

The Medieval Book

I. 1. Art Patronage and Function of Medieval Manuscripts

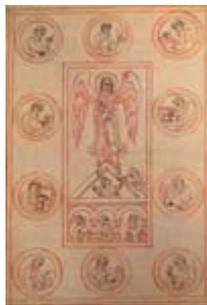
Art patronage is an active collaboration between the artist and the patron leading to completion of a work of art. In the Middle Ages it was of essential importance for the artistic creation; both sides provided contributions to the realization of the project without which no medieval work of art could have been made. We can see the phenomenon of patronage of book production in the Middle Ages from two angles: the collective ownership of books intended for the common use by a religious community and the individual patronage of a religious person or layman, the phenomenon that gradually took over during the thirteenth and fourteenth centuries. The books ordered for individual use mirror a variety of personal interests. They were collected for the purpose of self-educational study, satisfying one's eagerness for information. A phenomenon of ardent bibliophile interest also occurs relatively frequently during the Middle Ages. Finally, a specific kind of a book intended for private devotion and contemplation of an individual was favored in the Late Middle Ages.

In the Early Middle Ages, the majority of books produced served as the liturgical books and were used by priests and monks in churches and monasteries. These books - especially Bibles - were seen as the property of the titular saint of the church or monastery in order to assure their attachment to a particular community and symbolize its continuation. Very often we find the representation of the titular saint depicted on the dedication page or book opening, sometimes together with a symbolic representation of the community. This very attitude expresses itself also in the occasional inclusion of transcriptions of important documents related to the legal status and privileges of the community or even of its historical accounts. The proximity of these documents to the sacred text obviously should supply them with larger credibility and authenticity.

The major need for new books appeared when a new monastery was founded and had to be furnished with all the necessary liturgical equipment. As a common practice, the abbot or the monks came from an already established monastic community, which then provided the most urgent books for the new community; other necessary books were been copied as soon as possible. We are shown by the example of the first abbot of the French monastery of St. Evroult, who himself copied a number of books and led a [*scriptorium*](#) there, what kind of books were needed in the newly founded monastery. Among those the abbot copied was an [*Antiphonary*](#), a [*Gradual*](#) and a *Collector*. Other books were copied by his companions, as were the excerpts from the Old Testament and its commentaries, *Heptateuch* and a [*Missal*](#).



As early as the twelfth century, some books were produced for individuals rather than institutions, and by that we are notified about the existence of a reading public in this time, whose orders are likely to be responsible for the considerable increase in the manuscript production in terms of quantity. The gradual penetration of books into the secular world resulted in the flourishing of lay ateliers manned by professional scribes, which were competing with the monastic *scriptoria*. This is also the time, when the first accounts of bibliophile interests among secular and religious personalities occur, as in the case of John of Salisbury or Hugh of Puiset, who both bequeathed several dozens of their books to their cathedral libraries. From the same period we have some notion of professionals, traveling to remote places, as did the anonymous master, who worked for the Abbey of St. Albans in England and later in France, probably even in Paris. Such artisans were hired to supplement the monastic production of books or sometimes replace it totally. This phenomenon of the shift of craft towards more specialized activity is still very much veiled in the history of book production.



If we look closely at the patrons of manuscript production after these changes took place, we find several major patterns of exercising lay patronage. First, an individual or a couple orders a book to be written or donates the sum necessary for its completion, as we are informed in many cases from a dedicatory representation in the frontispiece of a book or from a colophon. Or the costs of a manuscript can be shared among a larger group of laymen and coordinated by an administrator, usually a priest, who collects the provided funds and deals with the hired labour. The transactions recorded for the manufacturing of the Certosa di Calci Bible list a surprising number of more than sixty individual contributors together with the sums they offered.

If a book might be procured through commission, it could also be purchased outright, presumably ready-made. Several books of Austrian convents were likely acquired this way, often with financial help from outside of the monastic realm. The prices of books varied; however, books were considered luxurious goods and therefore very expensive. This is confirmed also by the fact, that books are often to be found among objects listed in war booties. We can therefore assume that book collecting in the Middle Ages was a highly demanding activity financially.

I. 2. The Use of Books

Unlike the present day, books were used for a variety of purposes in the Middle Ages. The outlook and content of various kinds of medieval books were determined by the intended usage and, more specifically, by those, who ordered them. We may recognize eight types of books according to their usage, covering the changing need in book acquisition during the medieval period. These are books for missionaries, for emperors,

for monks, for students, for aristocrats, for priests, for collectors, and simply for everybody.

The first group comprises books immediately related to the Christian teaching with illustrative and explicative contents (as Bibles, Gospels, [Psalters](#) and their commentaries, and books containing practical advice for pastors). They were used during the missionary activities - as shown in the example of England - during the 7th to 9th centuries. A further step in the history of book production was the richly decorated and luxurious codices of kings and emperors, which were put on display in ceremonial fashion in order to achieve others' admiration; they can be considered investments to improve the rulers' prestigious position among their contemporaries. They were parts of royal treasuries favored especially from the 8th to the 11th century and often served as diplomatic gifts handed over to a ruler in a distant country. The golden age of monastic books came in the 12th century, when the monastic libraries were the main recipients of glossed and separated volumes of the Bible, Church Fathers, the works of antique and contemporary authors, scholarly works and handbooks, monastic rules, [Breviaries](#), Psalters, [Graduals](#), [Antiphonaries](#) and other service books.

The rise of universities and cathedral schools in the 13th century created a new need for books - handbooks for scholarly and educational use. These were theological treatises, biblical glosses and interpretations, legal handbooks and texts, didactic poems, astronomical handbooks and books about nature, historical books, and revised and unified texts of the Bible. The public demand for these books led to the emergence of a professional book trade, the centers of which were the major medieval universities in Paris, Bologna and Padua.

Already in the thirteenth century we have numerous illustrated manuscripts with secular content, they appear in the next century in a real abundance: chronicles of royal houses, moral treatises, cookbooks, tournament books, and chivalrous romances. These were the books intended for young aristocrats, in which the exemplary way of aristocratic life was presented. The type of literacy spread among the aristocrats was rather educative. Among those books were different types of chansons and romances, travel books, antique themes and saints' lives, specula, histories and world chronicles. From the late fourteenth century, a peculiar type of manuscripts appeared, so-called pattern books. These books can be attributed to one particular artist, they are signed, and contain fine and polished quality drawings, as if they were made for presentation to high-ranking patrons in order to win their support for a particular work.

For personal piety, the [books of hours](#), immensely popular in the fifteenth century, are the best examples. They have been preserved in large amounts all over medieval Europe as books for ordinary households as well as the aristocracy. The books for priests were probably those commonly used by the village communities around the parish churches. They were - as well as the monastic books - service books for the celebration of the Mass: Bible, Breviary, [Missal](#), Psalter, Gradual and new instructive pastoral handbooks, moral treatises on virtues and vices, penitential books, collections of sermons and new illustrative handbooks such as *Biblia pauperum* and *Speculum Humanae Salvationis*, and books on lay participation in Christ's suffering, such as the *Imitation of Christ* of Thomas of Kempis.

It became popular to collect books in the fifteenth and sixteenth centuries in relation to the revival of classical learning among the early humanists. Their enthusiastic and copious patronage aimed at works by antique authors, books on philosophy and science, literary works and bibliophiles. The results of their activities came to us as abundant personal libraries, built with a particular interest in mind.

II. Materials and Techniques of Manuscript Production

1. Parchment

Parchment is made from the skin of an animal. The process of transforming the animal skin into a clean white material suitable for writing medieval manuscripts was the task of the percamenarius, the parchment-maker or parchmenter. In the late Middle Ages parchment-makers took their place among the artisans and tradesmen of every town.



In normal usage, the terms *parchment* and *vellurri* are interchangeable. The word *parchment*, usually *pergamenum* in medieval Latin, derives from the name of the city of Pergamum whose ancient King Eumenes is said by Pliny to have invented it in the second century BC during a trade blockade on papyrus. The word vellum has the same origin as *veal* or *veau* in French, in other words, calf, *vitellus* in Latin, and is strictly the writing material made from cow skin. But except with magnification and a good knowledge of dermatology it is practically impossible to tell the prepared skin of one animal from another.

The preparation of parchment is a slow and complicated process. Early craftsmen's manuals emphasize that the selection of good skins is crucial. Medieval farm animals probably suffered from diseases and ticks, and these can leave unacceptable flaws on the skin of the flayed animal. A parchmenter, looking over available skins in the abattoir, would probably also have to consider the color of the wool or hair as this will be reflected on the final surface of the parchment: white sheep or cows will tend to produce white parchment, and the shadowy brown patterns which are one of the aesthetically pleasing features of parchment may often be echoes of brindled cows or piebald goats. First of all the parchmenter has to wash a skin in cold clear running water for a day and a night according to one recipe or simply 'till it is clean enough', according to another. As the skin begins to rot, the hair naturally falls out. In hot countries the damp skins may have been laid out in the sun to allow this to take place. Usually, however, the process of loosening the hair in parchment making is artificially induced by soaking the skins in wooden or stone vats in a solution of lime and water for between about three to ten days, stirring the vats several times a day with a wooden pole. One by one, the wet slippery skins are taken out and draped hair side out over a great curved

upright shield of wood. The parchment-maker scrapes away the hair with a long curved knife with a wooden handle at each end. The bare skin is revealed underneath, looking pink where the animal's hair was white and paler where it was brown. Where possible the outer film is scraped away too. This surface where the hair has been is known as the grain side of the parchment. The de-haired and tidied-up pelt is then once more rinsed for two further days in fresh water to clear it of the lime.

In the second phase of the process the skin is actually made into [parchment](#). It centers around the drying of the skin while it is stretched on a frame. The pelt, floppy and wet from its last rinse, is suspended spread-eagled in a wooden frame.



This frame can be hoop-shaped or more-or-less rectangular. The skin cannot be nailed to the frame because it shrinks during the drying process and the edges would tear away (and in any case the frames are used over and over again and would become unserviceable if riddled with nail holes) and so instead the [parchmenter](#) suspends the skin by strings attached to adjustable pegs in the frame. Every few centimeters around the edge of the skin the parchment-maker pushes little pebbles or smooth stones into the soft border, folding them in to form knobs which are then looped around and secured with cord. The other end of the cord is then anchored into the slot of a revolving peg in the frame. One by one these knobs and strings are lashed around the edge until the whole skin resembles a vertical trampoline, and the pegs are turned to pull the skin. As it stretches, any tiny gashes or cuts accidentally made in the flaying or de-hairing will be pulled out into circular or oval holes.

It is not uncommon to see such holes in pages or margins of medieval manuscripts. If the parchmenter notices cuts in time they can be stitched up with thread to stop their expansion into holes; sometimes in pages of manuscripts one sees holes with stitch marks around their edges, evidently indicating that cuts were mended but nevertheless split their sewing and opened up again under pressure.



