Isl. Hss.* 1, pp. 51–52 and illus. 1. 4 M. al-Nayyāl, *al-Maktaba al-athariyya bi-l-Qayrawān* (Tunis, 1963), p. 18, top illus. (see also p. 14, no. 6). 5 Duda, *Isl. Hss.* 2, pp. 15–17, illus. 92 and pp. 74–75, illus. 41. 6 A. Gacek, 'Ownership statements and seals in Arabic manuscripts', *MME* 2 (1987), p. 88. 7 Duda, *Isl. Hss.* 2, pp. 128–129, illus. 43 and pp. 74–75, illus. 97. 8 Duda, *Isl. Hss.* 2, pp. 131–133 and illus. 45. 9 See below. It should also be recalled that, as mediaeval writers recommended, the title of a work was sometimes written on the edge of the text block, so that it would be visible when the book was stored flat. See F. Rosenthal, *The technique and approach of Muslim scholarship* (Rome, 1947), p. 11. An excellent example of this practice can be seen in Gotha 1997, p. 73. The title might also figure on the binding, either tooled into the leather or copied onto a label glued to the top board. 10 Déroche, *Cat.* I/2, p. 121, no. 522.

copies, by an another containing decoration with no text, the text itself beginning on the next double page. Often the text simply started on the first double page, with no preceding announcement of any sort.

The title was not always placed on the recto of f. 1, however. The development of illuminations framing the beginning of the text on f. 1 v° offered scribes and illuminators the possibility of devoting part of the decoration to a frieze containing the title of the work. Thus in a certain number of manuscripts the title appears on the verso of the first folio: MS. Vienna ÖNB N.F. 145a, written at Shiraz in 882/1477–1478, bears the heading '*Muqaṭṭa'āt Ibn Yamīn*' in the frieze adorning f. 1 v°.[11] A more developed version of this practice can be seen in a copy of 'Aṭṭār's *Manṭiq al-ṭayr* (Paris BNF persan 348, dated 897/1492), where the illumination on f. 1 v° has a pendant on the opposite page, both friezes being used to advantage to feature the title of the work and the name of the author.[12] In many books, however, the illuminated frieze on the verso of folio 1 features a pious invocation, very often the *basmala.*[13]

Ex-libris and contents

As mentioned above, the name of the patron who commissioned the copy is sometimes given with the title on f. 1; in lavish manuscripts, it may even figure alone on that leaf (see illus. 47). Changes of ownership provided reasons for modifying this information – subsequent scraping and overwriting are usually easy to spot. One of the earliest known examples can be found in MS. Leiden BRU Or. 437, where the front page is overwritten with the name of a merchant, Muḥammad ibn Shibl, partly covering the original inscription with the name of the Ghaznawid ruler 'Abd al-Rashīd (reigned 440-3/1049-52).[14] Conversely, illuminators sometimes decorated f. 1 with a space in the middle apparently designed to receive the name of the patron, which was never added. Finally, mention should be made of indications of ownership that remain highly general, as when a phrase included in the decoration has been formulated in an anonymous fashion, as seen for example in MS. Vienna ÖNB Cod. A.F. 93, f. 1, dated 905–906/1500: '*Li-ṣāḥibih al-sa'āda wa-l-salāma.*'[15]

In this same manuscript – a copy of Niẓāmī's *Khamsa* – as well as in other anthologies containing several works, the illumination includes a table of contents. Other examples include MSS. Paris BNF suppl. persan 1357 (f. 2),[16] dated 865/1461, and Vienna ÖNB Cod. Mixt. 914 (f. 1).[17] In ordinary copies,

11 Duda, *Isl. Hss.* 1, p. 75 and illus. 64. For another example, see MS. Cod. A.F. 28, f. 1 v°, *ibid.*, pp. 20–21 and illus. 344. 12 Richard, Paris 1997, p. 109, no. 68. 13 Three examples appear side by side in Duda, *Isl. Hss.* 2, illus. 124–126. 14 S. M. Stern, 'A manuscript from the library of the Ghaznawid Amīr 'Abd al-Rashīd', in R. Pinder-Wilson (ed.), *Painting from Islamic Lands* (Oxford, 1969), pp. 12–13 and pl. 1; J.J. Witkam, *Seven specimens of Arabic manuscripts* (Leiden, 1978), pp. 4-5. 15 Duda, *Isl. Hss.* 1, pp. 33–37 and illus. 107. 16 Richard, Paris 1997, p. 98, no. 51 and pl. p. 92. 17 Duda, *Isl. Hss.* 1, pp. 199–200 and illus. 66.

the contents were given in more basic form. Mediaeval scholars such as al-'Almawī (tenth/sixteenth century) recommended employing this useful device and placing it at the beginning of the book.[18]

Colophons and dates

When the scribe completed the work of copying, he often took advantage of any space that remained at the end of the basic text to add information about the copy he had just completed. This text, called a colophon, was usually of limited length; and since it was not subject to strict rules, the information it contains varies from one manuscript to another.[19] The scribe might identify himself, or perhaps note the date of completion or the place where the work was done, or even for whom the copy was executed. Colophons are therefore of great importance to scholars, since reliably dated manuscripts are crucial landmarks in the field of codicological scholarship. The information contained in a colophon must therefore be analysed all the more rigorously and checked for potentially erroneous data, whether inadvertent or deliberate.

Location and types of colophons

The preceding comment suggests that colophons are always found at the end of a manuscript, or at least at the conclusion of a specific text. There are exceptions to this rule, however. In a few manuscripts, the colophon figures at the front, as seen for example in Istanbul Qur'ān Nuruosmaniye 23.[20]

Sometimes codicologists are confronted with several colophons in a single manuscript. There are three main kinds of such manuscript: copies of the Qur'ān in several volumes;[21] manuscripts containing several separate texts (although sometimes they have only a single colophon or even none); and texts

18 Rosenthal, op. cit. 19 Excellent introductions to the subject of colophons can be found in articles by R. Şeşen ('Esquisse d'une histoire du développement des colophons dans les manuscrits musulmans', *Scribes*, pp. 189–221) and G. Troupeau ('Les colophons des manuscrits arabes chrétiens', *Scribes*, pp. 223–231), as well as the section on dated manuscripts in Fu'ād Sayyid, *Makhṭūṭ*, pp. 402–415. 20 F. Déroche, 'Cercles et entrelacs: format et décor des corans maghrébins médiévaux', *Académie des inscriptions et belles-lettres, Comptes rendus* 2001, pp. 596-599, fig. 1 and 2a. MSS. Istanbul Süleymaniye Murad Molla 6 and Feyzullah Ef. 1580 exhibit slightly different arrangements: the scribe's name appears on the title page, but the date is found in the colophon at the end of the volume (Şeşen, op. cit, pp. 196–197, no. 11 and p. 199, no. 19). 21 See, for example, MSS. Paris, BNF arabe 561 to 568 or 515 to 540 (Déroche, *Cat.* I/2, pp. 75-76, nos. 399-404, and pp. 77-81, nos. 409-425).

– such as an author's collected poems in various verse forms - that are divided into sections either through convenience[22] or necessity[23] (when the work is too large in size). Occasionally a single volume will contain a series of colophons, each marking the end of a section of text (which may not necessarily coincide with the end of a quire).

A colophon found in the normal location may immediately follow the text, with no sign to distinguish it from what precedes it (apart perhaps from a discreet dot).[24] Often, however, the scribe would lay out the colophon in a special way, the most common being in the form of either a triangle or a triangle truncated at the base to form a trapezoid (illus. 69).[25] This innovative form often replaced earlier layouts such as a column somewhat narrower than the main body of text[26] or a series of rectangular panels of alternating width (illus. 68).[27] Other copyists wrote their colophon in the form of a circle[28] or in even more complex shapes.[29] In illuminated manuscripts in particular (illus. 70 and 71), the colophon can be extremely elaborate.[30] In some colophons the initial words are elongated, especially the phrase *tamm al-kitāb*. [31] It was not unusual for a scribe to drop the script used in the text – notably when it comes to Qur'āns – and adopt a different one for the colophon[32]; at the tip of the colophon, he might write a series of the letter *mīm* (an abbreviation of *tamma*) or *hā'* (for *intahā*), often arranged in a triangle (illus. 69).

Formulas

The colophons in Arabic and Islamic manuscripts usually open with one of a number of time-honoured stock phrases. As a rule, they are composed in the

22 From what is known of the collection of early legal manuscripts in Kairouan, it seems that two of the basic works of the Mālikī school, the *Muwaṭṭa'* and *Mudawwana*, sometimes appeared in the form of fascicules corresponding to a logical division of the work, probably for ease of consultation and/or to enable them to be borrowed in parts for copying. 23 See, for example, MSS. Istanbul Süleymaniye Murad Molla 6 (Şeşen, *op. cit.*, p. 196, no. 11) and Paris BNF arabe 6791 (*FiMMOD* 160). 24 See, for example, MS. Tashkent IOB 3120, dated 771/1369 (*FiMMOD* 256). 25 As found in MSS. Paris BNF arabe 1687, dated 776/1374, and Liège BU 5070, dated 850/1447 (*FiMMOD* 53 and 70). 26 MSS. Paris BNF arabe 1451, dated 579/1183 and BNF arabe 1695, ff. 2–144, dated 612/1216 (*FiMMOD* 36 and 46). 27 MSS. Paris BNF arabe 2882, dated 582/1186, and BNF arabe 1246, dated 580/1184 (*FiMMOD* 61 and 103). 28 MS. Paris BNF arabe 1615, dated 894/1489 (*FiMMOD* 125). 29 MS. Oxford Bodleian Libr. Arab. d. 19, dated 743/1342 (*FiMMOD* 230). 30 MS. Paris BNF arabe 385, dated 703/1304 (*FiMMOD* 102). 31 MSS. Paris BNF arabe 1696, dated 629/1232 (*FiMMOD* 45) and Leiden BRU Or. 14113, f. 47 v° (J. Witkam, *Cat.* 2, pp. 189–191). See also A. Gacek, 'Technical practices and recommendations recorded by classical and post-classical Arabic scholars concerning the copying and correction of manuscripts', *MSS. du MO*, p. 53 and no. 27. 32 See Istanbul fragment TIEM ŞE 13644/1, in F. Déroche, 'Deux fragments coraniques maghrébins anciens au Musée des arts turc et islamique d'Istanbul', *REI* 59 (1991), pp. 231–232 and fig. 2, and MS. Montreal McGill Univ. Libr. ISL 54 , in Gacek, *McGill*, p. 49, no. 62 and fig. 11. For different reasons (they are forged 'Ibn al-Bawwābs'), two copies of Salāma ibn Jandal's *Dīwān* end with a colophon in gold lettering; see Fu'ād Sayyid, *Makhṭūṭ*, figs. 74 and 75.

third person, although exceptions exist. The rest of the text is often extremely brief and limited to essentials, unlike in some other manuscript traditions where colophons gave the scribe a chance to address readers and to present specific information about himself. As Ramazan Şeşen has suggested, the amount of information nevertheless tended to increase over time, along with a growing tendency to adopt more literary phrasing. Eulogies also played an important role and might occur at various points in the text.

In Arabic, colophons normally begin by a verb expressing completion (*tamm, faragh min...*) or a variant thereof (*waqa' al-tafrīgh*,[33] *wāfaq al-farāgh*,[34] *ṣādaf al-farāgh*[35] or *tayassar al-farāgh*,[36] *kamala*,[37] *waqa' ikhtitām*), or else by a verb for the act of copying itself (*kataba, naqala, nasakha, ḥarrara, nammaqa, 'allaqa*). In the former case, the verb will be accompanied by a word indicating the action that has just been completed: *kitāba, intisākh*,[38] *naql*,[39] *taswīd, taḥrīr*,[40] *tanmīq*,[41] *ta'līq, tarqīm*, or *tasṭīr*.[42] In the latter case, the colophon will refer to the book, either by a generic term (*muṣḥaf, nuskha, kitāb, risāla, juz', daftar*) or a specific indication of the author or, more commonly, the title.[43] The title is also usually given when the scribe decides to use the opening phrase *hādhā akhir*.[44]

The scribe's name does not always appear. A concise colophon sometimes gives only the year in which the text was copied. When the copyist did decide to reveal his identity, he might use any of the possibilities afforded by the Arabic and Islamic tradition of naming: some scribes wrote only their *ism*, others included not only genealogy[45] but also their *laqab, kunya*, or other title or nickname. Very often, the name would be preceded by the 'means' employed: hand (*'alā yad*), script (*bi-khaṭṭ*), fingers (*bi-banān*), reed pen (*bi-qalam*). The same scribe might give more or less lengthy versions of his name in one copy than in another; examining the main lists of copyists may help one to identify an individual recorded elsewhere. As mentioned above, additional details about the scribe's trade or training may also appear in the colophon; in Qur'āns from the later Ottoman period it was customary to include the name of one's calligraphy teacher.[46] All too rarely, a few words of a more personal

33 MS. Paris BNF arabe 820, dated 618/1221 (*FiMMOD* 97). 34 MS. Paris BNF arabe 4821, dated 544/1149 (*FiMMOD* 32). 35 MS. Berlin, Staatsbibl. Glaser 101 dated 544/1150 (*FiMMOD* 187). 36 MS. Berlin, Staatsbibl. Sprenger 1184, dated 501/1108 (*FiMMOD* 186). 37 MS. Liège, BU 5070, dated 850/1447 (*FiMMOD* 70). 38 MS. Paris BNF arabe 820, dated 618/1221 (*FiMMOD* 97). 39 MSS. Vatican BAV Vat. arab. 1033, dated 649/1251, and Sbath 5, dated 608/1211 (*FiMMOD* 78 and 84). 40 MS. Paris BNF arabe 3280, dated 616/1220 (*FiMMOD* 142). 41 MSS. Bologna BU 3014, dated 663/1265, and Tashkent IOB 3109/I, dated 785/1283 (*FiMMOD* 220 and 255). 42 MS. Paris BNF arabe 6019, dated 569/1174 (*FiMMOD* 52). 43 Sometimes the history of the work itself is briefly mentioned. See Şeşen, op. cit., p. 204, no. 27 and p. 209, no. 38. 44 MS. Paris BNF arabe 2882, dated 582/1186 (*FiMMOD* 61). 45 The copyist of Istanbul Qur'ān TIEM 450, a minor member of the Ayyūbid family, gives his complete genealogy in the colophon. See D. James, *Qur'āns of the Mamlūks* (London, 1988), p. 68. 46 For example, Paris BNF arabe 6923 and 6924 (Déroche, *Cat.* I/2, p. 115, no. 510, p. 114, no. 507); see also M.A. Karimzadeh Tabrizi, *Ijāzat nameh = Icâzet name* (London, 1999), pp. 119–120, no. 48, pp. 125-126, no. 51.

nature offer a fleeting glimpse of the scribe's character; their usefulness in understanding the world and mentality of makers of books has already been touched on in a few articles.[47]

The place where the manuscript was written is mentioned less frequently. Even when it is indicated, the location remains fairly vague; codicologists must often be content with the name of a city,[48] only rarely learning the precise spot where the work of transcription was done. But MS. Tashkent IOB 3907/I, dated 544/1149, ends with a lengthy colophon (f. 91) in which the scribe not only noted that he worked in a cell (*ḥujra*) but also pinpointed its exact location in Samarkand.[49] The same precision is found in MS. Paris BNF arabe 6690, copied in 581/1185 in a library next to a madrasa in Zanjān.[50]

The person who commissioned the volume (*muhtamm, mu'tanī*) would often be mentioned here as well, especially if the patron was of modest rank;[51] grandees usually preferred to see their names placed in the front of the book, sometimes adorned with elaborate decoration. Where relevant, it was not unusual for a scribe to indicate by the use of the phrase *li-nafsih*[52], that he had copied the text for himself.

At an early date, the importance of high-quality copies was recognised by scholars, who offered profuse advice on the subject. Scribes, meanwhile, sometimes went to the trouble of briefly describing the original model (*nuskhat al-aṣl*) when the nature of that original conferred greater value on the copy; Franz Rosenthal has noted literary evidence which seems to indicate that autograph versions (*bi-khaṭṭ al-mu'allif/al-muṣannif*) were held in high esteem,[53] as confirmed by several colophons.[54] A colophon might also contain bibliographic information; in multi-volume manuscripts, the order of each one in the series was often noted.