The skin is now tight and rubbery but still wet. The parchment-maker keeps it wet initially by ladling on scoops of hot water. He then begins scraping vigorously at the skin using a curved knife with a central handle. An ordinary knife would have a sharp corner and so could easily cut the tight surface. The crescent-shaped knife was called a *lunellum* and occurs in medieval pictures of parchment-makers as their most recognizable tool, and is used to give both surfaces a really thorough scraping, especially the *flesh side* of the skin.

As the work progresses the *parchmenter* is constantly tightening the pegs and tapping them with a hammer to keep them fixed. Then the skin is allowed to dry on the frame and it shrinks and becomes tighter still as it does so. When it is all dry, the scraping and shaving begins again. The skin is now as tight as a new drum and the noise in the workshop of the metal knife on the surface is considerable. In the early monastic period of manuscript production *parchment* was often quite thick, but by the thirteenth century it was being planed away to an almost tissue thinness. The grain side where the hair had once been has to be scraped away especially at this final stage to remove the glassy shine unsatisfactory as a writing surface. Now the pegs can be undone. The dry thin opaque parchment is released and can be rolled up and stored or taken to be sold. Probably when medieval scribes or booksellers bought *vellum* from a parchmenter it was like this, not yet buffed up and rubbed with chalk in preparation for the actual writing. Prices of parchment of course varied greatly, but sheets were mostly sold by the dozen.



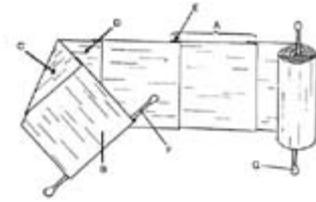
Parchment is extraordinarily durable, far more so than leather, for instance. It can last for a thousand years, or more, in perfect condition. Good parchment is soft and thin and velvety, and folds easily. The grain side of the sheet, where the hair once was, is usually darker in color, creamy or yellowish (especially with sheep parchment) or brownish grey with goat parchment.

II. Materials and Techniques of Manuscript Production

2. Papyrus

However, not all medieval manuscripts were written on *parchment*. The Middle Ages opened with a long legacy of *papyrus* book production, and this fragile Egyptian reed material lingered on in occasional use until the seventh or even eighth century. Papyrus is inexpensive to make and suitable for writing *rolls* but is not satisfactory for texts bound in book form because pages tend to snap off when they are turned repeatedly and

the folds are not strong enough to support constant pressure on sewing threads in the centre of the [gatherings](#). The non-durability of papyrus determined the type of manuscript which dominated as long as this material was the main writing material: a [roll](#).



The [rolls](#) of [papyrus](#) are of different size. Some of them reach the size of forty meters, but usually they vary from six to ten meters in length. The text was located in columns from left to right. For better preservation of papyrus material, the rolls were wound on special wooden or bone sticks with round-shaped endings. The wound roll was put into a leather case. The production of papyrus in the fourth-sixth centuries was a monopoly of Egypt. Papyrus continued to be produced there even after the Arabic conquest (640) till the tenth century. Papyrus production continued for a long time in Sicily where it came from Egypt during the papacy of Gregory I (590-604). Papyrus plantations on the island survived until the thirteenth century, and the Papal chancellery used papyrus for correspondence until the eleventh century. The word "papyrus," survives in modern English in our word "paper."

II. Materials and Techniques of Manuscript Production

3. Paper

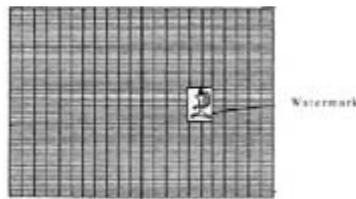
There are indeed very many medieval manuscripts written on [paper](#). Cheap little books made for clerics and students were probably more often on paper than on [parchment](#) by the fifteenth century. Even major aristocratic libraries had manuscripts on paper. Some paper manuscripts survive with the inner and outer pairs of leaves in each [gatherings](#) made of parchment, presumably because parchment is stronger and these were the most vulnerable pages. Paper was a Chinese invention probably of the second century and the technique of paper-making spent a thousand years slowly working its way through the Arab world to the West. By the thirteenth century there were established paper mills in Spain and Italy, and in France by about 1340, Germany by 1390, but probably not in England until the later fifteenth century. Paper was exported from its place of manufacture into all parts of Europe ([see the Map](#)).

By about 1400 it became a relatively common medium for little volumes of sermons, cheap textbooks, popular tracts, and so on. As late as 1480 a ruling of the University of Cambridge stipulated that only books on parchment could be accepted as security for loans. [Paper](#) was evidently thought to be too insignificant. It was the invention of printing in the 1450s which transformed the need for paper, and by the later fifteenth century it had become so infinitely cheaper than parchment that it was used for all but the most luxurious books.

Medieval paper was made from linen rags. It is much stronger and more durable than modern wood-pulp paper, and fifteenth-century scribes were wrong if they believed that it would not survive. Rag paper is manufactured as follows. White rags are sorted and washed thoroughly in a tub pierced with drainage holes and they are then allowed to

ferment for four or five days. Then the wet disintegrating pieces are cut into scraps and beaten for some hours in clean running water, left to fester for a week, beaten again, and so on, several times over, until the mixture disintegrates into a runny water-logged pulp. It is then tipped into a huge vat. A wire frame is scooped into the vat, picking up a film of wet fibers, and it is shaken free of drips and emptied onto a sheet of felt. Another layer of felt is laid over it. As the soggy sheets emerge and are tipped out, they are stacked in a pile of multiple sandwiches of interleaved felt and paper. Then the stack is squeezed in a press to remove excess water and the damp [paper](#) can be taken out and hung up to dry. When ready, the sheet is 'sized' by lowering it into an animal glue made from boiling scraps of [vellum](#) or other offcuts. The size makes the paper less absorbent and allows it to take [ink](#) without running. The sheets may have to be pressed again to make them completely flat. Sometimes, especially in north-east Italy (doubtless under the influence of Islamic paper manufacture) the paper was polished with a smooth stone to give it a luxurious sheen.

It happens that the wire frame leaves lines where the soft paper pulp is thinner, and by at least 1300 European paper-makers began twisting little patterns out of wire and attaching them to the grid so that amusing or emblematic pictures were coincidentally transferred into the thickness of the paper, invisible when the paper was stacked or folded in a book but quite clear when held up to the light. Thus [watermarks](#) came into being as a means of distinguishing paper stocks and their makers.



Before a late medieval scribe could begin to write out a manuscript, a decision had to be made whether to use [paper](#) or [parchment](#). Paper was cheaper and lighter and had the advantage of being supplied in sheets of an exact format. Parchment was thought to be stronger and has a slightly springy writing surface which gives an agreeable flexibility to [pen](#) strokes as compared with the unyielding flatness of writing on paper. The most beautiful and elaborate manuscripts were always on parchment, which was used for Books of Hours and other traditional books intended for a long life.

Parchment and paper as finished by the [parchmenter](#) or paper-maker are supplied in large rectangular sheets. A book is not made up of single pages, but of pairs of leaves or [bifolia](#). Several pairs of leaves are assembled one inside another, folded vertically down the middle and they can be stitched through the middle of the central fold to make a book in its simplest form. Each clutch of folded bifolia is called a [gathering](#) or [quire](#). All standard medieval manuscripts are made up of gatherings. A manuscript is a unit formed by assembling in sequence a series of smaller units. Scribes and illuminators worked on a gathering at a time. If one is examining a medieval manuscript carefully today, the first task will often be to peer into the centre of the folded pages looking for the sewing threads and sketching out a physical plan of where each gathering begins and ends. A gathering is usually of eight leaves, or four bifolia. In early Irish manuscripts and in fifteenth-century Italian books a gathering was often of ten leaves. Little thirteenth-century Bibles, which used exceedingly thin parchment, were often made of gatherings of twelve, sixteen, or even twenty-four leaves. Sometimes a book was made

up mostly of gatherings of eight leaves but ended with a gathering of six or ten leaves because the conclusion of the text fitted more neatly. Sometimes even within a manuscript there were gatherings of irregular length, and these can be clues as to how the maker put the book together.

As we remember, there are the subtle differences between what had been the *hair side* and what had been the *flesh side* of a sheet of *parchment*. In handmade *paper* too, if one can peer closely enough, one can detect from which side the wire lines and *watermark* were indented. Almost without a single exception in over a thousand years of book production in every conceivable circumstance all over Europe, facing pages match. Hair side faces hair side, flesh side faces flesh side, and in paper manuscripts watermark side faces watermark side. This is quite extraordinarily consistent, and yet no medieval manuals of craftsmanship mention the fact. A break in the sequence of hair to hair, flesh to flesh, is so rare that it is often the first indication that a leaf is missing from the manuscript.

If we take an ordinary-shaped oblong sheet of *paper* colored or somehow marked on one side, lay the paper horizontally on the table with the color side upwards, and now fold it over once with a vertical crease in the middle -- this shape is called *folio*. Now if we fold it in half again and crease it along the middle horizontally, it is oblong but a bit squatter in shape and this format is called *quarto*, because four thicknesses are folded. Now if we fold it in half yet again, the wad is now an eighth of the original size and the shape is called *octavo*. Imagine this as a gathering in a book, with a central fold and uncut edges. Take a knife or a finger and open it up page by page as if you were reading it. Page 1 is white. Pages 2 and 3 facing each other are colored. Pages 4 and 5 facing each other are white. Pages 6 and 7 are colored, and so on. If this were *vellum*, in other words, no matter how many times you fold the sheet, *flesh side* will automatically face flesh side and *hair side* automatically face hair side. Presumably, then, this is more-or-less how gatherings were folded in the Middle Ages. In the earlier Middle Ages *scribes* probably assembled their gatherings and wrote in them as they worked through the transcription of a book. By the fifteenth century, at the latest, *stationers* were certainly selling paper and parchment already made up into gatherings.

II. Materials and Techniques of Manuscript Production

4. Ruling

Lines were ruled on the pages of medieval manuscripts as a guide for the script. School children today have lines ruled for their handwriting, and exercise-books and ledgers are printed with ruled lines. It is, however, considered now to be not really good manners to write formal letters on ruled *paper*, as if there were something a bit shameful in needing guidelines for handwriting. It was quite the reverse in the Middle Ages. The smarter the book, the more elaborately it was ruled. Unruled manuscripts (and they exist) are the cheap and ugly home-made transcripts. Splendidly illuminated manuscripts have grids of guide lines. When printing was introduced and early customers expected their books to resemble traditional manuscripts, the usual trick was to rule in guide lines around every line of printed text because writing presumably looked naked without it. There are examples of this at least into the seventeenth century. Ruled guide lines were an expected feature of a medieval book. The lines drawn on a page of a medieval

manuscript will depend very much on the text to be written. Either the scribe ruled his own, or he selected ruled leaves in accordance with the scale and page layout of his text.