Dating

When the manuscript includes a colophon, the date (*bi-ta'rīkh*) is given in most cases, although sometimes the date is lacking and the scribe mentions only his name. The information most usually given is the year, with no mention of

47 M. Weisweiler, 'Arabische Schreiberverse', in R. Paret (ed.), *Orientalistische Studien E. Littmann zu seinem 60. Geburtstag ... überreicht* (Leiden, 1935), pp. 101–120; A.M. Piemontese, 'Devises et vers traditionnels des copistes entre explicit et colophon des manuscrits persans', *MSS. du MO*, pp. 79–87. 48 For example, in MS. Vatican BAV Vat. arab. 873, dated 588/1192, the scribe indicates on f. 101 v° that he copied the manuscript in Aleppo, adding no further details (*FiMMOD* 85). 49 *FiMMOD* 249. 50 *FiMMOD* 55 (f. 87). See also MS. Cairo DAK 490 Fiqh Ḥanafī (Fu'ād Sayyid, *Makhṭūṭ*, fig. 53). 51 MSS. Paris BNF arabe 3988, 1696, 1611, 2843 (*FiMMOD* 42, 45, 124, 129), etc. 52 MSS. Paris BNF arabe 718, 6690, 5883, 6042 (*FiMMOD* 40, 55, 56, 57) etc. Other formulas have been attested by A. Fu'ād Sayyid, who devotes a section of his study to these manuscripts (*Makhṭūṭ*, pp. 455–458). 53 Rosenthal, op. cit., p. 23. 54 MSS. Istanbul Köprülü 1618, 949, 978 and 956 (Şeşen, op. cit., pp. 202–203, nos. 24, 26, 27 and 29, figs. 8 and 9).

month or day; of the various chronological systems employed in the geographical regions that produced manuscripts in Arabic writing, the most commonly employed calendar took the year of the *Hijra* as its point of departure: the date 1 *Muḥarram* 1 corresponds to Friday, 16 July 622. The use of concordance tables allows the corresponding date in the Gregorian calendar to be determined.[55] Several automatic converters can be found on the Internet; they generally work reliably for the twentieth and present centuries, but do not always include all the parameters required to compute ancient dates. Before using them it is as well to test them on dates from different centuries.[56]

The Hijra era

The year is usually spelled out, preceded by the word *sana* or, less often, *'ām* – or *sāl* (in Persian), or *yıl* (in Turkish).[57] Scribes might nevertheless write the year in numerals on occasion,[58] more exceptionally in *abjad* letter-numerals.[59] Later on, chronograms and enigmatic formulas began to appear.[60] Although, as a rule, only the year was given, Adolf Grohmann cited a manuscript which refers specifically to 'the end of the year...' (*fī ḥudūd sana...*).[61]

55 For converting dates, the best work is G.S.P. Freeman-Grenville, *The Islamic and Christian calendars, AD622-2222 (AH 1-1650): a complete guide for converting Christian and Islamic dates and dates of festivals* (Reading, 1995), previously published as *The Muslim and Christian calendars: being tables for the conversion of Muslim and Christian dates from the Hijra to the year 2000* (Oxford, 1963; repr. 1977). Less convenient but more wide-ranging is V.V. Tsybulsky, *Calendars of Middle East countries: conversion tables and explanatory notes* (Moscow, 1979), which covers the Arab, Turkish, Iranian, Afghan, Israeli and Coptic calendars. F. Wüstenfeld's book of tables, revised by B. Spuler, remains a useful reference work (see the bibliography, which also lists the concordance tables by Cattenoz and Haig). Further information on these technical tables can be found in A. Grohmann, *Arabische Chronologie* [Handbuch der Orientalistik, I] (Leiden/Cologne, 1966) and in articles by R. Abdollahy (*Enc. Ir.*, vol. IV, s.v. 'calendars II: Islamic period', pp. 668–674) and F.C. de Blois and B. van Dalen (*EI²* X, pp. 258–271, s.v. 'ta'rīkh'). **56** Websites are extremely susceptible to change; in order to locate relevant ones, readers should use a search engine, entering the keywords 'Islamic calendar'. **57** This latter term is well attested in the Maghrib, as demonstrated by MSS. Paris BNF arabe 2960, dated 562/1166, BNF arabe 1246, dated 580/1184, BNF arabe 7228, dated 679/1281 and BNF arabe 7233, dated 720/1321 (*FiMMOD* 91, 103, 73 and 33); MS. Paris BNF arabe 1687, dated 776/1374, probably of Egyptian origin (*FiMMOD* 53), suggests that its use was more widespread. **58** MSS. Paris BNF arabe 1686, f. 30, dated 585/1190 (*FiMMOD* 173), Berlin SB Or. oct. 432, dated 1240/1824 (Sellheim, *Materialen* 2, p. 32 and fig. 27), Berlin SB Or. oct. 900, dated 1023/1614 (op. cit., p. 34 and fig. 19), and Berlin SB Or. oct. 1803, dated 968/1560 (op. cit., p. 66 and fig. 36). For the types of numerals, see R. Lemay's entry on 'Arabic Numerals' in *The Dictionary of the Middle Ages*, vol. I, pp. 382–398. **59** See MSS. Istanbul Köprülü 1383–1386 (Şeşen, op.cit., p. 213, no. 49). Folio 302 of MS. Paris BNF arabe 6851, reads: *'ām JYSSh*; *J* represents ones, *Y* tens, *S* hundreds, and *Sh* thousands, so that 3 + 10 + 300 + 1000 = 1313/1895–1896. **60** See below. **61** Grohmann, op. cit, p. 17.

Month (*shahr*; Persian *mah*, Turkish *ay*)

It is not unusual for the year of completion to be accompanied by the name of the month. There are twelve months in the Islamic calendar, occurring in the order given below. The name of the month is often accompanied by an honorific epithet (indicated on the right in the chart below),[62] and such epithets can be precious aids when the colophon has been damaged and the name of the month itself has been effaced.

Name of month:	Epithet:
1. *Muḥarram*	*al-ḥarām*[63]
2. *Ṣafar*	*al-khayr*,[64] *al-muẓaffar, al-mubārak, al-a'azz*[65]
3. *Rabī' al-awwal*	*al-sharīf*
4. *Rabī` al-ākhir/al-thānī*	*al-mubārak*
5. *Jumādā al-ūlā/al-awwal*	
6. *Jumādā al-ākhira/al-ukhrā al-thānī*	
7. *Rajab*	*al-fard*[66], *al-ḥarām, al-aṣamm*[67], *al-aṣabb*[68], *al-murajjab, al-mubārak*[69]
8. *Sha'bān*	*al-mu'aẓẓām*[70], *al-mukarram*[71], *al-sharīf, al-mubārak*
9. *Ramaḍān*	*al-mubārak*[72], *al-mu'aẓẓām*[73]
10. *Shawwāl*	*al-mukarram, al-mubārak*[74]
11. *Dhū l-Qa'da*	*al-sharīf, al-ḥarām*
12. *Dhū l-Ḥijja*	*al-sharīf, al-ḥarām*[75]

62 See E. Littmann, 'Über die Ehrennamen und Neubenennungen der islamischen Monate', *Der Islam* 8 (1918), pp. 228–236; J. Horovitz, 'Zu den Ehrennamen der islamischen Monate', *Der Islam* 13 (1923), p. 281; G. Wiet, *Matériaux pour un Corpus inscriptionum arabicarum*, I: Egypte 2/1 (Cairo, 1929), pp. 35– 40; Grohmann, op. cit., p. 12. Starting in the twelfth/eighteenth century, the name of the month might be abbreviated in notations such as ownership marks (Gacek, op. cit., p. 89). **63** MSS. Tashkent IOB 3109/I, dated 785/1283, and 3120, dated 771/1369 (*FiMMOD* 255 and 256). **64** MS. Paris BNF arabe 1569, dated 885/1480 (*FiMMOD* 112). **65** MS. Paris BNF arabe 1604, dated 880/1475 (*FiMMOD* 114). **66** MSS. Paris BNF arabe 3394, dated 883/1478, and BNF arabe 2843, dated 887/1482 (*FiMMOD* 10 and 129). **67** MSS. Paris BNF arabe 6018, dated 563/1168, Vatican BAV Sbath 266, dated 634/1237, Istanbul Süleymaniye Bağdatlı Vehbi 1383, dated 742/1341, and Paris BNF arabe 2843, dated 887/1482 (*FiMMOD* 62, 79, 108 and 129). **68** MSS. Paris BNF arabe 5883 (ff. 3-117, 128-157), dated 592/1196, and Vatican BAV Vat. arab. 372 (ff. 3–222), dated 650/1252 (*FiMMOD* 56 and 43). **69** MS. Vatican BAV Vat. arab. 372 (ff. 3-222), dated 650/1252 (*FiMMOD* 43). **70** MS. Oxford Bodleian Huntington 8, dated 669/1271 (*FiMMOD* 227). **71** MSS. Paris BNF arabe 1629, dated 762/1361, and BNF arabe 610, dated 632/1235 (*FiMMOD* 34 and 164). **72** MS. Paris BNF arabe 2947, dated 547/1152 (*FiMMOD* 24); this epithet was highly common. In MS. Paris BNF arabe 820, dated 618/1221, the phrase *shahr al-ṣawm* appears (*FiMMOD* 97). **73** MS. Paris BNF arabe 2682, dated 862/1458 (*FiMMOD* 101). **74** MS. Paris BNF arabe 2222, ff. 1–233, dated 744/1344 (*FiMMOD* 233). **75** MS. Paris BNF arabe 1600, dated 849/1446 (*FiMMOD* 113).

For the purpose of historical chronology, dates are normally converted on the basis that the odd months have thirty days and the even months twenty-nine,[76] except *Dhū l-Ḥijja*, to which a day must be added several times over the space of a thirty-year cycle in order to keep the synodic month in synchrony with the calendar year. In orientalist usage, dates in the first and second months of *Rabīʿ* and *Ǧumādā* are often abbreviated by using the roman numerals I and II: e.g. 12 *Rabīʿ* I 1200.

Divisions of the month

A scribe might sometimes indicate more precisely when his work was completed. First of all, the month could be divided into three series of ten days (months with twenty-nine days being irregular): *al-ʿashr al-awwal* (*al-ūlā*),[77] *al-ʿashr al-awsaṭ* (*al-wusṭā*),[78] *al-ʿashr al-ākhir* (*al-ukhrā*).[79] In this system, a copyist would indicate the ten-day period in which his task was completed. Sometimes mention would be made of the day of the week within that period (for example, Wednesday of the last ten-day period). Arabic also has special terms for certain days or groups of days that occupy obvious positions: the first day is called *ghurra* [80]or, less accurately, *mustahall/istihlāl*,[81] *ṣadr*,[82] *awā'il* (properly "first days")[83]or *uwal*. The middle day might be labelled *niṣf*,[84] *muntaṣaf*,[85] or *awāsiṭ*,[86] while the last day would be called *salkh*,[87] *insilākh, ākhir, awākhir* (properly "last days"),[88] or *ukhar*. The plural forms probably indicate uncertainty as to the precise day of the month. Another approach, mentioned

76 Exceptions sometimes arise: see MS. Liège BU 5070, dated 850/1447 (*FiMMOD* 70), which gives the date 30 *Shawwāl*. It should be borne in mind that Islamic authorities all agree that a month begins only once the new moon has actually been observed(*EI*² X, p. 259, s.v. 'ta'rīkh'). 77 MSS. Berlin SB Wetzstein II 162, dated 475/1083, Paris BNF arabe 5938 (ff. 3–67), dated 547/1153, London BL Or. 9447, dated 585/1189, and Paris BNF arabe 7094, dated 591/1195 (*FiMMOD* 193, 59, 153 and 162). 78 MSS. Paris BNF arabe 1498, dated 666/1268, and BNF arabe 5976, dated 589/1193 (*FiMMOD* 72 and 172); Istanbul Süleymaniye Hekimoğlu 572/1, dated 556/1161 (Şeşen, op. cit., p. 198, no. 16). 79 MSS. Berlin SB Sprenger 41, dated 447/1055, Vatican BAV Vat. Arab. 1023, dated 565/1170 and Paris BNF arabe 3112, dated 632/1235 (*FiMMOD* 184, 87 and 209). 80 MS. Paris BNF arabe 6080, dated 554/1159 (*FiMMOD* 50). 81 MSS. Vatican BAV Vat. arab. 1451, dated 692/1293, Paris BNF arabe 3305, dated 621/1224, BNF arabe 3281, dated 627/1230, and BNF arabe 1569, dated 885/1480 (*FiMMOD* 75, 143, 208 and 112). 82 MS. Berlin SB Or. quart. 107 (ff. 4–129), dated 424/1033 (*FiMMOD* 185). 83 MSS. Istanbul Süleymaniye Esat Ef. 2274, dated 871/1466, and Paris BNF arabe 2283, dated 745/1345 (*FiMMOD* 107 and 234). 84 MSS. Leiden BRU Or. 2380b, dated 488/1095, Vatican BAV Vat. arab. 526, dated 622/1225, and Tashkent IOB 3249, dated 695/1295 (*FiMMOD* 216, 82 and 235). 85 MSS. Paris BNF arabe 6690, dated 581/1185, BNF arabe 3926, dated 611/1214, and BNF arabe 4769, dated 770/1368 (*FiMMOD* 55, 257 and 166). 86 MS. Istanbul Köprülü 1602/13 (Şeşen, op. cit., p. 209, no. 38). 87 MSS. Paris BNF arabe 2906, dated 524/1130, BNF arabe 6042, dated 569/1174, BNF arabe 6440, dated 584/1188, BNF arabe 1686, dated 585/1190, BNF arabe 3280, dated 616/1220, BNF arabe 6759, dated 673/1274, and Berlin SB Glaser 101, dated 544/1150 (*FiMMOD* 211, 57, 171, 173, 142, 159 and 187). Grohmann, op. cit, p. 22, also cites the use of the term *ʿuqb* in inscriptions. 88 MSS. Paris BNF arabe 1629, dated 762/1361, and BNF arabe 1246, dated 580/1184 (*FiMMOD* 34 and 103).

by Grohmann, involved dating events by reference to major religious festivals,[89] but only two examples of such datings are known of in manuscripts.[90] Such references are in any case insufficient for dating every single day of a given month.

A further step toward accuracy could be made by using the old division of a lunar month into ten groups of three nights; the only known example is in Leiden BRU Or. 704, completed in 404/1014.[91]

Day of the month

Calculation of the exact day (*yawm, nahār*; Persian *rūz*; Turkish *gün*) of the month was often done by counting from the first day of that month, as is done in modern times: for example, Wednesday, 29 *Rabīʿ* I 1037. Another method involved dividing the month in half and counting the days within each half; during the first part of the month, the scribe would use the verb *khalā* (or *maḍā*) and count the number of nights (or days) that had elapsed,[92] whereas from the middle of the month (*niṣf*) onward, the exact day was calculated according to the number of nights remaining until the end of the second half (using the verb *baqā*).[93] To judge from the manuscripts, this method enjoyed a certain popularity. Whatever the case, a scribe was free to specify (or not) the day of the week. In a few manuscripts, the name of the day, like the name of the month, is accompanied by an epithet (*al-mubārak*).[94] With days of the week, slight discrepancies may arise, conversion tables sometimes proving at odds with the day stated in the manuscript for the date in question. Finally, some copyists even specified the time of day at which they completed their work.

Chronograms[95]

Sometimes scribes employed dating methods, such as chronograms and series of fractions, that have to be decoded. A chronogram is a word (or short phrase) composed of letters whose numerical values add up to the figure for the year in

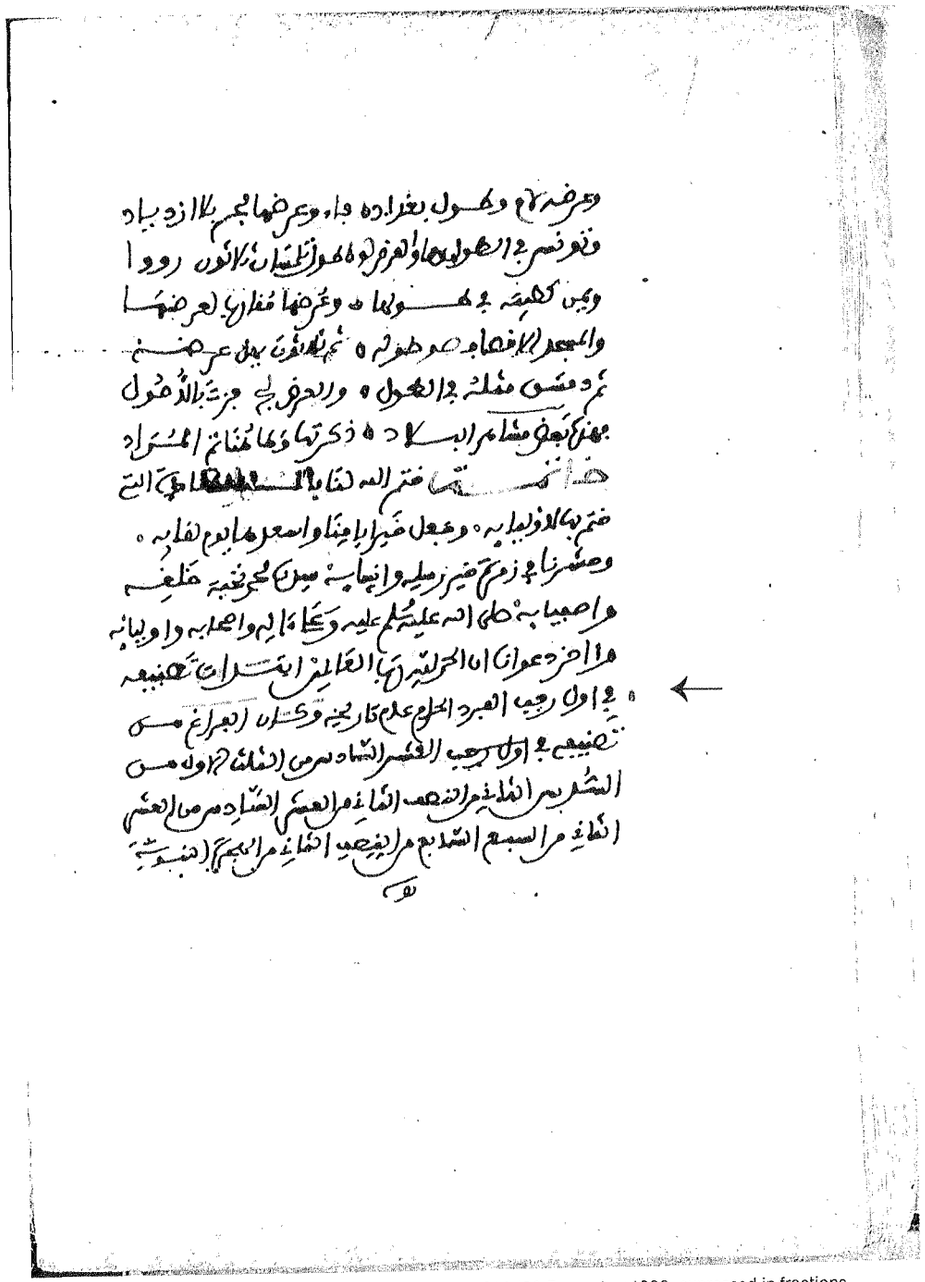
89 Grohmann, op. cit., pp. 23–24. 90 MSS. Oxford Bodleian Pococke 270, dated 886/1482, and Tashkent IOB 3153/II, dated 622/1263 (*FiMMOD* 228 and 308); see also MS. Montreal McGill BWL W16: 2, which states that copying was completed on the Night of the *Miʿrāj* 999/1591; see Gacek, op. cit. (1991), p. 52, no. 66/2. 91 *FiMMOD* 213; the colophon refers to *ayyām*; see C. Pellat, *EI*² V, p. 708, s.v. 'layl wa nahār'. 92 MSS. Berlin SB Or. oct. 2676, dated 438/1047, Tashkent IOB 3156, dated 536/1141, Vatican BAV Sbath 265, dated 583/1187, Vat. arab. 1025, dated 611/1214, Vat. arab. 1067, dated 630/1233, Vat. arab. 372 (ff. 3–222), dated 650/1252, Paris BNF arabe 4231, dated 631/1234, BNF arabe 1666, dated 666/1267, and Oxford Bodleian Huntington 8, dated 669/1271 (*FiMMOD* 189, 248, 86, 83, 80, 43, 212, 99 and 227). 93 MSS. Istanbul Süleymaniye Laleli 803, dated 737/1337, and Paris BNF arabe 3927, dated 611/1215 (*FiMMOD* 137 and 149). 94 MSS. Liège BU 5086, dated 696/1297, Paris BNF arabe 4088, dated 823/1420, BNF arabe 1537, dated 860/1456, BNF arabe 3394, dated 883/1478, and BNF arabe 2843, dated 887/1482 (*FiMMOD* 69, 226, 111, 10, 129). 95 The details on chronograms and dating by fractions were supplied by Marie-Geneviève Guesdon.

question.[96] This system was used in the Orient, but was also very popular in Morocco for dating inscriptions, historical texts and manuscripts from the Sa'dian period onward. Chronograms are also often found in manuscripts from Subsaharan Africa. Folio 214 of MS. Paris BNF arabe 6851 reads: *'ām bi-sharq min hijrat al-Nabī*; according to the numerical values of letters used in the Maghrib (see chart p. 104), *bi-sharq* equals 100 + 200 + 1000 + 2, giving a total of 1302 (the year 1302/1884–85).

Dating by fractions

Dating by fractions was a less common method, but occurs in Arabic and Turkish manuscripts.[97] According to Albert Dietrich, Kamāl Pāshāzāda (Kemalpaşazade, d. 940/1533) was the first to use this system. The following passage occurs in MS. Rabat BGA D 2046 (illus. 115): *wa kāna l-farāgh min taṣnīfih fī l-'ushr al-sādis min al-thulth al-awwal min al-suds al-thānī min al-nisf al-thānī min al-'ushr al-sādis min al-'ushr al-thānī min al-sub' al-sābi' min al-nisf al-thānī min al-hijrat al-nabawiyya* ('the end of the composition of it occurred on the sixth tenth of the first third of the second sixth of the second half of the sixth tenth of the second tenth of the seventh seventh of the second half of the Prophetic Hijra'). The decipherment starts from the end: the second half of the Hijra era is divisible into sevenths, which implies that the total is 1400, the second half running from 701 to 1400, and the seventh seventh from 1301 to 1400, which thereby establishes the century in question. The century is in turn divided into tenths (decades), the second one being 1311–1320; the decade itself can be divided into tenths (years), the sixth tenth corresponding to 1316. This date is confirmed by another manuscript in the same library, copied in the presence of the author when he happened to be in Marrakech, in 1316/1898–99. In the second half of that year, the second sixth corresponds to the month of *Sha'bān,* itself divided into three ten-day periods; the sixth day of the first tenth therefore corresponds to 6 *Sha'bān* 1316/20 December 1898.

96 G. S. Colin, *EI²* III, p. 468, s.v. 'ḥisāb al-djummal'; G. Ifrah, *The Universal history of computing* (New York, 2001), pp. 600–604; H.I. Gwarzo, 'The theory of chronograms as expounded by the 18th century Kasina astronomer-mathematician M. b. M. al-Fulani al-Kasinawi', *Centre of Arabic Documentation, Research Bulletin*, Ibadan, III (1967), pp. 116–123; F. C. de Blois, *EI²* X, p. 306, s.v. 'ta'rīkh'. Sellheim (*Materialen* 1, p. 326) also discusses a chronogram found in a manuscript. Quiring Zoche, *Ar. Hss.* 3, pp. 111–112, has reproduced a note from a manuscript that explains this system of dating. 97 H. Ritter, 'Philologika XII: Datierung durch Brüche', *Oriens* I (1948), pp. 237-247; A. Dietrich, 'Datierung durch Brüche in arabischen Handschriften', *Nachrichten der Akademie der Wissenschaften in Göttingen*, I [Phil.-hist. Klasse, N. 2] (1961), p. 11-24. Şeşen, op. cit., pp. 216-219 provides several examples, the earliest being in MS. Istanbul TKS R. 1062, dated 7 *Dhū l-Qa'da* 717 (11 January 1318); this suggests that the first experiments were made well before Kamāl Pāshāzāda.



115. Completion date of composition, 6 *Sha'bān* 1316/20 December 1898, expressed in fractions. Maghrib, ca. 1316/1898-9. Rabat, BGA D 2046, f. 31.

Other Middle Eastern calendar systems

Other calendar systems were in use at the same time; most manuscripts refer to only a single calendar, but a few offered equivalents.[98] The Julian calendar was well known in non-Islamic circles, although other systems were also in use. Melchite Christians referred to the Year of the World, also known as the Year of the Creation (*al-kawn/kawn al-ʿālam*) or of Adam (*Ādam*), which was reckoned to be September 5509 BCE. In Egypt, the Copts generally used the Diocletian era or 'era of martyrs' (*al-shuhadāʾ*), which began on 29 August 284 CE.[99] Also employed was the Alexandrian (*al-Iskandar*) or Seleucid system, sometimes known as the 'Greek' era (*Yūnāniyya*), which began on 1 October 312 BCE.[100] In the Iranian world, the Yazdagird era (which began on 16 June 632 CE) was first used,[101] then adapted by the Seljuk Sultan Malikshāh, who inaugurated the *Jalālī* era on 15 March 1079 CE.[102] Ramazan Şeşen has cited examples of the use of these various systems, such as the Istanbul manuscript Süleymaniye Selimağa 727, which gives four dates: *Hijrī*, *Iskandarī*, *Jalālī*, and *Yazdagirdī*.[103] It should be stressed that concordance between the various dates is not always exact when comparison is made with modern tables. Specific to Mughal India is the *ilāhī* era inaugurated by the Mughal emperor Akbar in 992/1584; intended originally for universal application, *ilāhī* dates were widely used in manuscripts, official documents, etc.[104]

The names of the months associated with these solar calendars might also figure in manuscripts. In the Middle East, the following forms appear (numbered in order starting from *Kānūn al-thānī*, the equivalent of January):

1) *Kānūn al-thānī*
2) *Shubāṭ*
3) *Ādhār*
4) *Nīsān*
5) *Ayyār*
6) *Ḥazīrān*
7) *Tammūz*
8) *Āb*
9) *Aylūl*
10) *Tishrīn al-awwal*
11) *Tishrīn al-thānī*
12) *Kānūn al-awwal.*

98 In converting dates to the modern, Common Era (CE), Freeman-Grenville, op. cit. and Wüstenfeld, op. cit., are extremely valuable. Also of great use are L. Mas-Latrie's *Trésor de chronologie* and P. V. Grümel's 'La chronologie', in P. Lemerle (ed.), *Traité d'études byzantines* I (Paris, 1958). 99 Blois, op. cit., p. 261. 100 Ibid. 101 Op. cit., pp. 262 and 267. 102 Abdollahy, op. cit., pp. 670–671; Blois, op. cit., pp. 262 and 267-268. 103 Şeşen, op. cit. p. 212, no. 48. 104 M. Athar Ali, *EI²*, Suppl., p. 410-411, s.v. 'ilāhī'. A colophon in which the date is given by reference to the reign of Shāh ʿĀlam has been noted in MS. Montreal McGill BWL 206. See Gacek, op. cit. (1991), p. 212, no. 235.

Depending on the community, the year might begin at different points. The Coptic year began on 29 or 30 August, and comprised the following months:

1) *Tūt*
2) *Bābih*
3) *Hātūr*
4) *Kiyahk*
5) *Ṭuba*
6) *Amshīr*
7) *Baramhāt*
8) *Barmūda*
9) *Bashans*
10) *Baʾūna*
11) *Abīb*
12) *Misrā*, plus the epagomenal days (*nasīʾ*).

In Persian, the months are:

1) *Farwardīn*
2) *Urdibihisht*
3) *Khurdād*
4) *Tīr*
5) *Murdād*
6) *Shahrīwar*
7) *Mihr*
8) *Ābān*
9) *Ādhar*
10) *Day*
11) *Bahman*
12) *Isfand* (or *Isfandarmud*) plus the epagomenal days.[105]

Signatures of illuminators and artists

As already mentioned,[106] only rarely did illuminators – and, somewhat more often, artists – sign their work. Furthermore, even when they did so, they deliberately made their signature as discreet as possible, skilfully integrating it into the decoration. It is therefore necessary to examine illumination and miniatures attentively in an effort to discover the name of the artist (see illus. 70).[107] Many of the apparent signatures below miniature paintings are in fact attributions to artists and were written by librarians or owners of the manuscripts in question.

105 Abdollahy, op. cit., p. 672, table 37. 106 See chapter 'Craftsmen and the making of the manuscript'. 107 In the *sarlawḥ* of MS. Paris BNF suppl. pers. 636, f. 1 v°, Mīr 'Aḍud's signature is cleverly incorporated into the decorative frame; see Richard, PARIS 1997, p. 114, no. 74 and detail p. 94.

The earliest attestations of illuminators' signatures are found in Qur'ānic manuscripts; perhaps the first known example figures in a restored section of the Amājūr Qur'an, dated 262/876.[108] Around that time or shortly afterwards, several Qur'āns, such as Istanbul TIEM 455[109] and London BL Add. 7214,[110] suggest that this practice became more widespread. In both cases, the signatures are clearly separated from the rest of the text.

Sources concerning the history of a manuscript

In the absence of a colophon, the date of a manuscript may be indirectly inferred by way of the dated notes that may have been added to it. The interest of these notes – to be discussed briefly below – is not limited to their help in dating a copy, for they also constitute an irreplaceable source of information concerning the history of a manuscript and, more generally, of the history of collections of manuscripts (the topic discussed in the next chapter). Caution must be used when dating a manuscript from such notes, because by definition they post-date the copy; it is essential to estimate carefully the time that elapsed between the copying of the text and the addition of a note – or possibly to detect where certificates have been copied from an older manuscript, or even forged.

Deeds of endowment (*waqf*)

Islamic legal scholars were divided as to whether books could be the object of a *waqf*, or deed of endowment.[111] In practice, *waqfiyya*s appeared on books as early as the third/ninth century; the earliest surviving examples concern Qur'āns, but it is possible that other books were also involved at that date.[112]

108 F. Déroche, 'Collections de manuscrits anciens du Coran à Istanbul', in J. Sourdel-Thomine (ed.), *Etudes médiévales et patrimoine turc* [Cultures et civilisations médiévales I] (Paris, 1983), p. 152 and pl. IIIa (fragment ŞE 12822). 109 Geneva 1988, p. 28, fig. 6. 110 London 1976, p. 43, no. 54; *FiMMOD* 163. 111 The conditions under which books began to be endowed as *waqf*, along with the arguments for and against the practice, are summarized in Y. Éche, *Les Bibliothèques arabes publiques et semi-publiques en Mésopotamie, en Syrie et en Égypte au Moyen Âge* (Damascus, 1967), pp. 68–74. See also Fu'ād Sayyid, *Makhṭūṭ*, pp. 421–427. 112 Most Qur'āns and Qur'ānic fragments ascribed to the third/ninth century are datable thanks to deeds of *waqf*. See F. Déroche, 'Les manuscrits arabes datés du IIIe/IXe s.', *REI* 55–57 (1987–1989), pp. 345–350. For the phrasing used in such deeds, see Fu'ād Sayyid, *Makhṭūṭ*, pp. 428–442 (essentially *waqf* texts derived from manuscripts).

Subsequently, the practice spread widely, to such an extent that a *waqf* sometimes applied to entire libraries.[113]

The acts of endowment written on manuscripts vary substantially in length and in phrasing. The shortest simply indicate the recipient institution and the fact that the volume is *waqf* or, to use to a term whose use became increasingly restricted to the Maghrib, *ḥabūs* (or *ḥabīs*).[114] Other details sometimes included are the name of the donor, the date, and a description of the volume(s) endowed. More detailed texts, such as the two Almohad *taḥbīs* published by Gaston Deverdun and Mohammed b. A. Ghiatī,[115] also incorporate legal phrasing that defines the aim of the bequest and the conditions of application, describing the manuscript and the location where it is kept, and forbidding that the book be removed from that place.[116] In endowment texts drafted in Damascus, the sale, loan and destruction of the manuscript are also forbidden.[117] These proscriptions were sometimes accompanied by a quotation from the Qur'ān: Sūra xxi, verse 89. In some instances, deeds were renewed and the condition of the manuscripts was checked, especially when multivolume Qur'āns were involved.[118]

Because waqfiyyas were customarily written at the front of the volume, a highly vulnerable zone, it was probably partly as a safety measure that in some manuscripts the word *waqf* (or *ḥabūs*) was added in the margins (usually the top margin) of every few folios. This inscription, sometimes the only surviving record of the *waqf*, was usually written in ink (sometimes gilded), although in certain parchment manuscripts it was done with a series of tiny perforations, a practice that might have been a Maghribī habit.[119] This system was taken to an

113 The size of these libraries could vary greatly. On this subject, see F. Bilici, 'Les bibliothèques vakıf-s à Istanbul au XVIe siècle, prémices de grandes bibliothèques publiques', *REMMM* 87–88 (1999), pp. 39–59. See also Fu'ād Sayyid, *Makhṭūṭ*, pp. 443–448. 114 The root *ḤBS* seems to have been more widely used in the early period, especially in Egypt. Assuming an Egyptian provenance for the bulk of the collection of Qur'ānic fragments held by the Bibliothèque nationale de France, this root appears on MSS. Paris BNF arabe 331, 334m, 358b (*FiMMOD* 19) and 366c (Déroche, *Cat.* I/1, p. 67, no. 15, p. 102, no. 125, p. 91, no. 85 and p. 115, no. 170). Istanbul fragment TIEM ŞE 12800, copied and declared *ḥabūs* at Fusṭāṭ in 325/936–937 may be added to this list (Déroche, op. cit., p. 155 and pl. IVb), as may another fragment from the same collection, originally belonging to the Great Mosque of Damascus (ŞE 45, part of a Qur'ān in thirty volumes, dispersed among a number of libraries (Déroche, op. cit., pp. 149–150 and pl. IIa). 115 'Deux taḥbīs almohades (milieu du XIIIe s. J.-C.)', *Hespéris* 3–4 (1954), pp. 411–423. 116 This type of restriction is illustrated by an example from Kairouan: 'It will not be forbidden to read [this Qur'ān] as long as the person remains inside the mosque. It may only be read within the mosque' (translated into French by Marçais and Poinssot, *Objets* 1, p. 210). 117 Unpublished. Such clauses are extremely common: the *waqf* deed of the Maḥmūdiyya library in Cairo forbids that books leave the madrasa. See F. Sayyid, '*Naṣṣān qadīmān fī i'ārat al-kutub*', *RIMA* 4/1 (1958), p. 128 and facing plate. The *waqfiyya* of the Baktīmūr al-Sāqī Qur'ān forbade that the volumes leave the *türbe* except to be repaired; see M. Lings and Y.H. Safadi, London 1976, p. 70 and pl. XIX, and James, op.cit., p. 116 and fig. 82). 118 See Marçais and Poinssot, *Objets* I, pp. 145 and 175 119 Examples can be found in sale catalogues, such as that of the Sotheby's auction sales of 22–23 October 1992 (lot 563) and 15 October 1998 (lots 10, 11 and 13). The same technique was used to make an ownership mark on MS. Paris BNF arabe 2960 (*FiMMOD* 91).

extreme in the Amājūr Qur'ān, by no means unique in this respect, in which each recto bears the phrase *waqafahā Amājūr* or *awqafahā Amājūr*, an abbreviation of a deed inscribed at the front of the volumes, dated 262/876.[120] The use of stamps is an extension of this practice, perhaps being an adaptation spurred by the increasing tendency to endow entire libraries. The deed itself thus became an autonomous text, too long to figure in full on each manuscript. An early, famous example of such stamps is the one from the library of Rashīd al-Dīn Faḍl Allāh, discovered by Francis Richard on f.178 v° of Paris manuscript BNF persan 121 (illus. 117).[121] During the Ottoman period, stamps were used to print an abridged version of the deed on the relevant volumes, as seen for example in the ones used by the Köprülü Library.[122]

The clues provided by these deeds are highly important in establishing the history of manuscripts and collections, but once again they must be treated carefully when used to date a copy itself, especially if it lacks a dated colophon. At best they provide a *terminus ad quem*, and the scholar must assess the time that elapsed between the writing of the manuscript and its endowment as *waqf*.