There is a ninth-century instruction for laying out pages mathematically. Suppose the page to be five units high and four wide, it says. The height of the written-space should be four such units. The inner and lower margins should be three times as wide as the outer margin and as the gutter between the columns (if it is a two column book) and a third wider than the width of the upper margin. The lines should be spaced, the ninth-century directive concludes, according to the size of the writing. It is quite difficult to measure out a page according to these rules. It can be hard to confirm whether extant manuscripts followed a formula of proportion, because their three outer margins are likely to have been trimmed a number of times in rebinding over the centuries. If nothing else, however, medieval book designers probably realized that in a handsome manuscript the height of the written-space equaled the width of the page.

Until the twelfth century, most manuscripts were ruled in *hardpoint*, that is, with blind lines scored with a *stylus* or back of the knife. Scribes ruled hard and sometimes cut through the *parchment* by mistake. Around the beginning of the twelfth century we first find guide lines ruled in what looks like pencil: it could be graphite but is more likely to be metallic lead or even silver. In thirteenth or fourteenth-century there are probably *plummet* markers for just such purposes as ruling manuscripts. From the thirteenth century onwards, concurrently with plummet (sometimes even in one manuscript), lines can be ruled in *pen* and *ink*. We find brown, red, green or purple ink used, and sometimes combinations of colors giving a festive appearance. Very often the lines marking off the block of text continue right to the edge of the page, and sometimes they are double or treble. The horizontal lines for the script sometimes extend to the edges too, or perhaps the first and last will, or the first, third, antepenultimate, and last. It is interesting to look at a manuscript and notice how it has been ruled, but it is not easy to draw any particular generalizations about what one sees.



Ruling page by page before even beginning to write was slow and tedious. Various devices were used to speed the process. The most universal was to measure out the first

page of the gathering, or the first and last page together) the gathering was laid open, and to follow the lines with a rule to the extreme edge of the page and there to prick very hard right through the whole stack of leaves. Then all that was needed was to open the pages and join up the [prickings](#) and the ruling pattern would be duplicated exactly from page to page. Sometimes these holes were apparently pricked with the very tip of a knife because they are the shape of tiny triangular wedges. Usually they must have been pushed with a carpenter's awl, a metal spike on a wooden handle. Prickings are not always visible as they are frequently trimmed off in [binding](#). If they occur in the inner margins as well as the outer margins, the leaves must have been ruled while the gatherings were folded into pages. Occasionally one notices (especially if alerted to look out for it) that every eight or ten lines or so one hole will be crooked or unduly widely spaced. If this is consistent in several gatherings, it is a good clue that the prickings had been made with some kind of wheel, like a tiny garden roller with spikes, and that one spike had somehow become knocked out of alignment and thus the defect recurred at regular intervals as the wheel went round. There is sometimes evidence too in the later Middle Ages that the multiple lines for the text were ruled with several [pens](#) tied together, like the rostrum or rake used for making musical staves. If for any reason these pens were knocked or quivered slightly as they were drawn across the page, the quaver is reflected at exactly the same point in several lines simultaneously. This is another clue worth looking out for in a page of manuscript.

A final artificial device, used only in the fifteenth century (as far as can be traced) and mostly in north-eastern Italy, is the ruling frame. This is a familiar feature of Oriental and Hebrew book production. Holes are drilled in a wooden board and wires are ingeniously threaded through, emerging in a criss-cross pattern exactly like that of the framework to be transferred onto the page. Then all that is needed is to place the blank sheet over the board and rub it with the fist, and the lines will be impressed identically onto the sheet. Once more, as with other ruling devices, it is not necessarily easy to tell when confronting a manuscript if a ruling board has been used. But imagine how the wires must bisect each other on the board when they cross at right angles. One must be threaded under the other or pushed right through the wood and out again on the other side of the wire it crosses. One can see this in the manuscript, as no line actually crosses another; the lines stop fractionally short and pick up again a millimeter on the other side of the crossing. When a line is ruled with a stylus, it simply ploughs straight across, one way and the other. In the early Middle Ages, scribes doubtlessly prepared many of the stages of the [parchment](#) themselves. The cottage-industry of the monastic community left little scope for teams of professional collaborators. Even the parchment was doubtless a by-product of the monastery's kitchens, and [paper](#) was unknown. But certainly by the fourteenth century it seems to have been possible to purchase gatherings of parchment ready prepared for writing. Ruling continues under miniatures, and there is ruling on blank [flyleaves](#). For many scribes, the task of writing a manuscript must have begun with neat stacks of paper or parchment gatherings, ready folded and ruled.

II. Materials and Techniques of Manuscript Production

5. Pen

Everyone is familiar with the image of the medieval scribe copying texts with a quill [pen](#): it is quite correct. The [inks](#) were thicker and more glutinous than modern commercial ink, and there are numerous medieval recipes for their manufacture but

there are almost no medieval instructions for the cutting of pens. All literate people evidently prepared their own pens and there was thus no merit in writing about how it was done. The cutting of a quill must have been entirely obvious and so familiar to every educated person from ancient Egypt to nineteenth-century England that it was not thought worthy of mention. The best feathers prove to be the five or so outer wing pinions of goose or swan. It is sometimes claimed that the microscopic scripts of the university scribes were made with crow or raven quills. This is technically quite possible but a small pen is difficult to hold, especially if writing a Bible a thousand pages long, and tiny script may after all be the result of a bigger quill cut to a finer tip. Turkeys, which produce excellent quills, are native to America and were unknown in medieval Europe.

For a right-handed scribe a quill which fits most comfortably into the hand has a slight natural curve to the right. This, then, comes from the left wing of the bird. First of all, the thin end and most of the barbs would be trimmed or peeled away and medieval pictures of scribes show simply the curved white barrel. Feathers freshly removed from the bird, or found on the beach, are too flexible and need hardening. They can either be left to dry out for some months or can be hardened artificially by soaking them in water and then plunging them for a few minutes into a tray of heated sand. The thin greasy outer skin and pith within the barrel can be scraped or rubbed away easily now. What remains is a tough and almost transparent tube. The tip is pared away on each flank with a short and sharp knife - a penknife - usually in a double step, very much into the shape of a fountain pen nib. Then it is cushioned in the hand (rather like the action of peeling a potato) and a slit is cut up the centre of the nib. Finally the pen is laid with its nib against a firm surface and the scribe pushes down with the blade of his knife across the extreme end, removing a fraction of a millimeter to produce an absolutely clean crisp squared-off tip.



The medieval scribe doubtlessly prepared his [pen](#) at considerable speed and without great effort. The final cut across the tip has to be repeated quite often in the course of writing out a manuscript as the slit in the point will open up with use or with neglect.

John of Tilbury, one of the scholars in the household of Thomas Becket in the twelfth century, describes how a clerk taking dictation would need to sharpen his pen so often that he had to have sixty or a hundred quills ready cut and sharpened in advance. The implication is that in the course of a day's work a busy scribe would sharpen his pen sixty times.

Medieval pictures of scribes in action are remarkably common, either as author portraits at the opening of their texts, or as part of the standard iconography of evangelists and of the Church Fathers in their study. Thus there are illustrations of people with [pens](#) from all periods of the Middle Ages.



Especially in Books of Hours, which often open the section of Gospel Sequences with a miniature of St. John writing on the island of Patmos, we see the Saint peering at his pen, sharpening it (pulling the blade towards him, not away as we might sharpen a pencil), scraping it with a knife, licking it, writing with it, propping it behind his ear, and so forth, all intended to represent familiar homely activities of the manuscript maker.

II. Materials and Techniques of Manuscript Production [Credits](#)

6. Ink

The quills were what we would call dip-pens. A scribe cannot write without a pot of [ink](#), and the miniatures of St. John on Patmos sometimes include the figure of a mischievous devil who creeps up behind a bush with a grappling-hook to spirit away the Saint's ink pot.



This is an open-air scene and so the pot is portable, presumably with a screw lid, and it is attached by a [cord](#) to an oblong pen case. In the [scriptorium](#) ink was held in inkhorns; some scribes are shown holding these horns but usually both hands were occupied with knife and [pen](#). Evangelists depicted in Carolingian Gospel Books often have their ink on a separate stand, like a torchère, beside the desk (a sensible precaution if one is prone to knock the pot over). In late medieval pictures the horns are generally inserted into metal hoops attached into the edge of the right-hand side of the desk, and there are frequently two and sometimes three at once. There are examples where the horns are fitted into a vertical row of holes in the surface of the desk itself and their tips can be seen protruding below the table.

There are a fair number of medieval recipes for making [ink](#). There were two completely different types of ink. The first is carbon ink, made of charcoal or lamp-black mixed with a gum. The second is metal-gall ink, usually iron gall, made by mixing a solution of tannic acids with ferrous sulphate (copperas); it too requires added gum, but as a thickener rather than as an adhesive. The blackness is the result of a chemical reaction. Both types of ink were employed in medieval manuscripts. Carbon ink was used in the

ancient and eastern worlds and occurs in all medieval recipes until the twelfth century. There were certainly iron-gall inks in use by the third century, but there is no literary tradition of explaining them until Theophilus in the earlier twelfth century. Thereafter craftsmen's recipes describe gall inks, and probably almost all later medieval manuscripts are written with iron gall. The recipe is interesting, and it may come as a surprise to learn that a principal ingredient is the oak apple, the curious ball-like tumour, about the size of a small marble, which grows mainly on the leaves and twigs of oak trees. It is formed when a gall wasp lays its egg in the growing bud of the tree, and a soft pale-green apple-like sphere begins to form around the larva.



One can find [gallnuts](#) quite easily on shrub oaks, even today, though the finest specimens were said to be those imported from Aleppo in the Levant. If picked too young, gallnuts shrivel up like rotten fruit; but when the larva inside is fully developed into an insect, it bores a hole out of its vegetable cocoon and it flies away and the hard nut which remains is rich in tannic and gallic acids. These are roughly crushed up and infused for some days in rainwater in the sun or by the fire. Sometimes white wine or vinegar was used instead of rainwater. This, then, is the first ingredient of iron-gall ink. The second is ferrous sulphate, known also as copperas, green vitriol, or salmortis. It was manufactured or found naturally in Spain by the evaporation of water from ferrous earths. By the late sixteenth century, copperas was probably made by pouring sulphuric acid over old nails, then filtering the liquid, and mixing the filtrate with alcohol (this may explain the acidity of post-medieval inks). The copperas is then added to the oak-gall potion and stirred in with a fig stick. The resulting solution slowly turns from pale brown into black ink. Some ground-up gum arabic is added, not so much to supply adhesive but to make the ink thicker. Quill [pens](#) need the viscosity of gum; fountain pens, in fact, do not. Gum arabic is the dried-up sap of the acacia tree, brought to Europe from Egypt and Asia Minor. Iron-gall ink darkens even further when exposed to air on the pages of a manuscript. It soaks well into [parchment](#), unlike carbon inks which can be rubbed off relatively easily. It is more translucent and shinier than carbon ink which is grittier and blacker.