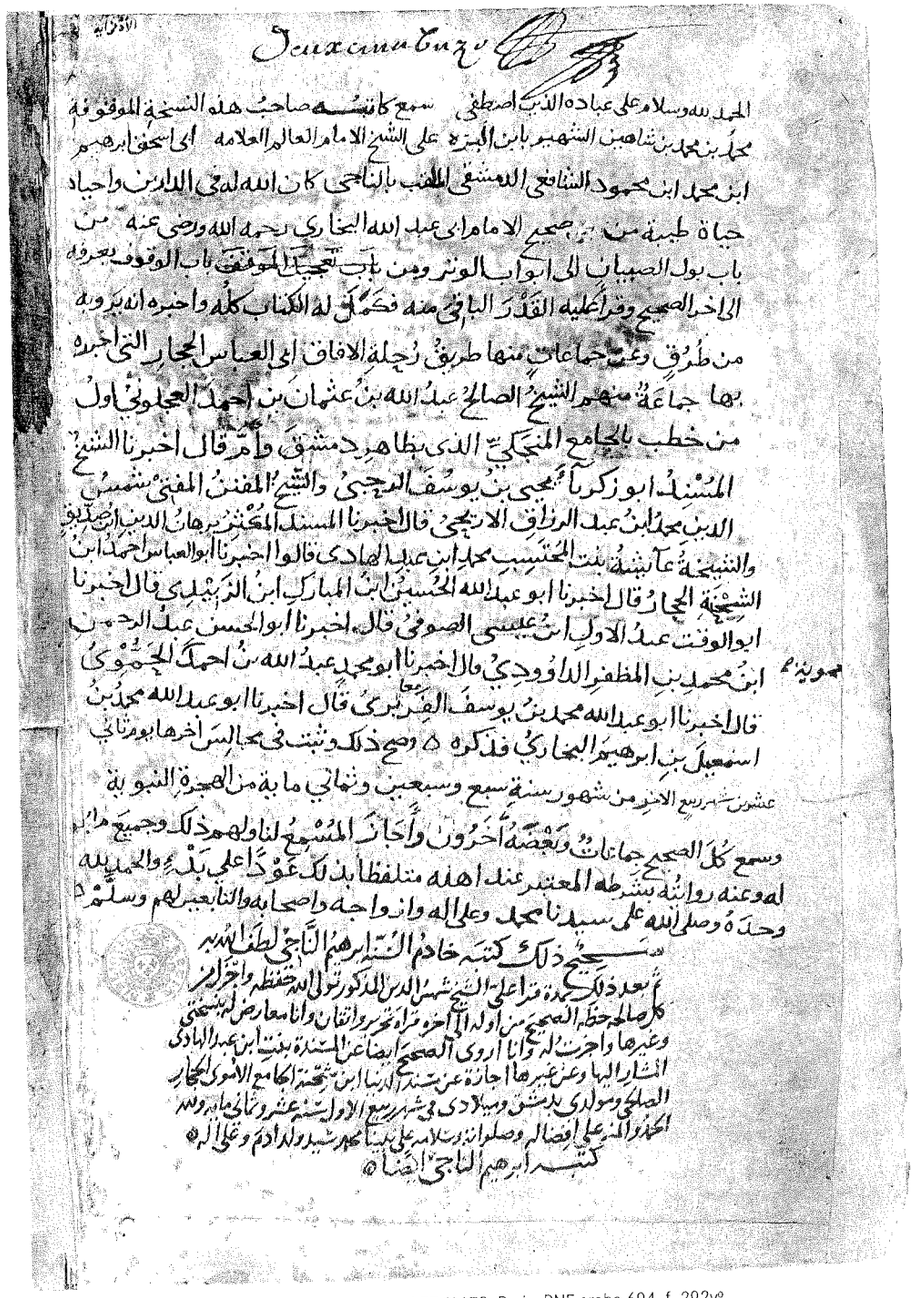
In addition to such texts of endowment, mention must be made of notes indicating that a given person commissioned a glamorous manuscript – which would often be subsequently endowed to a mosque or mausoleum. Significant documentation on this subject, focusing on the eighth/fourteenth century, has been published by David James.[123]

Certificates[124]

A reading certificate, or *samā'*,[125] may appear on a manuscript to attest to the fact that a reader (*qāri'*) has read the text before a listener (*musmi'*), who might be the author himself or one of his authorised transmitters; in the latter case, the chain of transmission back to the author must be given. This reading was done in the presence of witnesses, whose names were also cited. The certificate would be written by a writer (*kātib*) who also indicated the place and date of the session. If several sessions were required, their number was sometimes mentioned.

An *ijāza*[126] is an 'authorisation to transmit' the text, delivered by an authorised transmitter forming part of the chain back to the author or an initial transmitter. *Samā'* and *ijāza* relate to a system of transmission of texts used in

120 F. Déroche, 'The Qur'ān of Amājūr', *MME* 5 (1990–1991), p. 60, pl. I and p. 63, pl. III. 121 F. Richard, 'Muhr-i kitābkhāna-i Rashīd al-Dīn', *Āyanda* VIII/6 (1982), pp. 343–346; F. Richard, *Cat.* I, p. 139; Paris 1997, p. 39, no. 5; *FiMMOD* 168. 122 R. Şeşen, C. İzgi and C. Akpınar, *Catalogue of Manuscripts in the Köprülü Library* III (Istanbul, 1406/1986), colour pl. (MS. no. 1). Several examples of Egyptian origin have been published by A. Fu'ād Sayyid (*Makhṭūṭ*, pl. 156). See also below. 123 James, op. cit. 124 This section was written by Marie-Geneviève Guesdon. 125 R. Sellheim, *EI²* VIII, pp. 1019–1020, s.v. 'samā'. 126 G. Vajda, *EI²* III, pp. 1020–1021, s.v. 'iḏjāza'.



116. Reading certificate. 877/1472. Paris, BNF arabe 694, f. 292v°.

madrasas and religious establishments (and still in use today), but such certificates might also be issued in hospitals or other institutions.[127] They began to appear in the fifth/eleventh century, becoming frequent in the following two centuries; they subsequently became rarer, although still found on later manuscripts. In 1957, Vajda published an analysis of reading certificates found on manuscripts in the Arabic collection at the Bibliothèque Nationale de France.[128] Many manuscripts copied in the sixth/twelfth, seventh/thirteenth, eighth/fourteenth, and ninth/fifteenth centuries bear such certificates, but their number decreased notably in the tenth/sixteenth century, even though three manuscripts from the twelfth/eighteenth century still bear a reading certificate (*samā'*) or an *ijāza*.[129]

Ṣalāḥ al-Dīn al-Munajjid has noted that the appearance of such certificates follows the development of madrasas: attested in Baghdad in the fifth/eleventh century, they appeared in Damascus in the sixth/twelfth century, and later in Cairo.[130] They also existed in the Maghrib.[131] Such attestations pertain largely, though not exclusively, to the traditional Islamic sciences, as confirmed by the certificates analysed by Vajda: twenty-four concern *Ḥadīth*, seventeen apply to other religious subjects, five to history, five to medicine, four to grammar, three to literary prose, two to poetry, and two others to bibliographies.

A *samā'* might be copied from one manuscript to another, so care must be taken when they are used for dating. Apart from their relevance to the history of a manuscript, these documents can provide valuable information about the transmission of a given text, as well as the places and patterns of teaching in a given region and time.[132] Their vocabulary has been studied by Jacqueline Sublet,[133] while al-Munajjid has listed the literary formulas employed.[134]

127 MS. Paris BNF arabe 3025, a copy of a medical treatise by Maḥmūd ibn Aḥmad al-Amsātī, bears a reading certificate issued at a Cairo hospital (*Dār al-Shifā'*), dated 7 *Rabī'* I 1023/17 April 1614. **128** G. Vajda, *Les Certificats de lecture et d'audition dans les manuscrits arabes de la Bibliothèque Nationale de Paris* (Paris, 1957). **129** Namely MSS. BNF arabe 1271 (dated 1114/1702, with an undated reading certificate), BNF arabe 4470 (dated 1142/1729, with a transmission chain dated 1195/1781 and an undated *ijāza*) and BNF arabe 4473 (*ijāza* dated 1178/1764). **130** 'Ijāzāt al-samā' fī l-makhṭūṭāt al-qadīma', *RIMA* 1 (1955), pp. 232–251. **131** Two Maghribī manuscripts in the Arabic collection of the BNF have reading certificates: BNF arabe 709 (certificate issued at Granada in 640/1253) and BNF arabe 4538 (certificate issued at the Zaytūna Mosque in Tunis in 788/1398). **132** S. Leder, Y. M. al-Sawwas and M. al-Sagargi, *Mu'jam al-samā'āt al-Dimashqiyya = Les Certificats d'audition à Damas, 550-750h/1155–1349* (Damascus, 1996). The study of some 1350 certificates enabled the authors to shed light on the history of Damascus during this period. J. J. Witkam has published an analysis of *ijāza* that bears more closely on the practice of reading and the relationship of reader to text; see 'The Human Element between Text and Reader: the ijāza in Arabic manuscripts', *Codicology*, pp. 123–136. **133** Sublet, 'Le modèle arabe: éléments de vocabulaire', in N. Grandin and M. Gaborieau (eds.), *Madrasa: la transmission du savoir dans le monde musulman* (Paris, 1997), pp. 13–27. **134** Al-Munajjid, op. cit.

Marks of ownership

Alongside the very formal inscriptions of ex-libris described above, which generally refer to the first owner of the manuscript, other marks of ownership often appear in spaces originally left blank in the front or back of the volume. When such marks have not been erased or excised, they indicate the name of a person who possessed the book and wanted to leave a written record of that ownership. The written formulas (sometimes referred to as *tamalluk*) vary a great deal and include highly diverse details; they frequent begin with *li-... fi milk..., ṣāra ilā* (or *fī milk/min kutub*)..., *min kutub..., fī nawba..., ṣāḥibuh...* or other expressions of the same type.[135] The name of the owner then follows, often accompanied by a date. Given the more compact nature of these notes, the year is often indicated in numerals above or below the word *sana* (year); sometimes the month is given in abridged form.[136] In addition to these basic details of ownership, the name of the city or other information that the writer wanted to add might be included. They can therefore be of great use to codicologists, providing evidence for assigning a date to a manuscript with no colophon,[137] or for reconstructing its provenance, etc. Very often, a mention of ownership is accompanied by a stamp.

Births, deaths and other events

The practice of recording births and deaths of family members were recorded on the flyleaves of some copies of the Qur'ān. Just like other notations, these records can prove highly useful in dating a manuscript. Several copies from the third/ninth century, when this practice is first attested, were in fact dated thanks to information of this type. Other comments may record extraordinary natural phenomena.

Stamps [138]

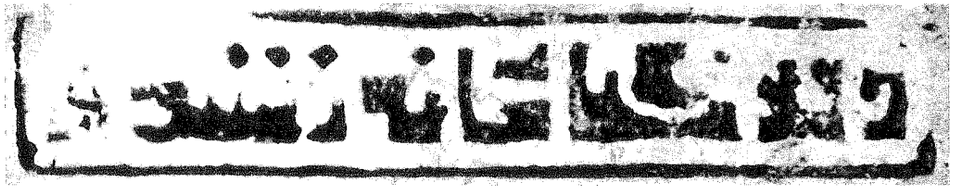
The flyleaves of a manuscript frequently play host to marks of ownership or authenticity in the form of stamps and printed seals (*khātam;* in Persian the term *muhr* is more commonly used, referring to the piece of stone or metal where the seal was etched in reverse, which also gives the Turkish term *mühür*). This practice stemmed from a long tradition; the Islamic Middle East merely adopted Byzantine and Sasanid habits. At some unknown date, the physical

135 Numerous examples are given in Gacek, op. cit., p. 89 and Fu'ād Sayyid, *Makhṭūṭ*, pp. 458-466 and 'Les marques de possession sur les manuscrits et la reconstitution des anciens fonds de manuscrits arabes', *Manuscripta Orientalia* 9/4 (2003), pp. 14-23. **136** Ibid. **137** A note of this kind provides a *terminus ante quem*, just as a *waqfiyya* does. **138** This section was written by Francis Richard.

seal normally attached to chancery documents was replaced by a 'stamp', that is to say a print of the seal in black ink (or sometimes red ink, as in China), applied to the document itself. An early example of a printed seal appears on f. 1v° of BNF arabe 3337 (Egypt, probably circa 1250).

A seal may contain a brief phrase in Arabic (or Persian), a person's name, or simply a pious expression (more rarely, a short poem or riddle). Relatively often, a date is also included – often the date the owner of the seal assumed his duties, the seal being an emblem of power. In Mughal India, this date might be expressed in terms of the *julūs*, or year of the monarch's reign. Most often, the words on a seal are read upwards from the bottom line. The name of the owner is often preceded by the phrase *al-'abd* ('the slave'; in Persian: *banda*) or *al-faqīr* ('the poor'). Brief poems or Arabic expressions often embody an allusion to the owner's *ism* (personal name), but not the name itself.

The fact that the forms of seals varied sometimes provides a useful indication of their approximate date. The seal of the library founded at Tabriz in the early eighth/fourteenth century by Rashīd al-Dīn was printed in black ink on several folios of the manuscripts held by the library.[139] Its rectangular shape is similar to certain stamps used in Fāṭimid Egypt, and the Kufic script reads, *waqf-i Kitābkhāna-i Rashīdiyya* (see illus. 117). It is not known whether this was an innovation – at a time when the influence of China's chancery was visible in Persia – or a practice that was already a tradition among *waqf* libraries. Inclusion of the word *waqf* is nevertheless fairly rare. There are a few Egyptian and, later, Ottoman examples (e.g. *madrasa-i Muṣṭafā Pāshā-yi 'atīq* in Istanbul) but very few Persian ones (except for the famous shrine of Ṣafī al-Dīn at Ardabīl).[140]



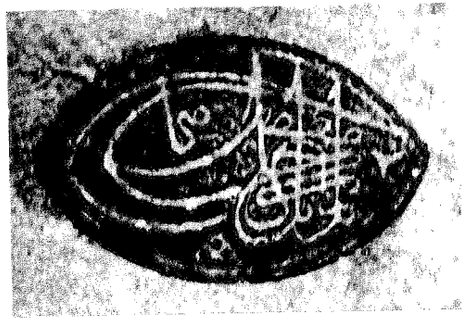
117. *Waqf* stamp of the *Kitāb-khâna-yi Rashīdī*. Tabriz, ca. 1305-18. Paris, BNF persan 121, f. 178v°.

The large seals belonging to monarchs were rarely stamped on the manuscripts in their library, although a few exceptions exist, notably the collection of the Ottoman Sultan Ahmed III in the twelfth/eighteenth century, the stamp of the famous Tīmūrid patron Sulṭān Ḥusayn Mīrzā Bāyqarā of Herat, and the stamp of Sulṭān Ibrāhīm of Bijapur in the late tenth/sixteenth century. Rulers generally used a smaller, more attractive seal for such purposes

139 In manuscripts at the Bibliothèque nationale de France, for instance on ff. 2, 4, 5, 178, etc. of MS. persan 121 and on f. 376 v° of MS. arabe 2324. 140 Many of the manuscripts belonging to this shrine later found their way to the Imperial Library at St. Petersburg.

(illus. 118). Starting with Bayezid II (late ninth/fifteenth century), Ottoman sultans marked their manuscripts with an almond-shape seal bearing their *tuğra* (illus. 119). Books in the library of Shāh 'Abbās I of Persia boasted oval seals with the motto *'Abbās banda-i Shāh-i valāyat* and a date. Shāh Rukh, the Tīmūrid sultan of Persia in the early ninth/fifteenth century, well known for his collections of historical manuscripts, had a special seal engraved for his library; it was round in shape, nearly two centimetres in diameter, and bore a motto in *naskhī* script: *min kutub khizānat al-Sulṭān al-A'ẓam Shāhrukh Bahādur* (illus. 122).[141]

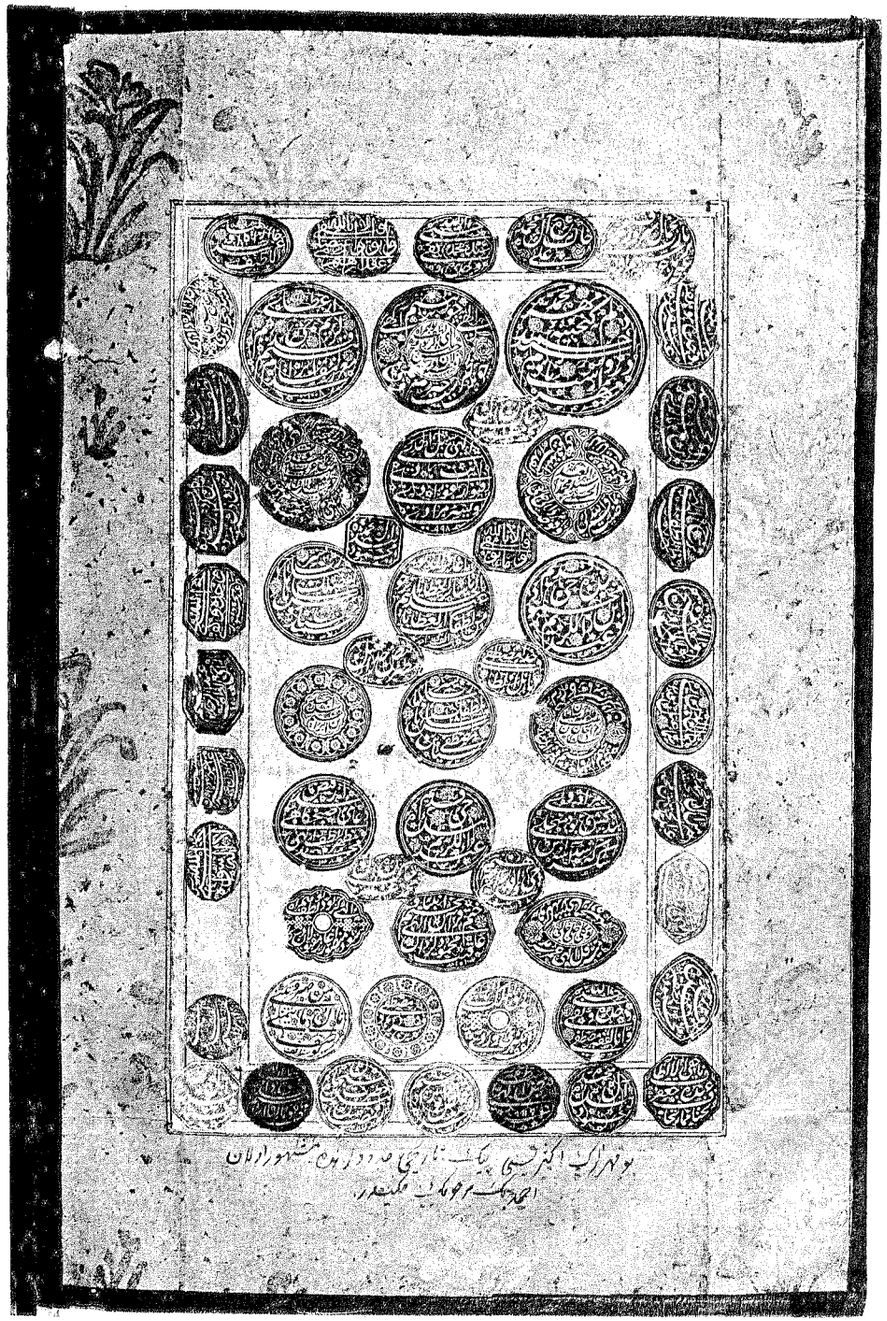
118. Seal stamp bearing the *tuğra* of Sultan 'Abdülhamīd I (*reg.* 1774-89); 10th/16th century oval Ottoman stamp with floral ornamentation surrounded by a motto in Arabic playing on the word *khātam* (seal-ring). Paris, BNF arabe 1648, f. 1 (detail).



119. Seal stamp of the Ottoman Sultan Bayezid II (*reg.* 1481-1512). Paris, BNF arabe 1493, f. 2 (detail).

120. Seal stamp bearing the *tuğra* of Sultan Mustafa III (*reg.* 1757-74). Paris, BNF arabe 1524, f. 1.

141 As seen, for example, on f. 55 of BNF arabe 2494 and in BNF suppl. persan 1113. See Fu'ād Sayyid, *Makhṭūṭ*, pp. 448–450 and pl. 156.



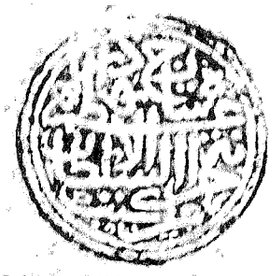
121. A collection of Ottoman seal stamps. Paris, BNF arabe 6074, f. 17v°.

The use of seals was widespread in Iran, Muslim India, and the Ottoman empire. Manuscripts prove this, but do not always provide clues as to whether the seal belonged to the owner or just a reader of the book. Each of the civil servants mentioned in Süreyya's biographical compilation *Sicill-i 'Osmanî*, for example, had one or several seals. It is often interesting to compare the dates given there with other bibliographical data. Some Europeans who lived in the Orient also had their names in Arabic letters engraved on a seal, employing it like an ex-libris. As regards the Maghrib, little has been established with certainty, except that the use of printed seals spread from the tenth/sixteenth century onward, concurrent with the Ottoman presence there.

In India, the use of seals dates back as far as the tenth/sixteenth century. Archive documents and the flyleaves of manuscripts contain a considerable number of seals belonging to both Hindu and Muslim dignitaries. Beginning with the reign of Akbar in the late tenth/sixteenth century, seals generally became large and round, bearing the name of the owner and a standard phrase which was usually 'servant to the king' (*fadw-i Shāh*), followed by the name of the monarch. This practice survived into the early twelfth/eighteenth century. Dates were usually given in two forms: the year of the Hijra and the year of the current monarch's reign. In the twelfth/eighteenth century, grandees would often have all of their honorary titles engraved on their seal along with their own name, not the name of the reigning Mughal. Inscriptions (*'arḍ-dīda*) recording the inspection and valuation (*'arḍ*) of the fabulous library of the Great Mughals from Akbar to the late twelfth/eighteenth century are accompanied by the seals of the important people who had owned the book (illus. 146).[142]

Despite the variety of forms of seals, unfortunately they must be analysed empirically, given the absence of publications that might constitute a *corpus sigillorum*. It can nevertheless be noted that the Mamlūk period favoured round seals. Similarly, Tīmūrid Persia left us a great number of printed seals, almost always round, with *naskhī* calligraphic inscriptions, usually two centimetres in diameter. The Mughal Tīmūrid rulers Bābur and Humāyūn still used round seals of this type. The seal of Humāyūn's wife, Princess Ḥamīda Bānū, was applied on all the books in her library, and took the form of a star with her name in the middle (illus. 143).[143] Whereas round seals were also used in the Ottoman empire until the tenth/sixteenth century, they often became oval toward the end of that century and adopted discreet floral patterns (illus. 121). Persian seals from the tenth/sixteenth century initially took the form of a pomegranate, laden with pious phrases; by the end of that century, they were becoming simpler and less dense. In eleventh/seventeenth-century India, the pomegranate-shaped seals from the days of Akbar were steadily abandoned in favour of large, round

142 On this subject, see the definitive study by John Seyller, 'The inspection and valuation of the manuscripts in the Imperial Mughul Library', *Artibus Asiae* 57 (1997), pp. 243–349.
143 As seen, for example, on the flyleaf of MS. Paris BNF suppl. persan 140 C.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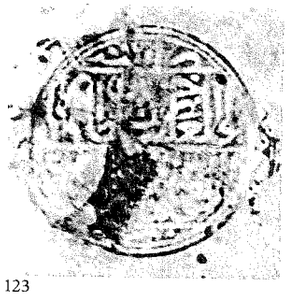
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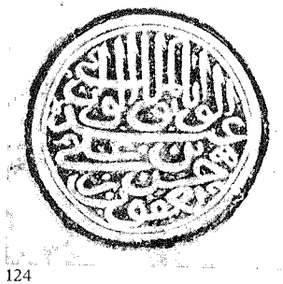
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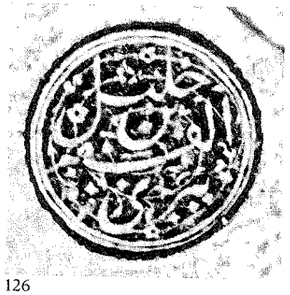
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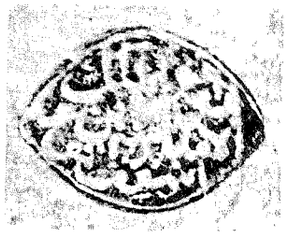
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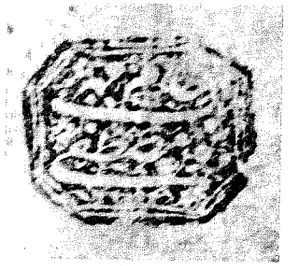
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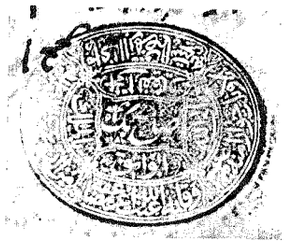
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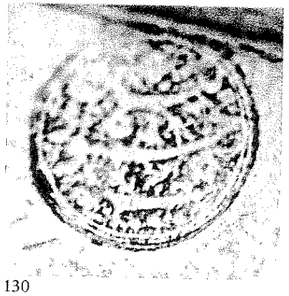
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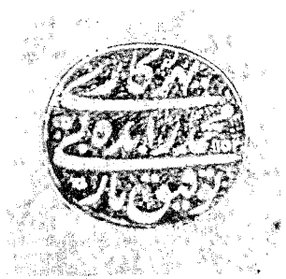
122. Library seal stamp of the Tīmūrid Sultan Shāh Rukh (*reg.* 1405-46). Paris, BNF arabe 2494, f. 55.
123. Seal stamp of the Tīmūrid Abū l-Ghāzī Sulṭān Ḥusayn [Bāyqarā] of Herat (*reg.* 1468-1506). Paris, BNF suppl. persan 822, f. 420.
124. Seal stamp of Sultan Ya'qūb ibn Ḥasan ibn 'Alī Āq-Quyūnlū (*reg.* 1479-91). Paris, BNF suppl. persan 1528, f. 5.
125. Seal stamp of Piyāla, courtier of Qūrqūd ibn Bāyazīd (1470-1513), with Persian motto. Paris, BNF suppl. persan 727, f. 168.
126. Seal stamp of Pīrī ibn Khalīl [Bēg Ramaḍān-zāda] (d. *ca.* 1562). Paris, BNF suppl. persan 1394, f. 87v°.
127. Seal stamp of the Nestorian bishop of Āmid, Mardīn and Suwar (*ca.* 1587). Paris, BNF suppl. persan 941, f. 74v°.
128. Octagonal seal stamp of one Muṣṭafā. Paris, BNF arabe 1413, f. 2.
129. Seal stamp of one Ṣāliḥ Beg. Paris, BNF arabe 7698, f. 1.
130. Seal stamp of Sayyid Maḥmūd, dated 1000/1591-2. MS. copied in 996/1588 at Manzala, Egypt by Maḥmūd ibn Muḥammad al-Lādhiqī, perhaps the same individual. Paris, BNF suppl. persan 896, f. 31.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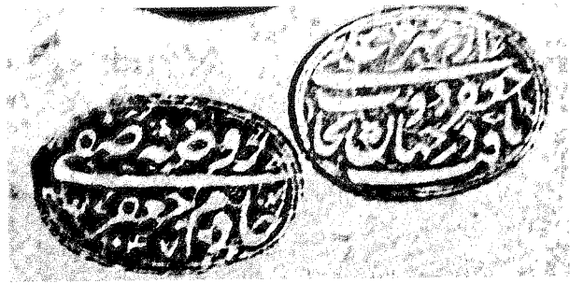
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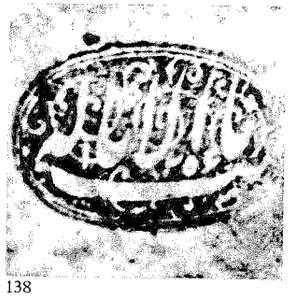
131. Seal stamp dated 1153/1740-1, with motto in Persian, of Muḥammad Afandī ibn Ismā'īl Āghā al-shahīr bi-Iskandarī. Paris, BNF suppl. persan 807, f. 1.
132. Large circular seal stamp of Sultan Muṣṭafā III, with *ṭuğrā* and a quotation from the Qur'ān (*Sūra* 7, verse 42). Paris, BNF arabe 1648, f. 1.
133. Seal stamps of the Ottoman bibliophile, collector and poet Ḥājj Muṣṭafā Ṣidqī (d. 1183/1769-70). One, in "Kūfic" script, contains a Qur'ānic phrase (*Sūra* 18, verse 39); the other is dated 1179/1765-6. Paris, BNF suppl. persan 727, f. 1.
134. Note recording that at Isfahan in 1619 the MS. was given by Mīr Ḥamza Harandī to Muḥammad ibn 'Alī Ibn Khātūn 'Āmilī (who later emigrated to Golconda, in India, where he died after 1658); and the latter's seal stamp, dated 1020/1611-12. Paris, BNF suppl. persan 517, f. 1.
135. Seal with motto ending "...*Rasūl Allāh*"; note recording gift of the album by Mīrzā Muḥammad Muqīm, collector of the library *(ṣāḥib-jam'-i kitābkhāna)* in Ṣafar 1062/January 1652. Paris, BNF arabe 6715, f. 2v°.
136. Seal stamp of Qiwām al-Dīn Muḥammad al-Ḥusaynī ibn Rafī' al-Dīn Muḥammad, dated 1073/1662-3. Paris, BNF suppl. persan 517, f. 1.
137. Seal stamps accompanying the ex-libris of Muḥammad ibn Ja'far ibn 'Alī Māzandarānī. The one on the left, dated 1047/1637-8, records that its owner was employed at the shrine in Ardabīl; the other is that of a Shī'ite named Ja'far who "was saved in both worlds, for 'Alī's sake." Paris, BNF suppl. persan 221, f. 1.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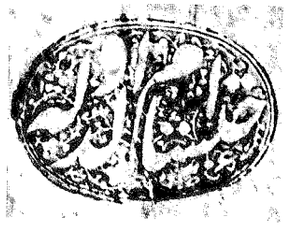
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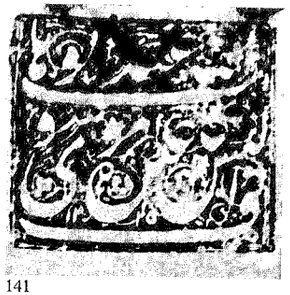
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138. Seal stamp dated 1256/1840 with a note recording the transfer in 1261/1845 of the MS., previously kept in the library of Fatḥ ʿAlī Shāh Qājār of Iran. Paris, BNF suppl. persan 1818, f. 1.
139. Seal stamp, dated 1141/1728-9, of Mīrzā Mahdī Khān Kawkab Astarābādī (d. 1173/1759-60), secretary and chronicler to Nādir Shāh. Paris, BNF suppl. persan 1029, f. 386.
140. Seal, dated 1306/1888-9, of ʿAbd al-ʿAlī Mīrzā ʿAhdī, known as Iḥtishām al-Dawla, son of Farhād Mīrzā who was governor of Fārs, Southern Iran. Paris, BNF suppl. persan 1818, f. 1.
141. Seal stamp of ʿAbd al-Wahhāb Mūsawī known as Muʿtamid al-Dawla, *Munshī al-Mamālik* (d. 1244/1828); found together with an inscription recording the inspection (*ʿarḍ*) of the MS. at the Qājār royal library in 1232/1816-17. Paris, BNF suppl. persan 1818, f. 1.
142. Thirteenth/nineteenth century Iranian seal stamp of Muḥammad ʿAlī. Paris, BNF suppl. persan 1818, f. 1.
143. (Above:) Seal stamp, dated 957/1550-1, of Ḥamīda Bānū bint ʿAlī Akbar, wife of the Emperor Humāyūn and mother of Akbar. (Below:) Small seal stamp of Nāmdār Khān, dated 1138/1725-6. Paris, BNF suppl. persan 140 C, f. 1.
144. Seal stamp of Shāh Beg ibn Mīrzā Muḥammad Beg Badakhshī, dated 1011/1602-3, in the same form as those of contemporary Mughal rulers. Paris, BNF suppl. persan 177, f. 8.
145. Seal stamp, dated 1150/1737-8, of Muḥammad ʿĀbid ibn Amīr Jaʿfar al-Ḥusaynī; seal stamp, dated 1063/1652-3, of Iʿtimād Khān, "servant of Shāh Jahān." Paris, BNF suppl. persan 815, f. 1.


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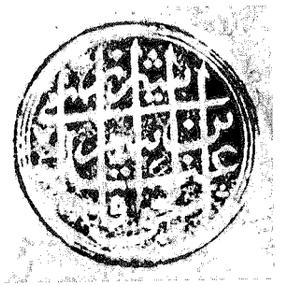
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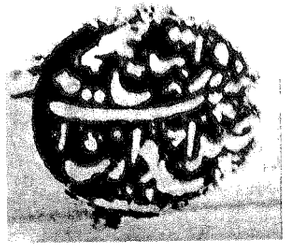
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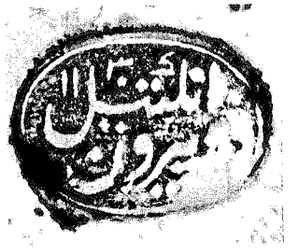
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146. Seal stamp of Amānat Khān Shāh-Jahānī, a librarian (*kitābdār*) to Shāh Jahān, dated 1042/1633-4. Paris, BNF suppl. persan 815, f. 1.
147. Seal stamp of ʿAbd al-Ḥaqq ibn Qāsim Shīrāzī, dated 1037/1627-8. Paris, BNF suppl. persan 177, f. 8.
148. Seal stamp of Aḥmad Shahīd (?), "sincere follower" of Shāh Jahān, dated 1054/1644. Paris, BNF suppl. persan 815, f. 1.
149. Seal stamp of ʿAbd al-Rashīd Daylamī, "servant of Shāh Jahān" and later librarian to Awrangzīb. Paris, BNF suppl. persan 177, f. 8.
150. Seal stamp of ʿĀrif, follower of Shāh Jahān, dated 1045/1635-6. Paris, BNF suppl. persan 177, f. 8.
151. Seal stamp of Ṣalāḥ, described as "inheritor in true obedience" (*wārith dar ittibāʿ-i ṣaḥīḥ*). Paris, BNF suppl. persan 815, f. 1.
152. Waqf seal stamp, dated 1255/1839-40: "one of the books of Khwāja Muḥammad Pārsā." The library established at Herat by this Sufi scholar (1345-1420) was later dispersed. Paris, BNF suppl. persan 1671, f. 130.
153. Persian seal stamp of the French orientalist Anquetil-Duperron (1731-1805), bearing his name in Arabic letters and the *Yazdagirdī* era date 1130/1760 CE. Paris, BNF suppl. persan 499 A, f. 352v°.
154. Seal stamp of Archibald Swinton, dated 1174/1760-1, with his name and honorary titles *Rustam-Jang Bahādur*, Swinton collected numerous manuscripts while in India in 1752-66. Paris, BNF suppl. persan 619, f. 1.

seals, whereas in the twelfth/eighteenth century most seals became rectangular. Persian seals of the eleventh/seventeenth century were often oval and rather small; by the twelfth/eighteenth century, however, they became rectangular or square, and very small in size (like the seal of Mirzā Mahdī Khan Astarābādī, the famous book lover and *munshi* to Nādir Shāh; see illus. 139). In Qājār Iran (thirteenth/nineteenth and early fourteenth/twentieth century) there were many large seals of oval or rectangular shape (illus. 138 and 141), most of which featured inscriptions in *nasta'līq* script.

Reading the mottoes on the seals and the dates found there, as well as identifying their owners when possible, can provide important clues to the itinerary followed by a manuscript, thereby complementing study of any hand-written notations and ex-libris that may be found along with them.

Codicology and the History of Collections[1]

Theoretical approach

The field of application

Alongside the analysis of the material conditions of the production of manuscript books, another function of codicology is to establish the history of libraries and collections:[2] that is, to gather data on how books circulated after they were made, reconstructing as far as possible the chain of owners of a manuscript or set of manuscripts, and determining the provenance or places where the volumes were kept.[3] These questions directly concern Oriental manuscripts—especially those in Arabic, Persian, and Turkish—in public and private libraries and collections in both East and West.

The need for a history of collections: a multidisciplinary field

The history of collections is part of a broad field of scholarly endeavour. By progressively reconstructing the history of a volume or set of volumes, by seeking to learn which text (or group of texts) entered and became known in, say, France—along with when and by whom, and based on which copies—codicology can provide keys to the history of ideas and their dissemination, to the inter-relationship of cultures, and to a better knowledge of Oriental studies in Europe and of the heritage of the Oriental countries

1 Most of this chapter was written by Annie Berthier, with a final section by Marie-Geneviève Guesdon. 2 'Library' is used here in the general sense of an organised assortment of books held either by a public institution or private individual, while 'collection' refers to a particular group. Thus 'the history of collections' refers to sets of manuscripts and documents artificially united on the basis of shared features (language, subject matter, etc.); a collection might be assembled from a variety of sources and is generally held by an institution, whether public or private. 3 Charles Samaran's *L'Histoire et ses méthodes* (Paris, 1961) refers to a field of study 'of sets of manuscripts having a shared origin or history, which mutually explain one another.' Samaran closely relates this field to codicology, 'which, for lack of a better term, will be called the "archivistics" of manuscripts.' Nowadays the term 'history of collections' is more appropriate.

involved.[4] Such research also concerns the history of texts insofar as documenting the location of a copy in a given place or in the collection of an identified scholar helps to trace the history of transmission of the text itself, which may have been used as the basis for another copy, a translation or even a printed version. Furthermore, the history of manuscripts also involves art historians, curators, historians, numismatists, historians of literature, linguists, philologists and even legal scholars.