Medieval pictures of scribes sometimes show two inkhorns on the right of the desk. The second container was probably for red ink. Red was used greatly in medieval manuscripts, for headings, running titles and initials, for rubrics (hence the word) in liturgical manuscripts, and for red-letter days (hence that term too) in [Calendars](#). Corrections to the text were sometimes made in red, drawing attention to the care with which a text had been checked. Blue and green inks exist, but are rarer; red was always the second color. Red [ink](#) in manuscripts goes back at least to the fifth century and flourished until the fifteenth. It must have been the spread of printed books, in which producing colored text is very complicated, which eroded the doubtless standard medieval assumption that books were black and red. Printed books are just black, which

is duller. Vermilion is mercuric sulphide, and is turned into red ink by grinding up and mixing it with white of egg and gum arabic. Red ink can also be made from brazilwood chips which were infused in vinegar and mixed with gum arabic. Brazilwood, one should explain, is not a native of South America - the country was named after its abundance of the well-known trees already familiar to makers of medieval red ink.

Both the exemplar and the copy were usually ' simply placed side-by-side on a sloping desk. We can see in miniatures that manuscripts were held open by weights hanging from each end of a string, with one end dangling over the back of the desk and the other hanging down across the top of the page. A [parchment](#) manuscript will tend to close itself unless it is held open. Sometimes the weights are shown as more-or less triangular with rounded tops and extended horizontal lower edges. As the scribe copied a text, it would be relatively easy to pull the weight down the page so that the long horizontal edge of the weight would very effectively mark his exact place in the exemplar. Scribes sat very upright, often on tall backed chairs (to judge from pictures again), before a sloping desk.



Some medieval illustrations show the desk top actually attached to the chair, apparently hinging up to let the scribe sit down and then falling down again into place, rather like a baby's highchair. Looking at the pictures, however, it is difficult to envisage how the scribe wriggled into the seat; even with the hinge up. The slope is quite steep. Quill [pens](#) are most effective when held at right angles to the writing surface, and this is easier to achieve on a slope. It is tiring for an unpracticed modern writer to work on a steep slope because the way we hold our pens requires the resting of the edge of the hand on the page and manipulating the fingers. But a pen held as described earlier scarcely requires the hand to touch the page at all and the movement is from the arm. For this, the flexibility of a sloping desk is ideal. As [ink](#) takes some moments to dry, one can sometimes see on the pages of medieval manuscripts that the concentration of ink is in the lower edges of the letters as it has settled down the slope of the desk. As the scribe sat down to commence copying, he was recommended by the recipes to give his parchment a final rub over with fine [pumice](#) and to smooth the surface off with chalk.

This is to remove any grease stains that may have come about in handling and folding the sheets, and to reduce the risk of the ink running. As he actually wrote, the scribe held a knife in his left hand. This is important, and universal in the Middle Ages. Writing, like eating, was a two-handed operation. It meant, among other things, that he had no spare hand for following his place in the exemplar. The knife was for sharpening the [pen](#) and for erasing mistakes (quickly, before the ink had really soaked in) and, more practically, for holding down the always springy surface of the [vellum](#), moving along the line as the scribe wrote each word.



To steady the page with the finger is potentially greasy and clumsy, but a knife tip gives precision and control.

II. Materials and Techniques of Manuscript Production

7. Gilding

There are several methods of applying gold to manuscript pages and sometimes more than one technique was used in a single miniature in order to achieve different effects. There are three basic types of application appropriate for books. Two methods use gold leaf, and one uses powdered gold. In the first a design is brushed on in some kind of wet glue and the gold leaf is laid on top and is burnished when it is dry. This is used particularly in very early manuscripts and it can achieve wonderful areas of shimmering gold like the backgrounds of early panel paintings. In the second method a sticky *gesso* is prepared and built up so that the design is really three-dimensional. When the gold has been applied and polished with a *burnishing tool* it looks extremely thick and the curving edges of the design catch the light from many angles at once. This is the most wonderful medieval gold in manuscripts and is discussed in more detail below. The third method is to apply what is called *'shell' gold*, a powdered gold mixed with gum arabic into a kind of gold ink (and commonly dispensed from a sea shell like a mussel or oyster, hence the name) and applied with *pen* or brush. It can also be called matt or liquid gold. Unlike leaf gold, it was added after the color. It was particularly used from the second half of the fifteenth century, and can resemble the frosted gold printed now on some Christmas cards. It is curious that it was so popular, because the effect can easily be sugary and overdone, it must have been more expensive to make since grinding up pieces of gold uses more of the material than laying leaf, and those who have tried highlighting in shell gold over *pigment* report that it is a slow process to apply scores of hatched lines with repeated precision.

Gold leaf is not especially easy to use either. It is a property of gold that, unlike many other metals, it can be hammered thinner and thinner without ever crumbling away. A piece of gold leaf is infinitely thinner than the thinnest *paper*. It is virtually without thickness and has almost no weight. If dropped it hardly seems to flutter downwards. If it settles on a hard surface ruffled or folded it can be straightened out with a puff of breath, unwrinkling itself instantly like a shimmering shaken blanket. It was comparatively rarely used in medieval manuscripts before about 1200, with certain fantastically lavish and princely exceptions. Gold leaf is comparatively cheap, even now. Cennino Cennini, the 14th century Italian jeweler and art-theoretician, says that when buying gold leaf, 'get it from someone who is a good goldbeater; and examine the gold; and if you find it rippling and matt, like goat *parchment*, then consider it good'. Both Cennino and the Göttingen Model 5, Book describe at some length the mixing of

[gesso](#) for raised illumination. Begin with slaked plaster of Paris, and grind in a little white lead (less than a third of the amount of the plaster, Cennino says). The mixture is very white and crumbly. The Göttingen manuscript takes up the recipe: 'then fetch bolum armenum at the apothecary's, and grind so much into it that the chalk will turn a red flesh color there from. Armenian bole, as it was called although it certainly came from many places closer than Armenia, is a kind of greasy red clay. It has no real function in gesso except to supply color. When the gesso is eventually applied to the white page the inclusion of a coloring substance will make the mixture easier to see; and if the gold should ever wear off a bit, a pink-brown color underneath gives a more pleasing and warmer glow than stark white. It is interesting to look out for traces of bole having been used in the illumination of manuscripts. Usually, especially in rather battered manuscripts, one can detect whether or not bole has been mixed with the gesso under the gold. In Italy it is pink. In Flanders and Germany it is brown. In Paris it is usually not used at all. This must be one of those curious differences which, if enough examples could be systematically collected up and documented, might one day help localise manuscripts or at least the place of the illuminator's training. However, to return to the recipe, we now have plaster and white lead, with or without coloring. Add a dash or two of sugar. Sugar, or honey for that matter, has the property of attracting moisture and it is important that the concoction should remain damp as long as possible. The substance can be dried into little pink pellets and stored like this. When it is needed mix it up with a little clear water and [egg glair](#), presumably on a slab of stone, crunching the mixture over and over with a palette knife until it is really smooth and runny, without bubbles. The egg glair is made from the sticky liquid which forms at the bottom of a bowl of whipped egg whites, especially if a cup of cold water is tipped in too.

This is [gesso](#), a mixture which needs to be stirred often, ready for use. It is applied with a quill [pen](#), not a brush. Speed is important, as is a lightness of touch so as not to scratch the [parchment](#) with the nib. The liquid is puddled into the centre of the piece to be gilded and then quite quickly drawn out carefully into the corners and over the parts of the manuscript page marked out by the under drawing, round the shape of initials, into ivy leaves, haloes, dotted across tessellated chessboard backgrounds, and so on. Presumably the medieval illuminator, unlike the scribe, worked at a flat table rather than at a sloping desk as the gesso is piled up thickly and held by surface tension and it would run down a slope. Damp weather, or dank early mornings are said to be good for applying gold leaf. A fluttering piece of gold leaf is picked up on a thin flat brush called a gilder's tip and can be allowed to fall onto the soft gilder's cushion where it can be blown out flat and cut with a sharp knife into strips or other simple shapes before being picked up again on the brush. The illuminator breathes heavily onto the manuscript page and the dampness of his breath makes the gesso slightly tacky again, and the gold leaf can be lowered into place, overlapping the edges of the gesso pattern. As it nears the page the gold leaf seems to jump into place. It is covered quickly with a piece of silk and pushed quite firmly with the thumb. Patterns will be impressed from the weave of the silk but they are of no consequence as they will be smoothed away in a moment. The illuminator then takes up the [burnishing tool](#); this was traditionally a dog's tooth mounted on a handle, but Cennino says that the tooth of a lion, wolf, cat, or any carnivore is as good, and he goes on to describe how to make a stone burnishing tool from a piece of hematite. The tool is rubbed up and down over and around the gold and into the crevices at its edge. As it rubs, the gold which generously overlapped the edges of the [gesso](#) design will fall away and these infinitely small crumbs of gold dust can be brushed off or swept up.



Some modern scribes assert with the credibility of practical experience that a great deal of medieval manuscript decoration was executed with a [pen](#) rather than a brush. This may have been true, especially for flourished initials where the body of the infilling was in one color without heightening. If the paint has rubbed thin, one can see pen strokes. The Göttingen instructions suggest both implements were used: 'you shall apply all colors, shade and heighten them, with a brush, except in the checkered backgrounds, which you shall apply with the pen and heighten with the brush; otherwise, all foliage and flower work with a brush, large or small'. There are sixteenth century instructions for making brushes for portrait miniatures. Use clippings from the tail hairs of the miniver or the calaber (species of ermine and squirrel respectively) rolled up in strips of [paper](#) tied, and inserted into the end of a barrel of a feather. Thus it may be that pictures of illuminators apparently holding quills are in fact wielding brushes.

II. Materials and Techniques of Manuscript Production

8. Pigments

The range of colors available to the medieval manuscript painter was surprisingly large. Red, for example, could be natural cinnabar, mercuric sulphide, found since classical times in Spain and at Monte Amiata, near Siena, and elsewhere. Vermilion is similar in chemical composition, and was made from heating mercury with sulphur and then by collecting and grinding the deposits of vapour formed during the heating process. It is very poisonous, and so the old artist's trick of bringing a brush to a fine point by licking it was a calculated risk. Alternatively, red [pigment](#) can be made from plant extracts. Brazilwood has already been mentioned in connection with red ink. Madder, a rather pure red, is made from the root of the madder plant, which grows wild in Italy. A romantically named red, widely used in book-decoration, was dragon's blood, described in medieval encyclopaedias as a pigment formed not merely from dragons but from the mingling of the blood of elephants and dragons which have killed each other in battle. Botanists assert that it comes from the sap of the shrub *Pterocarpus draco*.