The special nature of Oriental manuscripts held in Europe

The physical nature of Oriental manuscripts held in Europe is characterised by the fact that marks, alterations and restorations of text or changes in binding may have a double origin – Eastern or Western –testifying to their itinerant background. In studying such manuscripts, scholars encounter problems relating to both Eastern and Western codicology, and they must therefore be competent in multiple fields, including a familiarity with all the key reference works. Deciphering and identifying various collating marks, both Oriental and Western, might at first sight seem to depend on highly specialised analyses, given the languages and scripts involved, yet in fact such tasks are closely interrelated and the problems to be solved are highly similar from a methodological and technical standpoint.[5] Moreover, although some Oriental volumes now in Europe have undergone significant alterations (change of covering, for instance), a good many have retained their original appearance, which means that studying them can directly contribute to the history of Oriental manuscripts; indeed, in Eastern lands the various conservation measures

4 See Annie Berthier, 'Manuscrits orientaux et connaissance de l'Orient, éléments pour une enquête culturelle', *Moyen-Orient et Océan indien, XVI^e–XIX^e s.* 2, 2 (1985), pp. 79–108, and Berthier, 'Collections de manuscrits et genèse des études orientales en France', *Revue arabe d'archives, de documentation et d'information* 1–2 (May 1997), pp. 9–19. See also many publications by F. Richard, notably 'Jean-Baptiste Gentil collectionneur de manuscrits persans', *Dix-huitième siècle* 28 (1996), pp. 91–110. 5 See the 'Introduction'. 6 See Annie Berthier, 'Contribution à l'histoire des fonds de manuscrits orientaux des bibliothèques européennes, le Fonds turc de la Bibliothèque nationale de Paris', *Mss du MO*, pp. 17–22. As far as France is concerned, the Bibliothèque royale's first printed catalogue, published in 1739, listed 7,000 Oriental volumes, a majority of which were Chinese, followed, in order of number, by Arabic, Persian, Turkish, Hebrew, Indian, Armenian, Syriac, Coptic, Samaritan and Ethiopian manuscripts, all of which then comprised nearly 5% of the total library (manuscripts and printed volumes combined). Today, over 30,000 Oriental manuscripts in eighty languages, divided into sixty specialised collections, are held at the Rue Richelieu site of the Bibliothèque nationale de France, of which 11,800 volumes are in Arabic, Persian, or Turkish. The founding of collections of Oriental books in France, notably at the Bibliothèque royale, occurred in the context of developments triggered by the 'age of exploration', both geographical and technological. Handwritten inventories of the Oriental collection in the Bibliothèque nationale de France, with reference to their acquisition, by purchase or bequest, are dispersed throughout the French and Latin collections. Starting in the late eighteenth century and throughout the nineteenth, projects were undertaken to catalogue and list documents of all kinds, as were programmes for translation and cultural exchange. The

applied to manuscripts down through the ages have often considerably altered their appearance if not their Oriental nature. Since Oriental collections in Europe and the East do not share the same history, the analytical methods employed when examining them must be adapted to their specificities.[6]

What constitutes an Oriental manuscript?

The concept of Oriental manuscript obviously covers books produced by Orientals in the Orient for their own use, as is the case with most volumes, yet also those produced for use by Westerners in a form that might often be adapted to their specific use.[7] The notion of Oriental manuscript also extends to books written in Arabic script by Europeans, constituting the special field of Western Orientalist codicology. For instance, the so-called 'translations collection' in the Oriental Section of the Manuscript Department at the Bibliothèque Nationale de France comprises Oriental-style volumes produced in the early eighteenth century by the 'jeunes de langues', young students who received scholarships from the French government to study interpreting in Constantinople; an Ottoman Turkish text with a French translation would be bound into a single volume with fore-edge flap and envelop flap.[8] Furthermore, manuscripts in Arabic script were sometimes produced in Europe by Orientals who were temporary or permanent residents there, as exemplified by a version of the New Testament copied in Paris by the Syrian Ḥannā Shāmī in 1680 (MS. BNF suppl. turc 1–2 and 3), based on a Turkish translation of the Gospels printed in Oxford in 1666. Finally, there are the grammar books and dictionaries written by Westerners either in Paris or on their travels to the Orient.[9]

impetus given by the Académie des inscriptions et belles-lettres was paramount, for a decision was taken in 1786 to establish the famous collection of 'Notices and extraits des manuscrits' stressing the importance accorded to the 'knowledge of men and events, times and countries, habits and customs, laws, arts, sciences, and literatures of all nations.' In the May–June 1855 issue of the *Journal Asiatique*, Joseph-Toussaint Reinaud published an outline of his plan for cataloguing the entire Oriental collection of France's national library, setting new standards for scholarship. It was in this context that Mac Guckin de Slane published the catalogue of Arabic manuscripts. Efforts continued until the outbreak of the First World War in 1914, which considerably delayed work and deprived scholarship of a great number of researchers, a situation that recurred during the Second World War. A new push was made after 1945, fresh impetus being given by the publication of catalogues by Vajda, an effort that has been sustained into the recent past. The cataloguing programme is now embarking on a new phase of its history, inextricably linked to the development of new technologies. 7 See Annie Berthier, 'Le fonds turc du Département des Manuscrits', *Bulletin de la Bibliothèque Nationale* VI (June 1981), pp. 78–95. 8 See Annie Berthier, 'Turquerie ou turcologie? L'effort de traduction des Jeunes de langues au XVIII^e siècle d'après la collection de manuscrits conservée à la Bibliothèque nationale de France', in F. Hitzel (ed.), *Istanbul et les langues orientales. Actes du colloque organisé par l'IFEA et l'INALCO à l'occasion du bicentenaire de l'Ecole des Langues orientales, Istanbul 29–31 May 1995* (Paris, 1997), pp. 283–317. 9 See Annie Berthier, 'A l'origine de l'étude de la langue turque en France: liste des grammaires et des dictionnaires manuscrits du fonds turc de la Bibliothèque nationale de Paris', *Mélanges offerts à Louis Bazin* [Varia Turcica, XIX], 1992, pp. 77–82.

The history of collections and the current state of cataloguing

The emergence and development of codicological knowledge has had a major impact on the organisation of catalogues of manuscripts, which is why the subject is addressed here. Broadly speaking, it became essential to revise the old catalogues compiled in the West due to the need for an exhaustive material description of each item. A catalogue entry could no longer overlook any of the elements that might contribute to the establishment of an increasingly accurate history of the document, which meant giving, in chronological order, all useful information on the libraries and collections in which it figured. This revision also entailed the standardisation of entries – at least on a European level – as well as the regular updating of relevant literature. In addition to correcting putative errors and inaccuracies, one of the roles of descriptive entries in the new catalogues is to provide information on the history of the volume and its peregrinations; the new catalogues are also designed to contribute to the filing of all this data in abstracts based on the systematic organisation of entries and the production of summary tables. Generally speaking, the new generation of catalogues integrate new data as a function of new categorisations that each require appropriate resources.

A manuscript entry is always a reflection of immediate needs – it is a functional item that mirrors the general scholarly trend of each period. In Europe, beginning in the eighteenth century, the appearance of the notion of scientific investigation and the systematisation of knowledge influenced the constitution of catalogues, which became increasingly exhaustive and increasingly accurate; 'observe' and 'measure' were the two watchwords of a man like the Comte de Volney, the eighteenth-century promoter of cultural research and of a system for transliterating Oriental languages. Specialised fields, notably the scientific study of the Orient, emerged in the nineteenth century shortly after the invention of the metric system, whose general adoption, it should be recalled, dates back just 120 years. To take a French example, the first volume of *Catalogus Manuscriptorum Bibliothecae Regiae* (Catalogue of manuscripts in the Royal Library), published in 1739, was

10 In European catalogues, manuscript shelf-marks, initially based on the location of the volumes on the shelves, evolved toward a more theoretical system. Entries giving the author's name were generally fairly approximate, as regards both precise identification and transliteration; for the same reasons, many titles would remain vague. Often, all that was indicated was the type of book, the nature of the writing surface (paper, parchment, etc.) sometimes being the only identifying feature provided. Provenance was frequently noted, for example, 'recently purchased in Constantinople'. The language used for entries evolved from Latin to French, while the use of the original alphabet for entering various elements, notably author and title, was a further interesting factor: in the days when catalogues were handwritten, it is possible to find title entries still employing the alphabet of the original language, whereas with the advent of printing there was a sudden rise in approximate

entirely devoted to Oriental manuscripts and featured entries that were extremely brief yet contained all the main 'ingredients'[10] found in modern descriptive catalogues: not only author and title but also type of support, format, and provenance[11]; previously, any indications of the contents of a manuscript, written in French or Latin, had often been placed in the book itself, on either the inner cover or the flyleaf (illus. 114a). Sometimes the entry would be printed on a little piece of paper glued to the inner cover; nineteenth-century catalogues such as the one compiled by MacGuckin de Slane, were written in French but used Arabic letters for the titles of books in both entry and index, and details concerning the history of the volume were somewhat fuller.[12] Modern catalogues – from the early twentieth century to the present – exhibit impressive progress in the amount of codicological information provided as well as in its classification.[13] Computerisation of catalogues, now making major strides in terms of the use of original alphabets and their transliteration, as well as digitised images, should be of considerable benefit to codicology in general and to the history of collections in particular.[14]

Writing the history of collections of Oriental manuscripts

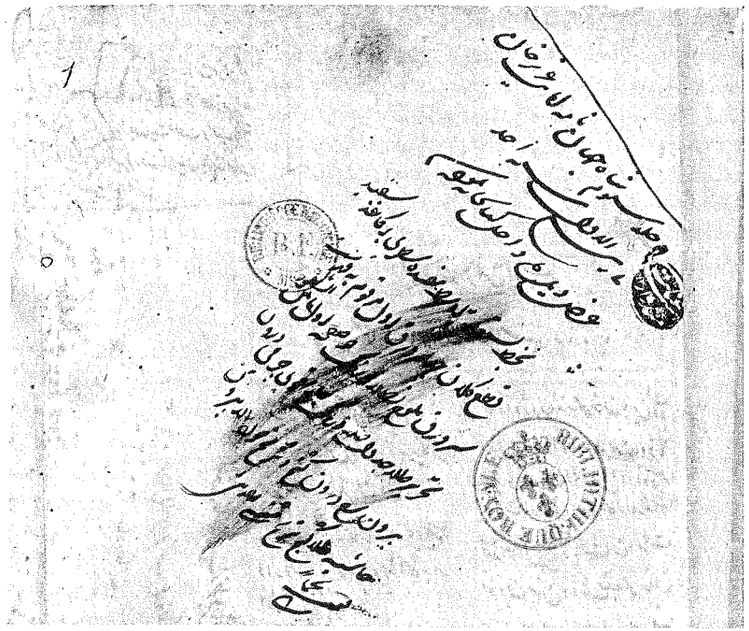
Methods

A rigorous methodology and various material tools now enable codicologists to conduct an investigation that should provide a maximum number of clues for establishing the most complete possible history of a volume.[15]

The history of a volume or set of volumes should be based on several observations: examination of marks made on the books (see illus. 155–158), which must be identified and/or compared with other similar marks found elsewhere, in order to constitute groups and to establish, as far as possible,

transliterations, which only became more accurate with Volney's catalogue and with the development of Oriental typefaces by the Imprimerie Nationale in France (despite the earlier efforts of Savary de Brèves in the late sixteenth and early seventeenth centuries). Reference to relevant literature is a very late innovation in catalogue entries. 11 *Catalogus codicum manuscriptorum Bibliothecae regiae* (Paris, 1739). 12 W. MacGuckin de Slane, *Catalogue des manuscrits arabes* (Paris, 1883–1895). 13 E. Blochet, *Catalogue des manuscrits arabes des nouvelles acquisitions: 1884–1924* (Paris, 1925). Blochet, *Catalogue des manuscrits persans...* (Paris, 1905–1934). Blochet, *Catalogue des manuscrits turcs...* (Paris, 1932–1933). G. Vajda and Y. Sauvan, *Catalogue des manuscrits arabes...* (Paris, 1978–1985). 14 See below. 15 In particular, see the many publications by Gilbert Ouy, and more generally the publications in recent decades on Greek and Latin codicology.

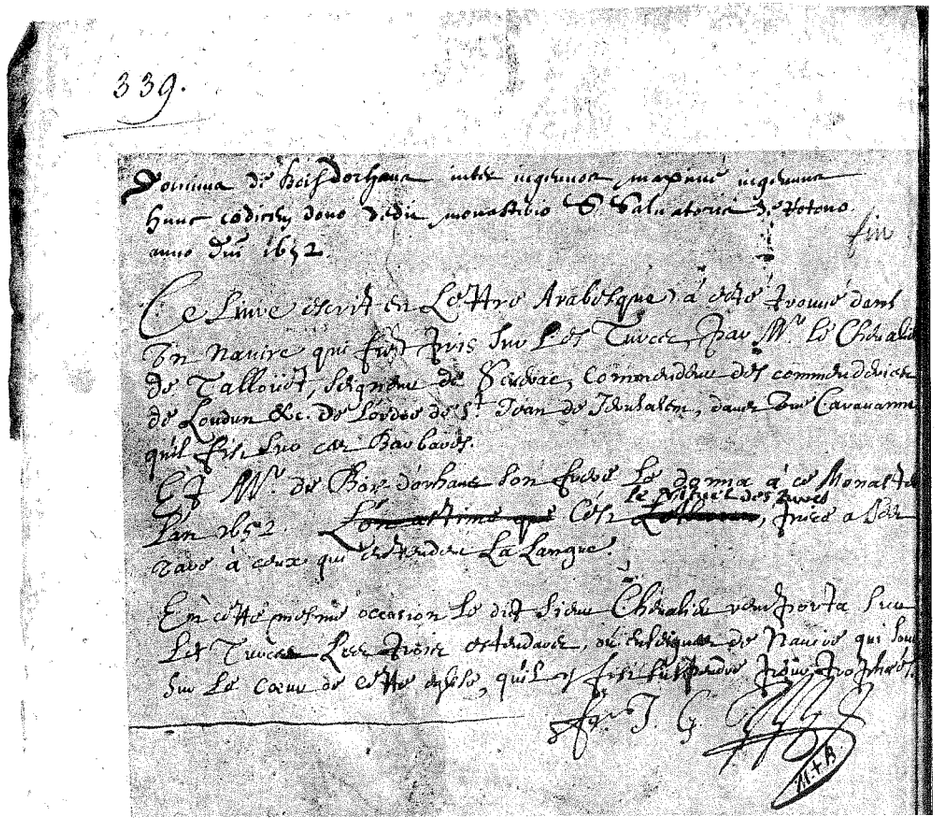
a chronological classification; examination of the binding and any potential alterations; examination of modifications of all kinds in every part of the volume. In accomplishing these tasks, two things are imperative: knowing, as thoroughly as possible, the collection on which one is working and, if possible, other related or similar collections; understanding and assembling – indeed, designing – the right tools for the job.



155. Note in a MS., describing it. India. Paris, BNF suppl. persan 292 B f. 1 (detail).

The distinctive features of a manuscript

Thanks to certain detectable signs – visible and invisible – the history of a volume or set of volumes can be reconstituted. The appearance of bindings ought to be closely examined, whatever their date or origin, in search of a characteristic mark or decoration making it possible to identify a volume's geographical location, date, or owner (coat of arms, monogram, letters, emblem, motto, etc.; see illus. 47). Search should also be made for an ex-libris (a sign of ownership – usually a standard phrase – placed on the inner cover or first page of a book) or any other indication of possession (a simple hand-written name; illus. 113a and 114a), stamps or seals (illus. 157), dedications, statements of bequest (illus. 156), various notarial signatures or initials, and



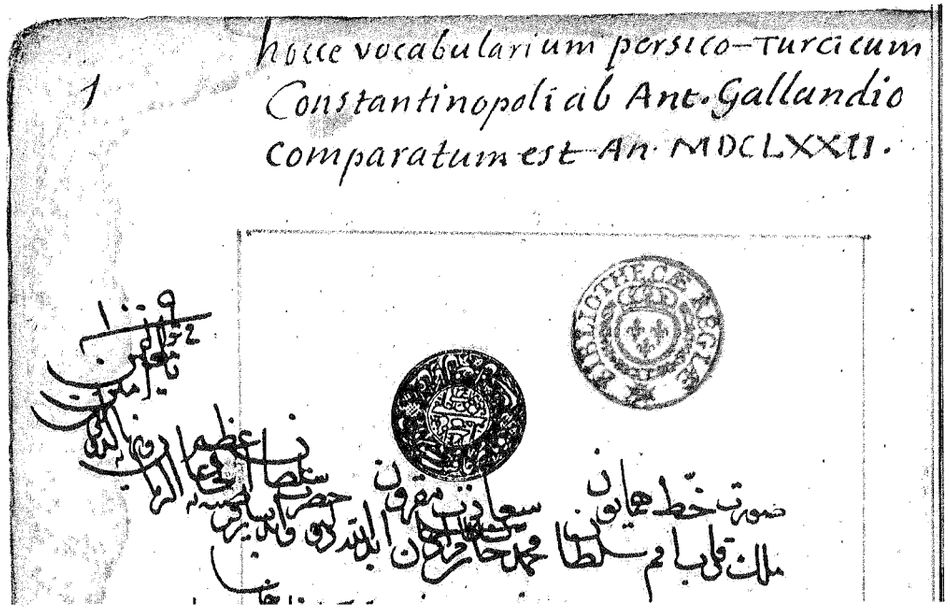
156. Note recording how the MS. was taken in a boarding, then later given away. Paris, BNF arabe 825, f. 339 (detail).

references to place of purchase, sometimes accompanied by an indication of price (illus. 158). In particular, study should be made – based on identical scripts – of annotations and readers' marks whether written in the margins, on blank pages, or on the inner covers; the type of writing should help to situate, perhaps even identify, one or several hands and even help – along with textual content – to date a work, to document its presence in a given place or to attribute it to an owner at a given period (via financial accounts or else allusions to a birth, an earthquake, or a visit from a friend). Close attention should also be paid to old shelf-marks (illus. 114a and 157), mentions of inclusion in one or several libraries (in the form of a phrase or stamp), as well as any erasures or overwriting, and anything inscribed on the edges. Any alterations to the volume should be noted: pagination and foliation (sometimes superimposed) of potentially diverse origin and hands, trimmed margins, inversion of folios or quires, anything cut out or pasted in, and damage of all kinds, from traces of dampness

157. Inscriptions in French and in Turkish: two shelf-marks, "Ar.L.Tab.2.Loc. 15" and "Pers. 176"; ownership inscription (by Meḥemmed?); stamps of an Oriental owner and of the Bibliothèque royale. Paris, BNF persan 176, f. 2 (detail).

or fire, stains, spilled liquids, and finger marks. Finally, information can be gleaned from papers and other items added to or sometimes left in a volume (tissue paper, bookmarks, tassels, loose leaves, pictures, letters, blotting paper), as well as documents occasionally found in the binding materials.[16]

16 See the illustrations with examples.



158. Note of purchase of a MS., in the hand of Antoine Galland. Istanbul, 1672; Ottoman and French library stamps; and the description of the text of an Ottoman imperial edict dated 1009/1600-1. Paris, BNF persan 201, f. 1 (detail).

Aids to the identification of various elements

As the examination progresses, a list should be made of the marks encountered, which may be of Oriental or Western origin, and may have been made by individuals or institutions.

Such marks can be identified through the use of three aids. First, comparison should be made with identical marks found on other manuscripts where they may be clearer and more easily identifiable or already known (their decipherment perhaps requiring knowledge of Eastern and/or Western palaeography). This approach raises the notion of links between one specific collection and another; at the Bibliothèque Nationale de France, for instance, when investigating provenance, manuscripts in the Turkish collection will first be compared with one another, then with the Persian and Arabic collections, and finally with Western manuscripts (including Latin, French, and Italian volumes), if it is known that a given collector owned books in several languages.[17] Next, the major reference works must be consulted: catalogues

17 As was the case with the late sixteenth-century scholar Gilbert Gaulmin, for example.

(even old ones) of manuscripts, handwritten or printed inventories, and lists of stamps and old marks, not forgetting exhibition catalogues and divers articles. Lastly, other sources can be profitably employed whenever they exist: library acquisition records (noting purchases, bequests, and exchanges) can be valuable aids and can lead to complete lists; similarly, lending registers, some quite old, may provide dates of consultation and the names of readers. The archives of libraries and individuals can be extremely rich in information (estate inventories, sale catalogues), so it is crucial they be consulted whenever access is granted. Restoration ledgers provide information on the state of a volume at a given date, as well as the restoration concerned; when elements of a manuscript become detached they are henceforth filed under the same shelf-mark as the manuscript to which they belong, listed as "pieces."

A well-trained visual memory is a valuable asset – the examination of the external appearance of volumes (bindings, old shelf-marks, the look of old labels) helps to constitute groupings within the same collection or across different collections; observation and comparison of identical marks found in several volumes can lead to the affiliation of scattered volumes into a single collection even when the name of the collector remains unknown. This approach supposes a good working knowledge of the contents of manuscript collections and therefore the greatest possible contact with original volumes.

A scholar must display inventiveness in devising and arranging personal tools of research: making manual copies of marks encountered (either freehand or copied onto tracing paper); taking photographs, which are useful only if the scale is indicated (the photocopying of manuscripts being usually forbidden); and making rubbings of bindings (usually permitted).

This data, whether filed on small cards, in folders, in notebooks, or on a computer, must always include a clear mention of the document's shelf-mark, the place where the document is held, the folio or page concerned, the exact location of the mark on the page, and the date the observation was made. This patiently gathered information will constitute an invaluable database for research; if possible, the data should be compared with that of other scholars encountered at seminars and symposiums, or published in books and articles.

Material means of observation

A thorough codicological description of a volume must be based on examination of the original manuscript,[18] but when it comes to the history of a collection, the gathering of images is necessary at a given point in the analysis, and examination of reproductions forms a legitimate stage of research. Operations impossible to conduct on an original document can be done on reproductions, such as photos, slides, microfilm/microfiche, facsimiles, digitised

18 See the Introduction to this handbook.

images. Especially important are reproductions made by a scholar for a specific purpose, such as sketches, tracings – which can be superimposed for comparison – photocopies of microfilm, enlargements, scans, etc.

Organising data

When it comes to classifying identifiable elements, catalogues of manuscripts now contain indexes of owners plus illustrations showing examples of various hands,[19] but there do not yet exist lists that combine these indexes on an extensive scale. Stamps and seals, meanwhile, both Oriental and Western, are identified in published articles.[20] Some libraries have published lists of their dated marks.[21] There also exist repertories of numerical systems employed.[22]

When classifying unidentified or undated features, until such time as that situation can be rectified, they should be categorised according to shape (the round, angular, or linear form of a signature, plus the first letter of a signature when recognisable), according to technique (handwritten, embossed, stamped), according to chronology (presumed date), and according to geographical origin when relevant and possible.

This still-limited range of tools is sure to expand. National and international meetings of scholars are crucial because of the fruitful and constructive exchange they encourage.[23]

Modern tasks

Developments in recent decades have imposed new tasks on scholars and curators in both East and West, mainly involving teaching and the transmission of knowledge – it is important to make students and doctoral candidates aware of new tools and methods. But the new tasks also concern research: ensuring that resources are available on site, and implementing new methods and techniques elsewhere. This means establishing links between the old and the new, encouraging communication between scholars thanks to databases that

19 Richard, *Cat.* 1. 20 See chapter 'Instruments and preparations used in book production'. 21 See, for example, P. Josserand et J. Bruno, 'Les estampilles du département des Imprimés de la Bibliothèque nationale', in *Mélanges d'histoire du livre et des bibliothèques offerts à M. Frantz Calot* (Paris, 1960) pp. 261–298. 22 See, for example, R. Lemay, *Dictionary of the Middle Ages* 1 (1982), s.v. 'Arabic numerals', pp. 382–398. 23 As evidence of their benefits, see *Mss du MO*; *Scribes*; *Codicology*.

are user-friendly and constantly updated, and publishing compilations of the available data on well-defined sets of manuscripts (as exemplified by *FiMMOD*).

Catalogues of manuscripts[24]

Lists and catalogues of manuscripts fulfil two functions: they locate and describe the documents. Listings focus on the first function only – they identify the manuscripts found in a library or collection, giving a shelf-mark and limited information such as title and author, perhaps a brief description. They may have been compiled for the benefit of librarians as much as users. The term 'catalogue' will be reserved for registers where descriptions are more developed, whether presented in codified form or written out. The description should inform scholars about the manuscript in such a way as to indicate whether it is relevant to their research in terms of the edition of the text or its history, or the history of the book or of codicology. A catalogue thus represents a genuine research tool. Generally, a catalogue entry includes the bibliographic, historical and physical details of a manuscript. This distinction remains theoretical, however. In the absence of descriptive standards such as ISBD,[25] each institution has developed its own tradition for cataloguing manuscripts that curators refine in their own way. Catalogues of manuscripts therefore come in very different forms. Some contain a freely written description combined with a short entry of regular format[26]; others are more standardised in the sense that the descriptive elements are presented in a precise order and in a uniform way.[27] Still others have a highly codified presentation, with a list of categories.[28] The catalogues of the N. D. Khalili Collection of Islamic art in London invariably reproduce a page from each manuscript next to the entry,[29] while

24 This section was written by Marie-Geneviève Guesdon. 25 The International Standard Bibliographical Description (ISBD) can be used for books and other non-book items such as audio-visual material. The ISBD makes it possible to find entries established in the same way, with the same details presented in the same order, in any library in the world. 26 For example, M. Götz, *Islamische Handschriften*. Vol. I: *Nordrhein-Westfalen* (Stuttgart, 1999). 27 As is the case with Vajda and Sauvan, *Cat.* 2 and 3, at the Bibliothèque Nationale de France. 28 See the catalogues published by the Al-Furqān Islamic Heritage Foundation, for example M. Hayla's *Fihris makhṭūṭāt Maktabat Makka al-Mukarrama*, vol I: *Qism al-Qur'ān wa 'ulūmih*; and vol. II: *Qism al-ta'rīkh* (London, 1994). 29 The N. D. Khalili Collection of Islamic Art: F. Déroche, *The Abbassid Tradition: Qur'ans of the 8th to 10th centuries* (London, 1992); D. James, *Master Scribes: Qur'ans from the 11th to 14th centuries* (London, 1992); James, *After Timur: Qur'ans of the 15th and 16th centuries* (1992); G. Khan, *Bills, letters and deeds: Arabic papyri of the 7th to the 11th centuries* (London, 1993); M. Bayani, A. Contadini, and T. Stanley, *The decorated word: Qur'ans of the 17th to 19th centuries* (London, 1999); N.F. Safwat, *The Art of the Pen: calligraphy of the 14th to 20th Centuries* (London, 1995).

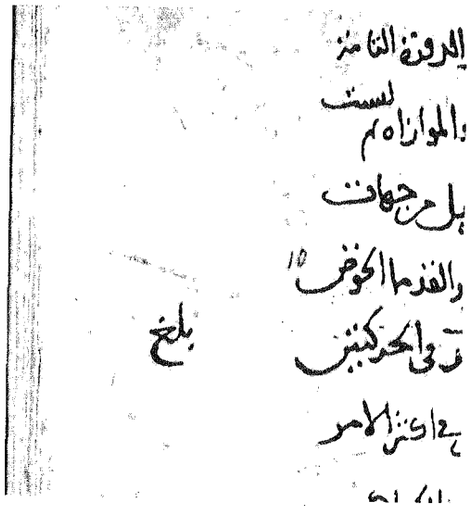
others only publish illustrations felt to be significant[30]; most catalogues, however, do not include any images of the documents described therein. The features that figure in the description vary: for example, certain catalogues make no mention of the presence or absence of a binding. When a manuscript is undated, sometimes a cataloguer may propose a date, sometimes not. The computerisation of catalogues is nevertheless now imposing further reflection on – if not yet standardisation of – the content of catalogues.

At the very least, a bibliographical description generally gives the title and author of the work (or works) contained in the manuscript. The single codicological entity enclosed by the binding of a volume does not always correspond to a single text: just as a single book may be spread across several volumes, several texts may be contained in a single volume. Either a scribe copied them one after another at the same time, or else an owner, for various reasons, may have decided to compile an ad hoc anthology by binding together texts of similar format but diverse origin. Most cataloguers provide bibliographical references on the author or work,[31] to which should be added, in principle, editions of the text and its translations, publications that include a reproduction of the manuscript, and sources used by the cataloguer to compose the entry. Increasingly, the incipit – or opening words of the text – is included in catalogues, because this constitutes a key element for identifying texts and their recensions. The catalogue of manuscripts in Berlin compiled by Wilhelm Ahlwardt in the late nineteenth century is an invaluable tool in this respect, since the incipits were not only transcribed but also indexed.[32] Explicits, or the closing words of the text, can also function as an identifying feature, but they are harder to index. When a manuscript lacks its original beginning or end, the first or last words figuring in the manuscript provide a point of reference for anyone with access to another edition of the text or a different manuscript.

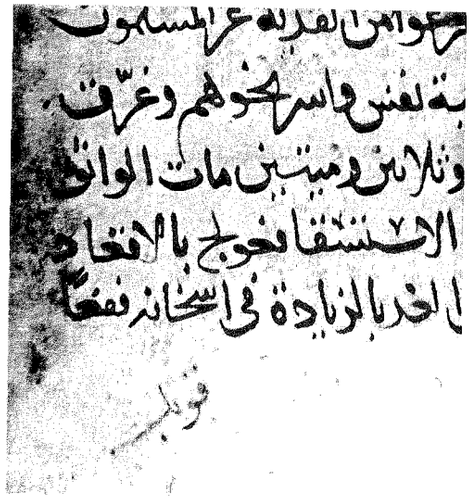
As far as the history of a given manuscript goes, catalogues should be consulted for details on the circumstances surrounding the copying of the text: date, place, name of scribe, description of collating marks (see illus. 159 and 160), the original text from which the copy was made, and so on. If the date is not indicated on the copy itself, cataloguers usually try to assign an approximate date based on a certain number of elements (which should be specified in the entry so that a reader can assess their pertinence). A catalogue may also include a description of the script (style, the presence or absence of vocalisation and/or punctuation, the colour of ink used for text and titles) and an indication of

30 Richard, *Cat.* 1. 31 The most commonly used bio-bibliographical reference works are C. Brockelmann, *Geschichte der arabischen Litteratur*, 2 vols. (Leiden, 1943-1948, 2nd ed.), with 3 volumes of supplements (1937-1942); F. Sezgin, *Geschichte des arabischen Schrifttums*, 9 vol, (Leiden, 1967-1984); H.D. Zirikli, *al-A'lām: qāmūs tarājim li-ashhar al-rijāl wa l-nisā' min al-'Arab wa-l-musta'ribīn wa l-mustashriqīn*, 8 vol. (Beirut, 1979, 2nd ed.). 32 W. Ahlwardt, *Verzeichnis der arabischen Handschriften der königlichen Bibliothek zu Berlin* (Berlin, 1887–1899).

additions such as charts, maps, and figures. Decoration and illumination should also, in theory, be described. Notes relating to the transmission of the text should also be mentioned, such as reading certificates, certificates of endowment (waqf), indications of sale, reading, or ownership, and stamps. In addition to providing clues to the dating of the manuscript, these details are valuable in establishing the history of the text – how it was transmitted, where, in what circles it moved. Beyond the text itself, they are also of interest in terms of the history of the book trade and of private and public libraries in the Orient. A list of the brief comments added to the end of a volume when bound or inscribed by owners – such as records of family events, sundry recipes or descriptions of meteorological occurrences – can also be of use in contexts that extend beyond the study of the volume in isolation. The way in which the manuscript was acquired by the library is usually indicated, and sheds light on the history of the text in terms of its spread in the West (in the case of Western libraries) or its presence in a given private or public collection (in the case of libraries in the Arab and Islamic world). All marks figuring in the manuscript should be mentioned: indications of price, explanatory comments, stamps, and former shelf-marks, not forgetting research into earlier listings in order to supply readers with complete information on the history of the volume.



159. Collation note: *balagha* ("point reached"). 554/1159. Paris, BNF arabe 6080, f. 70 (detail).



160. Collation note: *qūbila* ("compared"). Paris, BNF arabe 6501, f. 86v° (detail).

Physical description is often limited to an indication of the material used as writing surface, the number of folios in the volume, and their dimensions. Recent codicological research tends to extend such descriptions, and research may in turn be facilitated by the explicit mention of features that will later

enable scholars to locate manuscripts relating to a specific line of research. Some catalogues offer a detailed description of the support: type of paper, watermark if any, the collation and numbering of quires, the use and arrangement of catchwords, the surface area allocated to text (measured from the top line to the bottom line), the number of lines, the colour of ink, and the type of ruling. Unfortunately, all too often the binding is not described. These physical features, apart from their interest to scholars, are often the ones that enable a cataloguer to assign an approximate date to a manuscript, so it is only natural that, for this reason at least, they are included in a catalogue entry.

In European libraries, the manuscripts are usually catalogued according to a so-called 'topographical' organisation, namely the order of shelf-marks, which itself generally reflects the order in which the library acquired the manuscripts. In Arab countries, manuscripts are usually classified systematically according to branch of knowledge. Works contained in anthologies may therefore appear under different categories or even volumes. Whatever the system of classification used, an index or concordance should always make it feasible to find manuscripts pertaining to a given field and to locate the description of a manuscript whose shelf-mark is known.

Indeed, it is largely the index that transforms a catalogue into a useful tool of research. When it comes to identifying texts, indexes of authors, titles, and incipits, as well as a systematic index by field of knowledge are all essential. A concordance between shelf-marks and catalogue numbers is also often necessary. Codicologists would like to find at least an index giving date and place of production, names of individuals (scribes, owners, readers, transmitters), and illuminated copies; they are positively delighted when they come across an index of undated manuscripts and supports.[33]

Numerous catalogues of manuscripts have been published in the past twenty years, thanks largely to support from institutions such as the Institute of Arab Manuscripts (part of ALECSO[34] in Cairo) and the private Al-Furqān Islamic Heritage Foundation in London. This output has been accompanied by an effort to standardise the content of entries, which are tending to become fuller.

Libraries are currently working on the computerisation of catalogues. The manuscripts at Dār al-Kutub in Cairo have been catalogued since 1992 in a database containing 50,000 titles, which can be consulted on the spot. Other libraries have launched projects that remain at the experimental stage. In Morocco, the Bibliothèque Générale et Archives has produced a CD-ROM with a description of manuscripts from the Qarawiyyīn mosque, and has developed a still-experimental database for cataloguing its own manuscripts. Algeria is also currently considering a database. In France, the Bibliothèque Nationale de France has developed a descriptive format of the InterMARC

33 Richard, *Cat.* 1, pp. 391–432. 34 Arab League Educational, Cultural and Scientific Organisation.

type,[35] which may be implemented in a system employing non-Latin letters. In the United States, manuscripts in the Library of Congress are listed in the OCLC[36] database in a USMARC format that has not been adapted to manuscript books and therefore has very limited entries.[37] The blueprint for a virtual Mediterranean library (Medlib) unveiled by UNESCO should result in a collective computerised catalogue – accessible via Internet – of Arabic manuscripts in libraries in the Mediterranean regions; consideration of the content of entries is currently under way.

Furthermore, consideration is being given to the reproduction of manuscripts accompanied by descriptive entries. In Spain, two CD-ROMs have been issued pertaining to Arabic manuscripts in the CSIC library in Madrid and in two libraries in Cordoba.[38] The potential of new technology to combine digitised images with verbal description will probably also lead to a reconsideration of the role of description. Rather than evoking the features of a decoration, script, or stamp, descriptive entries will probably establish the pertinent criteria for indexing images in a way that allows for meaningful cross-referencing, comparison and contrast.

Catalogues of manuscripts have now been listed in a repertory entitled World Survey of Islamic Manuscripts, published between 1992 and 1994.[39] This listing contains practical information (address, telephone number, etc.) concerning libraries holding manuscripts in Arabic script; an estimate of the number of the manuscripts held by each one and a list of published catalogues. Two reviews, *Nouvelles des manuscrits du Moyen-Orient*[40] and *Manuscripta Orientalia*,[41] have also made it their task to announce the publication of new catalogues of manuscripts.