Blue is the second most common color in medieval manuscripts, after red. Probably its most common color source was azurite, a blue stone rich in copper, found in many countries of Europe. It is very hard, and has to be smashed and then ground patiently with mortar and pestle until it slowly and dustily turns to powder. Another blue, much more of a violet blue, was made from the seeds of the plant tumsle, now called *Crozophora*. But the blue prized above all others was ultramarine, blue from far beyond the sea, made from lapis lazuli, found naturally only in the region of Afghanistan. The journey that this stone must have taken to reach Europe is almost unimaginable, for it was available long before the time of Marco Polo, and it must have passed in bags from one camel train to another, to carts, and ships, a medium of commerce over and over again, before finally being purchased at enormous expense from the apothecaries of northern Europe. Good blue paint was valuable. In the twelfth-century Winchester Psalter it was scraped off for re-use. The inventory of the Duke de Berry, drawn up in 1401-3, includes among his treasures of unbelievable wealth two precious pots containing ultramarine. Other pigments included green from malachite or from verdigris, yellow from volcanic earth or from saffron, white from white lead, and so on. There were several techniques of mixing pigments into paints. Both white of egg (egg glair) and yellow of egg (egg tempera) were common, egg being a very effective glue. Gums too were made from air bladder of the sturgeon or from animal size made usually by boiling up pieces of skin. The grinding and the mixing and the tempering of paints were essential prerequisites to the decorating of illuminated manuscripts.

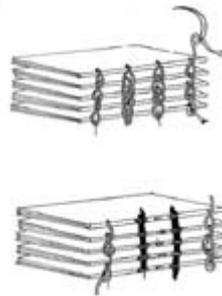
II. Materials and Techniques of Manuscript Production

9. Bookbinding

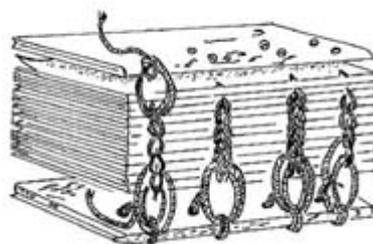
Binding of the book is the last stage in producing a manuscript. A book was not yet ready for the customer when the artist had completed the illumination. It was still in loose *gatherings* and perhaps even dismembered further into separate pairs of leaves. These all had to be collected up, reassembled into order, and held together in some serviceable binding. In the late Middle Ages this would be the task of the *stationer* or bookseller and when a commercial bookbinder can be identified by name, he often proves to have been a stationer. This was the person who had taken the order for the manuscript in the first place and who had distributed the gatherings among the illuminators of the town. It was now the stationer's task to call in the various parts of the book, clean them up (erasing guide words and smudges left over from the various stages of manufacture), assemble them in sequence according to the signatures or catchwords, and to bind the book for the client. In the earlier Middle Ages, when books were mostly made by monks, the binding was carried out by whatever member of the community was able to do so. Quite often catalogues of monastic libraries include a shelf or two of unbound books, sometimes described as in quaternis, which presumably means stitched into some kind of wrappers rather than literally in loose *quires*. From the earliest times when manuscripts were first made in book form, rather than as *rolls* or *tablets*, the gatherings were held together by sewing thread through the central fold. The book is a stack of gatherings joined one to another with the sewing of the first and last gatherings knotted into the covers. Greek and Oriental bindings were basically like this, and so were the earliest monastic bindings of western Europe.



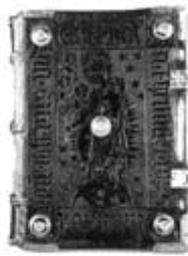
Through most of the Middle Ages, however, manuscripts were sewn onto bands or thongs or [cords](#) running at right angles horizontally across the [spine](#). The stitching of each [gathering](#) goes through the centre fold and around the band, through the centre fold again and out around the next band, back through the centre fold again, and so on. The next gathering is the same, and the next, and the next, until all the gatherings are attached securely to the thongs across their spines.



From at least the twelfth century the stitching was done with the help of a sewing frame. This is a wooden contraption, rather like a gate, which stands upright on the bench. The bands for the [spine](#) are tied to it vertically, suspended from the top and bottom of the frame. The first [gathering](#) of the manuscript is placed on the bench with its spine up against these taut bands and is sewn through its centre and around the bands. Then the next gathering is placed on top, tapped down with a block of wood to keep the result firm and tight, and is sewn around the bands, and so on, one after the other, until all the book is there lashed by its spine to the frame. Sewing is the most time-consuming part of [binding](#). Methods of actually stitching the gatherings varied from century to century and place to place, sometimes a herring-bone stitch, sometimes a [kettle stitch](#), sometimes going round the band once, or twice round it, or through splits in the bands themselves. When the sewing is complete, the bands can be untied from each end of the frame. The book may feel loose and swivel rather easily, and this can be tightened up (as it was in the later Middle Ages) by sewing on stout headbands along the top and bottom edge of the spine.



The boards of medieval manuscripts were generally made of wood. Oak was commonly used in England and France; beech was usual in Italy, or pine, and bound Italian manuscripts feel lighter than northern books. Occasionally the boards were made of leather. The use of pasteboards (a kind of cardboard formed of layers of waste [paper](#) or [parchment](#) glued together), can be followed infrequently through the Middle Ages and from the late fourteenth century became more and more common in southern Europe, in Spain and into Italy in Bologna, Milan, and later Padua. The boards, of whatever material, were squared up into the shape of the book. In earlier manuscripts the boards were cut flush with the edges of the pages; after about 1200 they began to project beyond the edges and were often beveled on their edges. The bands on the back of the sewn [gatherings](#) were threaded into the boards. Frequently some kinds of [flyleaves](#) were added at each end of the book (these explain the cost of extra [vellum](#) in bookbinders' bills), sometimes reusing waste leaves of old obsolete manuscripts. The bands can be attached into the boards by several methods, varying with time and place, but the basic method is the same. The ends of the bands were secured into the boards by hammering in wooden [pegs](#) or, sometimes in Italy, with nails. The manuscript is now within plain boards, and was usable left like this. Usually, however, the outside of the book was covered with leather, [tanned](#), and sometimes dyed.



On a few Carolingian books, [bindings](#) have simple stamped patterns on the leather. There was a fashion for stamped bindings in northern France in the later twelfth century, and bindings ornamented with little tools exist (but are unusual) from the thirteenth and fourteenth century. Then around 1450 the practice became much more common. Sides of bindings from then on were frequently ornamented with repeated impressions of floral or animal devices. This is done with a metal tool on a wooden handle. The [binder](#) grasps the handle in both hands and leans over the binding and pushes down, holding the handle close to his chest and chin, rocking slightly one way and then the other, and then lifts the tool quickly up. No great pressure is needed to leave a neat crisp blind impression. These were arranged in rows, or in lattice or other patterns. The outside of the binding was often fitted then with metal bosses or protective [cornerpieces](#), and usually with some kind of [clasp](#) to hold the book shut. Folded [parchment](#), however well creased, is springy and inclined to cockle in varying temperatures and humidities unless it is held securely shut by the gentle pressure of clasps. Medieval books were sometimes enclosed further in loose jackets, called [chemise](#), which wrap around the fore-edge and keep out the dust. Far more frequently than the surviving medieval bindings suggest, manuscripts may have been covered with textiles and brocades (which have mostly long-since perished) or with precious metals and jewels (which have mostly been removed with motives of varying legitimacy) or with enamels or paintings. Medieval inventories often describe bindings, since the outside of a book is a simple guide to its recognition, and give the impression that the private libraries of rich men or the treasuries of great churches were filled with

multicoloured and elaborate and precious bindings. The craftsmanship of such bindings takes us beyond the work of the [stationer](#) and into the shops of the jeweller or enameller.

III. 1. The Structure of the Text of Medieval Manuscripts [Credits](#)

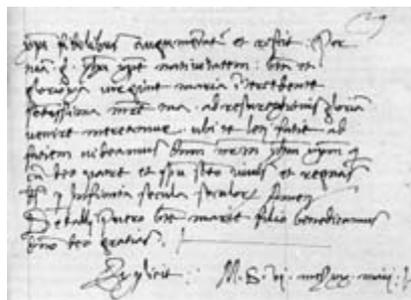
The arrangement of modern books follows certain conventions that make books easy to use. Even without reading a book one may expect to gather information about its contents by examining certain formal elements of almost every book, such as its title, the name of an author, the table of contents, the foreword (introduction, preface), the footnotes, the indices, etc. Moreover, one always knows where to find these elements because their disposition within a book normally follows a universally accepted order. For instance, author's (editor's) name, the title of a book, the name of a publisher would usually appear on the cover or the first page of a book. The table of contents is to be found at the very beginning or the very end of a book. The author's (editor's) address to the reader is usually placed at the beginning, right before the main body of the text. The comments and references are situated either right on the page to which they refer, or at the end of the text.

Medieval hand-written books, [codices](#), followed similar, although not identical, conventions.

A book would begin with a *titulus* (title) and if known – the name of the author.



The first page of a book sometimes bears a *subscriptio* – an inscription, indicating the place and/or the date of making the book and/or the name of a scribe or of a person who ordered the book. Both *subscriptio* and *colophon* -- a statement of the same contents, a mirror of the *subscriptio* at the end of a book -- are optional elements, appearing in medieval books only sporadically. For the Renaissance books *colophon* is more common than the *subscriptio*. In the early prints *colophon* became the emblem, or device, of the publisher. *Subscriptio* and *colophon* serve for defining the origin of a manuscript.

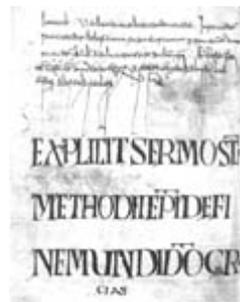
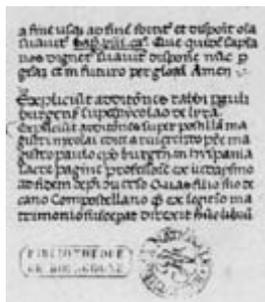


Incipit (« begins ») is the formula indicating the beginning of the text. In codices containing several pieces of writing (four Gospels, or a collection of sermons) each of them would normally have its own incipit. Incipit is sometimes confused with a *titulus*

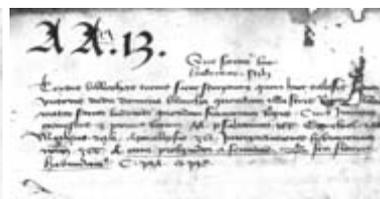
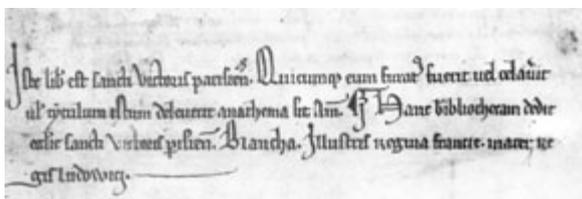
or, more often, with a subscriptio, for the reason that all of them may begin with the word « incipit. »



For a similar reason *explicit* (literally, « unfolded ») – a formula marking the end of the text or of the part of the text -- is sometimes confused with colophon.



Manuscripts acquired for monastic or secular libraries often have a mark indicating that they belong to a particular collection or person. These marks, called *ex libris*, are more often placed at the beginning of the manuscript. They provide an invaluable source of information on the provenance of the manuscript.



Index, or an analytical table of contents, appeared as a result of the general change in the attitude to reading. Before, books were read continuously from the beginning to the end. This was a slow meditative monastic reading, without any need for quickly finding any particular part of the book. In the twelfth century, with the rise of the scholarly – scholastic – culture this attitude changed. Students, professors, and preachers, who now became the main book-users, perceived books as a reference material for consultation rather than for reading through. They wanted to be able to do a quick search within any book, to easily locate a place of interest, skipping the rest of the text. An index

prefacing the text, the first instrument for retrieving information, thus became an indispensable element of any twelfth-century manuscript. First indices simply listed chapter-headings; more elaborated subject indices were to appear later. Writings like *Decreta* by Gratian, a complex legal text, were prefaced by the so-called *materia operis*, a synoptic index containing not only numbered chapter-titles but also short summaries of the topics discussed in each chapter and subchapter.



Numbering of pages is a practice which developed in medieval manuscripts only gradually. At the beginning, only *quires* were marked by *catchwords*. Catchword, the first word of the first line of the following quire, was normally written on the margin, in the lower right-hand corner of the last *verso* of the preceding quire. Catchword helped a binder to establish the correct order of quires. Later the indication of the sequence of quires by numbers or letters was introduced. All these signs were drawn by the same scribe who copied the text, for the binder to know the order in which to join quires to each other.

Two factors brought about a universal acceptance of foliation: development of the *scriptoria*, on the one hand, and change in the function of a book, on the other hand. By the twelfth-thirteenth centuries the number of people taking part in the production of a manuscript grew considerably: rubricators, miniaturists, correctors all intervened in the process. This circumstance increased the danger of misplacing not only *quires* but also *bifolia* inside a quire. On the other hand, the new twelfth-century generation of readers wanted to be able to find a reference in a book easily and quickly.

Foliation is the numbering of the *folios* of the manuscript when numbers were only assigned to the *recto* side of a folio. Occasionally used since Antiquity, in the twelfth century foliation became a rule. There existed various systems of foliation. One of them was to mark folios with a combination of letters, numbers, or some other signs (asterisks, dots, circles, crosses, etc.) where first the number of a quire was given, and then the number of a folio within this single quire: Ai, Aii, Aiii to Aviii, Bi, Bii, etc. These marks were now placed in the middle of the bottom margin and sometimes nicely decorated. It was not anymore a job of a scribe to indicate the sequence of folios: foliation was usually done by a specially appointed person after the copying, decoration, and correction had been completed.

Pagination is a continuous numbering of the pages of a manuscript, when numbers were assigned to both recto and verso sides of a folio. Continuous pagination throughout (e.g., 1 to 348) first appeared in the thirteenth century and became wide-spread in the later Middle Ages.

In addition to foliation and pagination, for the ease of citation some liturgical or theological books numbered the columns of the text (in case that there were more than one column on a page) and even lines.

III. 2. Arrangement of the Text

1. Letters

Due to the fact that medieval books were written by hand, in order to make books legible special types of *book-scripts*, different from the usual handwriting, were elaborated. These scripts certainly changed over time.

In the Early Middle Ages the entire text, except for the incipits and initials, was usually written in one same script. Later development brought considerable changes. For the purpose of visual separation of the main text from the commentary (or several sets of commentaries) different scripts were used within one page, “fine-print” as well as various cursives.



The title of a book, and incipits of the parts of a book were usually written in a special decorative display script, sometimes very difficult to read.

Bigger letters written in red or, rarely, blue ink, were used to indicate the beginning of a section of a book. These are called *initials*. Initials were often richly decorated.



From the twelfth century onwards letters bigger than the rest of the text but smaller than initials, the so-called *litterae notabiliores* (usually different in colour from the initials proper) marked the minor divisions of the text.

In order to ease and speed up copying of a manuscript, medieval scribes employed numerous *abbreviations*. These were used mainly in Latin and Greek texts, although late-medieval vernacular manuscripts also show a number of abbreviated words. There are three main categories of abbreviations: suspensions, in which the end of a word is abbreviated; contractions, in which another part of a word is abbreviated; and abbreviation symbols, standing for a whole word. The latter ones were often preserved from Antiquity, as, e.g., the so-called *tyronian notes*: & for "et." Ubiquitously, abbreviations were used for the “sacred names,” such as *Xpc* for "Christus."

2. Division of the Text

The text of medieval books of the first millennium A.D. looked more or less as an uninterrupted flow, without any of the visible breaks into smaller parts or units the modern reader is accustomed to. Words were not always separated from each other, there was no division into paragraphs or chapters, quotations were not distinguished from the author's words. Special, highly decorative book-scripts also added to "illegibility" of the text. In the end, these books were not meant to be read quickly, sometimes they were not meant for being read at all: these were prestigious gifts, artistic items, for which enjoyable decorative appearance was much more important than the contents.

For this reason, perhaps, even in the Early Middle Ages books designed for study rather than for the pleasure of looking at or for a slow reading were arranged in a bit different way. For instance, the "study-Bibles" had almost no decoration, were written in a legible "fine-print" script, the text being broken into chapters and verses.

In the twelfth century a new generation of readers appeared, with new demands on the text presentation. This fact exerted an immense influence on the overall arrangement of the text, including its division into distinct parts and sections.

Words were now clearly separated from each other. The text itself was divided into chapters and subchapters, with headings containing either numbers, or words, or both numbers and words. The practice of numbering chapters, known since Antiquity, became the norm in the twelfth century. *Chapter numbers* would appear on the margin, beside the text. Later *chapter titles* combined both the number and the topic of the chapter. In most cases chapter titles did not belong to the author of the text. In older manuscripts they were inserted on the margins by twelfth-century readers. Later scribes copied such texts together with the chapter-titles, inserting them into the text onto a correct place. Put together into an analytical index, chapter titles in combination with page-numbers built up a handy system of reference.

Marginal space was extensively used in the twelfth century for indicating breaks in the text and for annotations. Upper margin was a place for the *running titles* which replaced or mirrored chapter titles. Running titles were particularly useful for quick browsing through the text. Left and right margins were very practical in theological or legal writings, where a reader needed guidance through a complicated argument. In the text itself the stages of the argument were distinguished by *litterae notabiliores*. In addition, parts of the argument were indicated and nominated on side margins with special "signposts," such as "quaestio", "prima causa," "secunda," "objectio," "responsio," "distinctio," etc.

Margins were also used to indicate references, cross-references, and quotations.

References were especially needed in the thirteenth century, when, instead of glossing the text, editors chose rather to provide links to separate other texts, e.g., to indicate in the Aristotle manuscript a relevant section of Averroes' commentary on Aristotle. Another usage of references was to make any small part of the text easily retrievable with the help of a separate external index, such as the concordance for the Bible.

Cross-references linked different parts of the same manuscript.

Quotations before the thirteenth century and often also after were inserted right into the text rather than pushed into margins. Over the course of time, a system of signs indicating quotations was worked out. The text of the quotation would normally be marked by dots or commas in the margin, at times even accompanied with an inclusive line from the beginning to the end of the quotation. The source of quotation (abbreviated name of the author) would be placed next to it, also on the margin.

3. Text Layout

Before the twelfth century any text would normally be written in one or two continuous *columns* of equal size, implying equal significance of the contents of both columns. In cases when a scribe or a consequent reader felt the need to expand the text, discuss it, or in any way comment on it, these *commentaries* (called *glosses*) were usually inserted between the lines or placed in the margins, without any particular order.



By the twelfth century three fields of medieval learning, that is, theology, jurisprudence, and biblical study, worked out a new attitude toward spacial disposition of the text on a page. The reason for this innovation was the impetus to present the text of importance in the context of the commentary tradition that surrounds this text. The three most significant examples of such presentation are the *Glossa Ordinaria* (commented Bible), the *Sentences* by Peter of Lombard (concise exposition of the patristic doctrine), and the *Decreta* by Gratian (commented canon law), all of the mid-twelfth century. These compositions attempted to present both the original text and the corpus of commentaries on it all on one page, in order to facilitate understanding of the important source.

There existed numerous ways of laying the text out on a page, the main characteristic of all of them being concentration on the commentary rather than on the original itself. In the case of glossed Bibles, the main text would be written in the central, narrow column, in a large script with large spacing. The glosses, written in a much smaller script, sometimes in cursive, would run parallel to the text on either side, two lines of the gloss corresponding to one line of the main text. In effect, marginal glosses turn into full-fledged left and right columns, for which the place is assigned beforehand, already at the preparatory stage of *ruling* the page out. The beginning of each individual gloss would be conspicuously linked to the corresponding place in the main text. Keywords, *lemmata*, would also be distinguished in the commentary by means of underlining.

The text of the commentary developed in a way similar to the development of the main text: parts of the text were indicated by bigger letters, by marginal signs, and by the division of the text into small bits. Quotations, first included into the gloss itself, were

marked by dots on the margins, and the abbreviated name of the author stood for the source reference. Later on, words of the commentator were distinguished from the words of his sources by means of *paragraphs*.

Medieval *picture-books* demonstrate a very different page layout: there illuminations take the central position, while the text serves rather as a caption.

Illuminated books stand in the middle between the university books and the picture-books: the text plays the main role, while illuminations either illustrate it, or clarify its meaning, or accompany it.

IV. Typology of Medieval Books

This section is designed rather to give a general introduction into the types of medieval books and their typical layout than to examine all existing types of books.

1. The Bible

The Vulgate

The Bible is the most important book of the European Middle Ages. In Late Antiquity and the Early Middle Ages there existed a number of Latin translations of the Bible, the most important among them being *Vetus Latina* (Earlier Latin). In 404 Jerome completed the new Latin translation of the Bible, the *Vulgata* (Biblia vulgata, in English -- Vulgate), which eventually became the most popular one throughout the Middle Ages. It should be borne in mind, however, that the text of the *Vulgata* varied considerably in different manuscripts.

It was not until Carolingian times that the Holy Scripture received its modern form of the *Biblia* (a “library of books”), a full collection of sacred texts all in one volume. Before that, and in many cases long after, many particular books of the Bible, such as the *Apocalypse*, the *Gospels* individually, the *Psalter* were reproduced in separate volumes and perceived as more or less independent texts. Also popular were separate editions that grouped together several related books, such as the *Pentateuch*, Wisdom-literature, Gospels altogether, etc.

Vernacular Bibles

In the eleventh – thirteenth centuries the first vernacular translations of the Bible appeared, of which the most influential was the French one, made in the mid-thirteenth century.

Biblical Books Separately

In the Middle Ages the *Apocalypse*, or the book of Revelation, was frequently reproduced separately, with commentaries, and sometimes with picture cycles. *Apocalypse* manuscripts were especially widespread in tenth and eleventh-century Spain; in the thirteenth century they were proliferated all over Europe.



The four canonical *Gospels* were rarely reproduced individually, more often in group. The full text was in most cases accompanied by an introductory matter such as Eusebius' [canon tables](#) and *chapter lists* (capitula). From the seventh century onwards Gospel books also contained the [Capitulare](#).



Old-Testament books were often reproduced in groups, such as the *Pentateuch* (the five books of Moses) and the *Hexateuch* (the first five books and the Book of Joshua).