35 Machine-Readable Cataloguing (MARC) formats are used in most libraries for printed books and other documents. They contain a certain number of fields designed for pre-defined indexing and offer the possibility of linking a title or name (author or other) to bibliographical entries in such a way that searches may be undertaken for all possible variants of name and title. 36 Online Computer Library Centre 37 Some university libraries in France can access OCLC entries. 38 Biblioteca, Instituto de Filología (Madrid), Colección de manuscritos árabes y aljamiados de la Biblioteca del Instituto de Filología del CSIC [CD-ROM]: María del Pilar Martínez Olmo (ed.), Los manuscritos de la Junta (Madrid, 1998). 39 G.J. Roper (ed.), *World Survey of Islamic Manuscripts,* 4 vols. (London, 1992–1994). 40 *Nouvelles des manuscrits du Moyen-Orient* (Paris, 1991—>). 41 *Manuscripta Orientalia: International Journal for Oriental Manuscript Research* (St. Petersburg, 1995—>).

Index of technical notions and terms

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Manuscripts quoted

Guide to Further Reading

I – Abbreviated titles

I. Chabbouh, *Le manuscrit*: Chabbouh (Ibrahim), *Le manuscrit*, Tunis, Alif – Agence nationale de mise en valeur et d'exploitation du patrimoine..., 1989 [Chefs d'œuvre de la Bibliothèque nationale de Tunisie, 1].

Codicology : Yasin Dutton (ed.), *The codicology of Islamic manuscripts: Proceedings of the second conference of al-Furqān Islamic Heritage Foundation*, London, al-Furqān Islamic Heritage Foundation, 1995.

Déroche, *Abbasid tradition* : Déroche (François), *The Abbasid Tradition: Qur'ans of the 8th to the 10th centuries AD*, London, Azimuth Editions, 1992 [The Nasser D. Khalili Collection of Islamic Art, 1].

Déroche, *Cat.* I/1 : Déroche (François), *Catalogue des manuscrits arabes*, 2e partie, I/1. *Les manuscrits du Coran. Aux origines de la calligraphie coranique*, Paris, Bibliothèque nationale, 1983.

Déroche, *Cat.* I/2 : Déroche (François), *Catalogue des manuscrits arabes*, 2e partie, I/2. *Les manuscrits du Coran. Du Maghreb à l'Insulinde*, Paris, Bibliothèque nationale, 1985.

Duda, *Isl. Hss* 1 : Duda (Dorothea), *Islamische Handschriften* I: *Persische Handschriften*, 2 vols., Vienna, Verlag der österreichischen Akademie der Wissenschaften, 1983 [Die illuminierten Handschriften und Inkunabeln der österreichischen Nationalbibliothek, 4].

Duda, *Isl. Hss.* 2 : Duda (Dorothea), *Islamische Handschriften* II: *Arabische Handschriften* 2 vols., Vienna , Verlag der österreichischen Akademie der Wissenschaften, 1992 [Die illuminierten Handschriften und Inkunabeln der österreichischen Nationalbibliothek, 5].

EI² : *Encyclopaedia of Islam*, new ed., Leiden, Brill, 1954-

Enc. Ir. : *Encyclopedia Iranica*, London/Costa Mesa, CA, 1982-

FiMMOD : *Fichier des manuscrits moyen-orientaux datés*, Paris, 1992-

Fu'ād Sayyid, *Makhṭūṭ* : Sayyid (Ayman Fu'ād), *al-Kitāb al-'Arabī al-makhṭūṭ wa-'ilm al-makhṭūṭāt – Le manuscrit arabe et la codicologie*, 2 vols., Cairo, al-Dār al-Miṣriyya al-Lubnāniyya, 1997.

Gacek, *AMT* : Gacek (Adam), *The Arabic manuscript tradition: a glossary of technical terms and bibliography*, Leiden, Brill, 2001 [Handbuch der Orientalistik I/58].

Gacek, *McGill* : Gacek (Adam), *Arabic manuscripts in the libraries of McGill University. Union catalogue*, Montreal, McGill University Libraries, 1991 [Fontanus monograph series, 1].

GAP : *Grundriss der arabischen Philologie 1: Sprachwissenschaft*, W. Fischer (ed.), Wiesbaden, Dr. Ludwig Reichert, 1982; 2, *Literatur*, H. Gätje (ed.), Wiesbaden, Dr. Ludwig Reichert, 1987.

GdQ : Nöldeke (Theodor), *Geschichte des Qorans*, bearbeitet von F. Schwally, 2 vols., Leipzig, Dieterch'sche Verlagsbuchhandlung, 1909, 1919; G. Bergsträsser and O. Pretzl, *Die Geschichte des Korantexts*, Leipzig, 1938 ; repr. Hildesheim/New York, G. Olms, 1961.

Grohmann, *AP* I : Grohmann (Adolf), *Arabische Paläographie. I. Teil*, Vienna, Hermann Böhlaus Nachf., 1967 [Österreichische Akademie der Wissenschaften, Phil.-hist. Klasse, Denkschriften, 94. Bd, I. Abhandlung].

Haldane, *Bookbindings* : Haldane (Duncan), *Islamic bookbindings in the Victoria and Albert Museum*, London, The World of Islam Festival Trust, 1983.

JA : *Journal Asiatique*. Paris, Société asiatique, 1822-

James, *Q. and B.* : James (David), *Qur'ans and bindings from the Chester Beatty Library. A facsimile exhibition*, London, World of Islam Festival Trust, 1980.

JEA : *Journal of Egyptian archaeology.*

Lemaire, *Introduction* : Lemaire (Jacques), *Introduction à la codicologie*, Louvain-la-Neuve, Institut d'études médiévales, 1989.

Marçais and Poinssot, *Objets* : Marçais (Georges) and Poinssot (Louis), *Objets kairouanais, IXe au XIIIe siècle. Reliures, verreries, cuivres et bronzes, bijoux*, 2 vols., Tunis, Tournier-Paris, Klincksieck, 1948-1952 [Direction des antiquités et arts. Notes et documents, 11].

MME : *Manuscripts of the Middle East*. Leiden, Ter Lugt Press, 1986-1992.

Moritz, *Ar. Pal.* : Moritz (Bernhard), *Arabic palæography. A collection of Arabic texts from the first century of the hidjra till the year 1000*, Cairo/Leipzig, K. W. Hiersemann, 1905 [Publications of the Khedivial Library, 16].

Mss du MO : François Déroche (ed.), *Les Manuscrits du Moyen-Orient. Essais de codicologie et de paléographie. Actes du Colloque d'Istanbul (Istanbul, 26-29 mai 1986)*, Istanbul, I.F.E.A./Paris, Bibliothèque nationale, 1989.

Muzerelle, *Vocabulaire* : Muzerelle (Denis), *Vocabulaire codicologique. Répertoire méthodique des termes français relatifs aux manuscrits*, n.p., CEMI, 1985 [Rubricæ, histoire du livre et des textes, 1].

NMMO : Nouvelles des Manuscrits du Moyen-Orient. La Celle-Saint-Cloud, SEMMO, 1992-

Quiring-Zoche, *Ar. Hss.* 3 : Quiring-Zoche (Rosemarie), *Arabische Handschriften. Teil III*, Stuttgart, Franz Steiner Verlag, 1994 [VOHD XVII, Reihe B, 3].

REI : *Revue des études islamiques*. Paris, Genthner, 1927-1993.

REMMM : Revue du monde musulman et de la Méditerranée. Aix-en-Provence, Édisud, 1989-

Richard, *Cat.* 1 : Richard (Francis), *Catalogue des manuscrits persans 1: Ancien Fonds*, Paris, Bibliothèque nationale de France, 1989.

Richard, Paris 1997 : Richard (Francis), *Splendeurs persanes. Manuscrits du XIIe au XVIIe siècle*, Paris, Bibliothèque nationale de France, 1997.

RIMA : *Revue de l'Institut des manuscrits arabes*, 1955/1374-

Rogers, Berlin 1988 : Rogers (J. Michael) and Ward (R. M.), *Schätze aus dem Topkapi Serail. Das Zeitalter Süleymans des Prächtigen*. Berlin, Staatliche Museen Preussischer Kulturbesitz/Museum für islamische Kunst, 1988.

Rogers, Geneva 1995 : Rogers (J. Michael), *Empire of the Sultans. Ottoman art in the collection of Nasser D. Khalili*. Geneva, Musée d'art et d'histoire/The Nour Foundation, 1995.

Sauvan and Balty-Guesdon, *Cat.* 5 : Sauvan (Yvette) and Balty-Guesdon (Marie-Geneviève), *Catalogue des manuscrits arabes*. 2e partie: *Manuscrits musulmans*, 5, nos 1465-1685, Paris, Bibliothèque nationale de France, 1995.

Schoeler, *Ar. Hss.* 2 : Schoeler (Gregor), in collaboration with H. C. Graf von Bothmer, T. Duncker Gökçen and H. Jenni, *Arabische Handschriften, Teil II*, Stuttgart, Franz Steiner Verlag, 1990 [VOHD XVII, Reihe B, 2].

Scribes : François Déroche and Francis Richard (eds.), *Scribes et manuscrits du Moyen-Orient*, Paris, Bibliothèque nationale de France, 1997.

Sellheim, *Materialen* : Sellheim (Rudolf), *Materialen zur arabischen Literaturgeschichte 1*, Stuttgart, Franz Steiner Verlag, 1976 [VOHD XVII/A, 1]; 2, Stuttgart, Franz Steiner Verlag, 1987 [VOHD XVII/A, 2].

SPA : Arthur U. Pope and Phyllis Ackerman (eds.), *A survey of Persian art from prehistoric times to the present*, 6 vols., London, Oxford University Press, 1938-1939.

Vajda and Sauvan, *Cat.* : Vajda (Georges) and Sauvan (Yvette), *Catalogue des manuscrits arabes*. 2e partie, *Manuscrits musulmans*, 2, nos 590-1120, Paris, Bibliothèque nationale, 1978 ; 3, nos 1121-1464, Paris, Bibliothèque nationale, 1985.

Weisweiler, *Bucheinband* : Weisweiler (Max), *Der islamische Bucheinband des Mittelalters*, Wiesbaden, Otto Harrassowitz, 1962 [Beiträge zum Buch- und Bibliothekwesen, 10].

Witkam, *Cat.* : Witkam (Jan Just), *Catalogue of the Arabic manuscripts in the library of the University of Leiden and other collections in the Netherlands*. 5 fasc. published, Leiden, E. J. Brill, 1983- [Codices manuscripti, 21].

II – General studies

A few journals focus on the manuscripts in Arabic script and provide therefore information about them and about the current trend in studies in this field. The following titles may prove of interest: *Manuscripta orientalia* (St Petersburg), *Revue de l'Institut des manuscrits arabes* (*Majalla Ma'hād al-makhṭūṭāt al-'arabiyya* ; Cairo) and *Nāmeh-ye Bahārestān* (Tehran). It may also prove useful to read *Manuscripts of the Middle East* and *Nouvelles des manuscrits du Moyen-Orient*.

A – Introductory studies on the codicology of manuscripts in Arabic script

Arnold (Thomas Walker) and Grohmann (Adolf), *The Islamic book: a contribution to its art and history from the VII-XVIII century*, [Leipzig, August Priess], 1929.

'Awwad (Kurkīs), *Aqdam al-makhṭūṭāt al-'Arabiyya fī maktabāt al-ālam al-maktūba mundhu ṣadr al-Islām ḥattā sana 500 h. (1106 m.)*, Baghdād, Wizāra al-Thaqāfa wa-l-I'lām, 1982.

The book in the Islamic world. The written word and communication in the Middle East, G. Atiyeh (ed.), New York, State University of New York Press/Washington DC, Library of Congress, 1995.

Brockelmann (Carl), *Geschichte der arabischen Litteratur*, 2nd ed., 2 vols., Leiden, E. J. Brill, 1943-1948 ; *Supplement*, 3 vols., 1937-1942.

I. Chabbouh, *Le manuscrit.*

Codicology.

Déroche (François), 'Les manuscrits arabes datés du IIe/VIIIe siècle', *REI* 55-57 (1987-1989), pp. 343-379.

Déroche (François), *Le livre manuscrit arabe, Préludes à une histoire*, Paris, Bibliothèque nationale de France, 2004 [Conférences L. Delisle].

Endress (Gerhard), 'Handschriftenkunde', *GAP* I, pp. 271-296.

Gacek (Adam), *AMT.*

A. Grohmann, *AP* I.

Mss du MO.

D. Muzerelle, *Vocabulaire.*

Orsatti (Paola), 'Le manuscrit islamique: caractéristiques matérielles et typologie', in M. Maniaci and P. F. Munafò (eds), *Ancient and medieval book materials and techniques* 2, Vatican City, Biblioteca Apostolica Vaticana, 1993, pp. 269-331.

Pedersen (Johannes), *The Arabic book*, ed. with an introduction by R. Hillenbrand, Princeton, N. J., Princeton University Press, 1984.

Richard (Francis), *Le livre persan*, Paris, Bibliothèque nationale de France, 2003 [Conférences L. Delisle].

Roper (Geoffrey) (ed.), *World survey of Islamic manuscripts*, 4 vols., London, al-Furqān Islamic Heritage Foundation, 1992-94.

al-Sāmarrā'ī (Qāsim), *'Ilm al-iktināh al-'Arabī al-Islāmī = Arabic Islamic palaeography & codicology*, al-Riyāḍ, Markaz al-Malik Fayṣal li-l-buḥūth wa-l-dirāsāt al-Islāmiyya, 1422/2001.

A. Fu'ad Sayyid, *Makhṭūṭ.*

Scribes.

Scripts, page settings and bindings of Middle-Eastern manuscripts: papers of the third international Conference on codicology and paleography of Middle-Eastern manuscripts (Bologna, 4-6 October 2000), F. Déroche and F. Richard (eds.) = *Manuscripta Orientalia* 9/3 and 4 (2003) and 10/1 (2004).

R. Sellheim, *EI*2 V, pp. 207-208, s.v. 'kitāb'.

R. Sellheim, *Materialen* 1 and 2.

Sezgin (Fuad), *Geschichte des arabischen Schrifttums*, 9 vols., Leiden, E. J. Brill, 1967-1984.

La tradition manuscrite en arabe, thème sous la responsabilité de G. Humbert, *REMMM* 99-100 (2002).

Waley (Muhammad Isa), 'Problems and possibilities in dating Persian manuscripts , *Mss du MO*, pp. 7-15.

Witkam (Jan Just) and Sukanda-Tessier (Viviane), *EI*2 VIII, pp. 149-154, s.v. 'nuskha'.

Zayyāt (Ḥabīb), *Al-Wirāqa wa-sinā'a al-kitāba wa-mu'jam al-sufun*, Beirut, Dār al-Ḥamrā', 1992.

Zirikli (Khayr al-dīn), *Al-A'lām : qāmūs tarājim li-ashhar al-rijāl wa l-nisā' min al-'Arab wa-l-musta'ribīn wa l-mustashriqīn*, 2nd ed., 8 vols., Beirut, Dār al-'ilm li-l-Malāyīn, 1979.

B – For a comparative approach

Beit-Arie (Malachi), *Hebrew codicology. Tentative of technical practices employed in Hebrew dated medieval manuscripts*, Paris, CNRS, 1977.

Bozzolo (Carla) and Ornato (Ezio), *Pour une histoire du livre manuscrit au Moyen Âge. Trois essais de codicologie quantitative*, Paris, CNRS, 1983.

Codicologica: towards a science of handwritten books, A. Gruys and J.P. Gumbert (eds), Leiden, 5 vols., 1976-1980.

Diringer (David), *The hand-produced book*, New York, 1953.

Gilissen (Léon), *Prolégomènes à la codicologie. Recherches de codicologie comparée. La composition du codex au Moyen Âge en Orient et en Occident*, Gand, Story-Scientia, 1977.

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J. Lemaire, *Introduction.*

Maniaci (Marilena) and Munafò (Paola F.) (eds.), *Ancient and medieval book materials and techniques (Erice, 18-25 septembre 1992)*, 2 vols., Vatican City, Biblioteca Apostolica Vaticana, 1993 [Studi e testi 357-358].

Roberts (Colin H.) and Skeat (T. C.), *The birth of the codex*, London, Oxford University Press, 1983.

C – Library catalogues

Ahlwardt (Wilhelm), *Verzeichnis der arabischen Handschriften der königlichen Bibliothek zu Berlin*, Berlin, A. Asher and Co, 1887-1899.

Bayani (Manijeh), Contadini (Anna) and Stanley (Tim), *The decorated word. Qur'ans of the 17th to 19th centuries*, London, Azimuth editions, 1999 [The Nasser D. Khalili Collection of Islamic Art, 4, *Pt. 1*].

F. Déroche, *Cat.* I/1 and I/2.

F. Déroche, *Abbasid tradition.*

D. Duda, *Isl. Hss* 1 and 2.

A. Gacek, *McGill.*

Gulchīn-Ma'ānī (Aḥmad), *Rāhnamā-yi Ganjīna-yi Qur'ān*. Mashad, Intishārāt-i Kitābkhāna-yi Āstān-i Quds, 1347/1969.

James (David), *Master scribes. Qur'ans from the 11th to the 14th centuries*, London, Azimuth editions, 1992 [The Nasser D. Khalili Collection of Islamic Art, 2].

James (David), *After Timur. Qu'ans of the 15th and 16th centuries*, London, Azimuth editions, 1992 [The Nasser D. Khalili Collection of Islamic Art, 3].

R. Quiring-Zoche, *Ar. Hss.* 3.

F. Richard, *Cat. 1.*

Y. Sauvan and M.-G. Balty-Guesdon, *Cat 5.*

Schmitz (Barbara), *Islamic and Indian manuscripts in the Pierpont Morgan Library*, New York, The Pierpont Morgan Library, 1997.

R. Sellheim, *Materialen* 1 and 2.

G. Schoeler, *Ar. Hss.* 2.

Şesen (Ramazan), İzgi (Cevat) and Akpinar (Cemil), *Catalogue of manuscripts in the Köprülü Library*, 3 vols., Istanbul, IRCICA, 1406/1986.

de Slane (William Mac Guckin), *Catalogue des manuscrits arabes*, Paris, Bibliothèque nationale, 1883-1895.

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