The [Psalter](#) was often reproduced alone, functioned rather as a liturgical book than a book for reading.



Commented Bible

Biblical texts were rarely reproduced alone, without commentaries. By the High Middle Ages readers expected to have the cumulative commentaries of the Church fathers and of recent scholarship immediately available, as a guide to each passage. By the eleventh century this circumstance resulted in a special layout of biblical manuscripts. The commentaries in glossed Bibles for professional (university or clerical) use were intentionally clearly separated from the biblical text itself.

Two types of glossed Bibles were the most popular: the *Glossa Ordinaria*, thus called from its common use during the Middle Ages, and the *Glossa Interlinearis*. The *Glossa Ordinaria* - the most advanced twelfth-century type of commented Bible - consisted of nine or ten volumes containing individual or grouped books of the Bible, each having marginal annotation throughout. This gloss is quoted as a high authority by St. Thomas Aquinas, and it was known as "the tongue of Scripture." Until the seventeenth century it remained the favourite commentary on the Bible, and it was only gradually superseded by more independent works of exegesis.

The second gloss, the *Glossa Interlinearis*, the work of Anselm of Laon (d. 1117), derived its name from the fact that it was written over the words in the text of the Vulgate. After the twelfth century, copies of the Vulgate were usually supplied with both these glosses, the *Glossa Ordinaria* being inserted in the margin, at the top and at the sides, and the *Glossa Interlinearis* being placed between the lines of the Vulgate text; while later, from the fourteenth century onward, the *Postilla* of Nicholas of Lyra and the *Additions* of Paulus Brugensis were added at the foot of each page. Some early printed editions of the Vulgate exhibit all this exegetical apparatus.



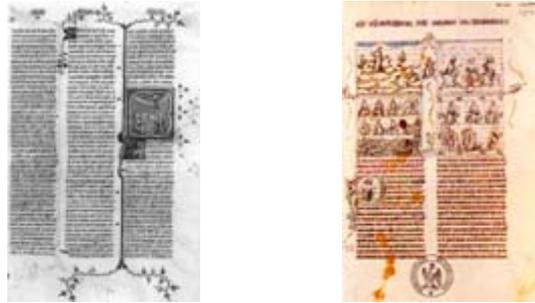
Biblical Concordances

These were Dominican friars who first composed verbal [concordances](#) of the Bible in order to allow a preacher to do a quick search for a quotation. The first concordance, completed in 1230, was undertaken under the guidance of Hugo of Saint-Cher. It contained no quotations, and was purely an index to passages where a word was found. These were indicated by book and chapter. As a result, it was of little service to preachers. In order to make it valuable for them, three English Dominicans added (1250-1252) the complete quotations of the passages indicated.

Picture Bible

A growing concern with moral education of unlearned classes led to development in the thirteenth century of another type of commented Bible: there the biblical text was re-narrated in abridged form, fused with interpretation, and extensively illustrated, thus creating a "picture Bible," such as the Bible historiale, Bible moralisée, and Biblia pauperum.

Bible historiale is the biblical narrative in prose form, written in French by Guyart des Moulins and based on his translation into French (1294) of the *Historia scholastica* of Peter Comestor and on the above-mentioned French translation of the Bible (1250) This was the Bible that the noble laymen were expected to own.



Bible moralisée is the Latin Bible in pictures, also known as the Bible historiée, Bible allégorisée, or Emblèmes bibliques. Composed in the thirteenth century, it consists of short biblical passages and related commentaries with moral or allegorical lessons. These latter usually emphasize the connection between the Old and the New Testament events. The texts were accompanied by extensive illustrations.



Biblia pauperum consisted of a series of captioned miniatures or hand-colored engravings illustrating parallels (typology) between the Old and the New Testament and became extremely popular in the Later Middle Ages. Literally, *Biblia pauperum* means the “Bible of the poor.” In the Middle Ages Bibles of this type did not have this name: it was invented by German scholarship in 1930s. They believed that such a Bible, abundant with pictures, was made for the education of the illiterate poor clergy and laymen. However, production of a *Biblia pauperum* still was costly; one can suggest that these Bibles were rather designed for noble or clerical entertainment.



IV. Typology of Medieval Books

2. Liturgical Books

The Mass

The main event in the life of Christian religious life is the Mass. In the early Middle Ages the complete liturgy was not to be found in one volume. A variety of books containing readings, chants, and prayers was used instead.

As early as in the fourth century it was customary to make notes in the margins of the Bible manuscripts, indicating the Sunday or the festival on which that particular passage would be read, and attach the list of such passages and corresponding dates, the [*Capitulare lectionum*](#), at the end of the manuscript. Very soon the *Capitulare* developed into the [*Evangelary*](#), a special book containing only particular passages from the Gospels, arranged in the order of the liturgical year. The [*Lectionary*](#), containing passages from both Old and New Testaments, complements the *Evangelary*. Epistles of the Apostles were sometimes similarly arranged in yearly order in a book called [*Epistolary*](#), or *Apostle*.

The order of prayers to be said by a priest during the Mass was in the early Middle Ages defined by a book called *Ordo*, or [*Directorium*](#).

The prayers pertaining to the consecration of the Eucharist were contained in a book called [*Sacramentary*](#).

Blessings to be said during the Mass were inscribed in the [*Benedictional*](#). In the earlier period blessings were announced exclusively by bishop. Some *Benedictionals* were produced for individual bishops and lavishly decorated. In the later Middle Ages any priest holding a Mass was entitled to delivering benedictions; thus *Benedictionals* became a common product.

Sung portions of the Mass in the early Middle Ages were inscribed in the [*Antiphonary*](#), or in the [*Gradual*](#).



From the tenth century onwards we find the Gospel lessons, together with the Epistles and prayers, united in a new liturgical book, called the [*Missal*](#). That was an amalgamation within one volume of a number of separate service books necessary for the celebration of the Mass, such as the [*Sacramentary*](#), the [*Antiphonary*](#), the [*Evangelary*](#), the [*Epistolary*](#), and so on, arranged in the liturgical order. The appearance of the *Missal* benefited private devotion: the celebrant received the possibility of saying the Mass alone.



Pastoral Care

A number of books guided Christian religious rites beyond the Mass. Episcopal offices such as, for example, ordination and confirmation, were contained in the [Pontifical](#). Priests had similar handbooks helping them in taking care of souls. These books contained all the sacraments a parish priest had to perform (baptism, extreme unction, matrimony), except the Eucharist. Every local rite had its own books of this kind, and their names were not uniform: *Manuale*, *Liber agendarum*, *Agenda*, *Sacramental*, sometimes [Ritual](#).

Daily Prayer

The Christian church prescribed the so-called Divine Office, that is, a certain order of prayers to be said in specific time of the day. In the Middle Ages, there existed a number of books containing such prayers, the most important among them being the [Breviary](#). The *breviary* appeared in the eleventh century as a combination of the numerous volumes used for daily prayer such as the [Psalter](#), [Antiphonary](#), [Lectionary](#), [Martyrology](#). The purpose of the *Breviary* was to supply poorer communities of canons, who had no means to possess all required books, with all necessary texts and a guide to conducting the order of service. Being, in effect, a voluminous book, initially the *Breviary* was only used by monks. Further development, especially due to the Franciscans and Dominicans, brought about a portable, handy breviary, to be used in private, even by laity. The contents vary in their details depending on the rite of the order and the usage of that geographic area.



Yearly Liturgy

Many liturgical books, especially *breviaries* and [books of hours](#), contained the [Calendar](#): a list of religious feasts in the order of the year. The calendar section is most often attached before the text itself. In the luxury manuscripts, beside universal Christian feasts, calendars usually highlight, in a different color, feasts pertinent to the

patron and the region. The two most popular themes for calendar illumination were the labours of the months and the zodiacal signs.



IV. Typology of Medieval Books

3. Diverse Book Categories

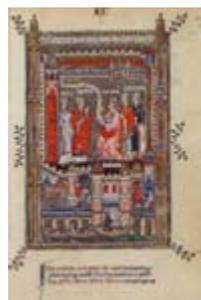
Schoolbooks and University Books

To the category of schoolbooks belonged first of all the Alphabet books, or *Abecedarii*, all kinds of grammar books, and, in the later Middle Ages, also commented [classical texts](#). University books comprised legal, medical, philosophical, scientific, and theological texts. All of them were presented in a specific commented form.



Books for Private Use

Numerous books were used for private religious study and contemplation. Many of them were produced purposefully for individual customers. In such cases manuscripts were often richly decorated and illuminated. To this category belong the [Psalter](#), the [Book of Hours](#), and the [Passional](#) (*Legendary*).



Such books as *hunting manuals*, *books on warfare*, *romans*, *chansons de geste*, *travel-books*, *cookbooks*, [bestiaries](#) were mainly produced for private secular entertainment. These were written in the vernacular rather than in Latin, and became immensely popular in the later Middle Ages. It is important that in most cases such books, even though called "manuals," were not intended as a practical guide. Their presence in the library of a rich nobleman was a prestigious sign of his high education.



Historical Books

Chronicle is a very significant and wide-spread genre of medieval historical writing. This is a collection of annals or yearly events, initially in the form of world history beginning with the Creation; from the ninth century on, local chronicles began to emerge. The thirteenth century saw the appearance of the first vernacular chronicles.



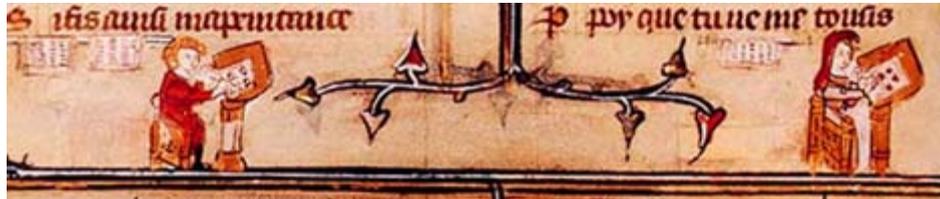
V. Manuscript Illumination

1. The History of Manuscript Illumination

The earliest surviving illuminated manuscripts date from the fifth century, but books and scrolls were already decorated in the classical world. Papyrus [rolls](#) were probably illustrated in ancient Egypt and Greece, and Varro and Martial, for example, describe author portraits in Roman manuscripts. The great rise of manuscript illumination, however, was triggered by the invention of the "book", that is, the change from [papyrus](#) rolls to [codices](#) that consisted of bound parchment leaves. This change took place gradually between the second and fourth centuries A.D. Book illumination remained one of the most flourishing forms of art until the sixteenth century when the luxuriously decorated, hand-written codices were gradually replaced by the printed book.

2. The Artists and the Works

In the early Middle Ages, most painters in miniatures were monks - occasionally nuns, members of the secular clergy, or even laymen - who worked in the [scriptoria](#) of monasteries by the side of the scribes or scriptores, who were usually monks themselves.



They executed large numbers of illuminated manuscripts needed for liturgical services, theological studies, or private devotion, as well as a innumerable other works that formed part of the learning of the period, including secular books handed down by antiquity. Although manuscripts continued to be written and decorated in monasteries and friaries in the later Middle Ages and the Renaissance as well (especially active were the Carthusians and the Brethren of the Common Life in fifteenth-century Netherlands), in this period many illuminators were already specialized lay craftsmen who worked in their [workshops](#) with the help of assistants and apprentices. In fact, as early as the eleventh and twelfth centuries professional laymen working for pay appeared, and often lay artists were called into monasteries for a short period of time necessary for the execution of the work. Most of the professional artists of the late Middle Ages worked only in book illumination, but some others were involved both in miniature and large scale painting such as frescos and altarpieces. Illuminators usually belonged either to the guild of painters or to guilds involved in the book trade (text writers, [binders](#), book sellers, etc.); this arrangement varied from town to town. Until the late Middle Ages most illuminators remained anonymous. Although scribes began signing their names as early as 586, when the famous Rabula Gospels was signed by its scribe, no signatures of illuminators survive before the eighth or ninth centuries, from which period we possess two certain signatures of illuminators. Even though the lack of artists' signatures can partly be explained by the fact that in some cases the scribe and the illuminator could have been one and the same person (as in the case of the Lindisfarne Gospels written by Bishop Eadfrith in 716), illuminators' signatures remain infrequent until the late medieval period. With the gradual rise of the status of the artist from simple artisan to acknowledged artist, illuminators also showed more self-awareness. Besides the increasing number of signatures, self-representation was also becoming frequent from the twelfth century on.



From the thirteenth century, the growing number of surviving documents, mainly of legal nature (contracts, tax rolls), provide additional information on lay artists. Illuminators have been especially well-documented in towns where book production was a major occupation. University towns such as Bologna, Paris, Oxford, Cambridge played a very important role in this respect, being the main centers for the production and trade of books. In the early phase of medieval book painting, the training of illuminators took place in the monasteries by personal instruction, although also some technical manuals were available from the ninth century on. Later, as the number of lay artists increased, the training was usually done by apprenticeship in the [workshops](#), according to the rules set down by the guild to which the illuminators belonged. Illuminators often shared the execution of works. The various stages of a single miniature were executed by different members of the same workshop: the master was responsible for the most difficult and determining parts of the job such as the layout of the composition, while apprentices were entrusted with the more mechanical, time-consuming jobs that also required less expertise, such as the preparation of the ground or the reinforcement of the preliminary drawing in [ink](#). Sometimes the separate sheets of a yet unbound [codex](#) were given out to different painters to decorate. In these cases, special attention was paid to the overall harmonization of the work. The overall unity of a book decoration was also of prime importance when an unfinished project was completed later, by different artists: the original program (often indicated by completed [underdrawing](#)) was usually treated with respect and followed as closely as possible. A famous fifteenth-century example is Jean Colombe's completion of the work of the Limbourg brothers on the Très Riches Heures of the Duke of Berry. Colombe kept and followed the original compositions, most probably because he was ordered to do so by the owner of the famous Book of Hours. The decoration of codices greatly varied in amount and complexity. The simplest of designs was the border decoration or marginalia, although these were sometimes quite intricate and included carefully worked out figures of animals, monsters, and human characters

The initial letters of texts were very frequently decorated, often with a scene, in which case they are called *historiated initials*.



The most ambitious decorations filled either a quarter, a half or a full page. Because of their square format, these miniatures often imitated large-scale painting. In many cases the direct influence of monumental paintings or even woodcuts have been demonstrated in miniatures. Illuminators also often copied other miniatures or borrowed designs from *pattern books*.



Pattern books usually included various studies from life and copies made from all sorts of works. They were often handed down from one artist or [workshop](#) to another. In the late Middle Ages some highly finished pattern books may also have been used as advertisement, to show the artist's capabilities to potential customers. Illuminated manuscripts were always widely circulated and copied. Especially sumptuously decorated codices were given as diplomatic or wedding gifts. Traveling scholars and monks carried books with them and brought them to their home libraries. In the late Middle Ages some single-leaf miniatures were created specifically for the art market, and often for export. These decorated sheets were then inserted into already bound [codices](#) for decoration. As such practice hazarded the market positions of local workshops, the guilds sometimes forced illuminators to mark their own work with a stamp and forbade the import of single-leaf miniatures from elsewhere. Such a decree was issued in Bruges in 1426.

V. Manuscript Illumination

3. The Technique of Illumination in the Middle Ages and in the Renaissance

As already mentioned, a number of techniques used during the work led to the early specialization in various disciplines; different artists and craftsmen covered the technical preparation of [parchment](#) and [ink](#), colors mixing, [gilding](#), composition design and drawing of figures, painting color by color, filigree and ornament drawing, polishing, etc. During the process of writing, the scribe left the place for the illustration and also prescribed its topic and composition in a form of small marginal notes. After the text was finished - the [gatherings](#) could have already been bound together - the sketch was carefully drawn in the given space by the master of the [workshop](#) following the prescribed guidelines. The first step in the decoration was gilding.

The actual process of painting started with application of the basic colors and with outlining the original lines of the sketch. Afterwards, the shadows and darker tones were superimposed and the whitening of light tones finished the modulation of the figures and space.

There is good evidence that compositions of miniatures could be literally traced from one copy to another using transparent *carta lustra* or *carta lucida*. They have also been duplicated by [pouncing](#) in which the outlines of the original were pricked with rows of holes and placed over the new page and dabbed with a bag of color, such as [chalk](#) or charcoal dust, to produce a dotted outline. This would provide a sketchy outline, like the

[metalpoint](#) drawings described above, ready to be strengthened in [ink](#) in preparation for coloring. Some pictures or *initials* in medieval manuscripts are formed only of drawing, especially in the Carolingian and Romanesque periods or in some scientific or practical books, but most decoration was intended to be colored and it was often illuminated. Strictly speaking, an 'illuminated' manuscript contains gold or silver, which reflects the light. A manuscript with much decoration but in colors without actually having gold or silver is, technically, not illuminated. Members of the Cistercian Order were permitted to ornament their manuscripts but not to illuminate them as gold was thought to be frivolous and inappropriate to an austere way of life. Illumination with gold goes back into antiquity but is especially common in the later Middle Ages. Manuscripts such as *Books of Hours* are almost always illuminated. If gold leaf is to be applied to a design in a manuscript it is put on before the color. This is crucial for two reasons. The first is that gold will adhere to any [pigment](#) which has already been laid, ruining the design, and secondly the action of [burnishing](#) it is vigorous and runs the risk of smudging any painting already around it.

At the beginning of the decoration of a medieval or Renaissance [codex](#), the book was often still in separate sheets, but the writing of the manuscript had already been finished. The illuminator set out to decorate the blank spaces left out by the scribe for the purpose of illumination. In effect this meant that the subject, the location, and very often also the format was predetermined for the illuminator by the scribe. The [parchment](#) had been rubbed with [pumice](#) or [chalk](#) already before the writing in order to decrease its oiliness and absorbency. The scribe often left instructions for the illuminator. Within or near the space left out for splendid *initials*, often a minute letter indicated what letter should be included there. Occasionally, as in thirteenth-century Cistercian manuscripts which used a single color for initials, even a spot of paint was included there to give direction for the color of the initial. The names of colors were sometimes inscribed on the margin or within the design itself.



This practice was especially widespread in twelfth- and thirteenth-century English and French codices. The illuminator began his work by laying out the design laid in [leadpoint](#) or graphite. When the [underdrawing](#) was completed, it was reinforced with [ink](#). These drawings survive in great quantities in unfinished manuscripts.

They are usually highly complex, refined drawings, and by no means hasty sketches, but they were never regarded as finished products in the age. After the fourteenth century, the design was sometimes transferred to the page from another miniature or a previous sketch by the method of [pouncing](#). Sometimes earlier miniatures were cut and reused for a new [codex](#). In the late fifteenth century, even woodcuts or prints were pasted into Dutch manuscripts and colored by hand.



When the design was finished, the [parchment](#) was coated with liquid size (animal glue dissolved in water). The size was often colored with green, blue, brownish yellow or pink pigment in order to create a tinted surface on which the gold and the brilliant colors were markedly set off from the background. (The same technique was also applied to [paper](#) ground, which was commonly used from the thirteenth century on, sometimes even mixed with parchment). In some early, sixth-century manuscripts (the famous "purple codices") the parchment itself was dyed, then decorated and inscribed with golden or silver letters. As has been mentioned, in the later Middle Ages the miniatures of a [codex](#) were often executed on separate sheets, and then inserted into the book and bound together. This was frequently done in the course of the decoration of *Books of Hours*. A special advantage of this method was that this way the finely prepared surface had to be applied to the illuminated pages only. After the preparation of the design and the surface of the parchment, the next stage was [gilding](#), always executed before the actual painting. The gold was applied in extremely fine leaves to the specially prepared surface. The final and most important stage was the painting itself. The [pigment](#) was mixed in some sort of a [binding medium](#) that kept the pigment particles together. Until the fourteenth century the most widely used binding medium was glair, obtained from the settled juice of beaten egg whites (egg glair). Glair was an optimal medium for miniature painting, free-flowing and easily applicable, but was fairly difficult to prepare well. Besides, it reduced the natural saturation of colors, and was therefore sometimes varnished with honey after drying. After the fourteenth century glair was replaced with gum arabic (the gum of a domestic tree). Its advantages included the fact that it could be more thinly applied, thus the resulting colors were more transparent and saturated. The two types of binding media were sometimes used together or occasionally mixed with further types of binding media such as egg yolk, sugar, or ear wax. The technique which both the glair and gum arabic mediums encouraged was similar to tempera painting, that is, slow-paced, careful work with tiny, meticulous brushstrokes, creating clearly defined forms and homogenous areas of color. The painting was applied in numerous layers of washes, and the modeling was executed in darker or lighter tones. The use of very small brushes and the easily controllable, free-flowing medium was a prerequisite for the execution of the minute pictures that were usually rendered in great detail. When the book was still in separate leaves, the artist could work on a number of pages at the same time, and mix colors for use on more than one page. The whole process of book illumination was very time-consuming and costly, thus the illuminated manuscript was a luxury item for wealthy customers. With the advent of book printing, the sumptuous illuminated [codices](#) went out of fashion. Although the early printed books were often made to resemble illuminated manuscripts, by way of hand coloring, the art of book illumination gradually disappeared in the course of the sixteenth century.

Antiphonary. Also called *Antiphoner* or *Antiphonal*. Liturgical book containing antiphons, the sung portions of the Divine office, both texts and notation. Such books were often of a large format, to be used by a choir. Often included decorated and historiated initials.

Applied covers. Decorative plaques, generally of metalwork or ivory, which are set into or onto the boards of a [binding](#).

Benedictional. Also called *Liber Benedictionalis* or *Liber Benedictionum*. Service book containing blessings delivered during the Mass and arranged according to the liturgical year. Some benedictionals were produced for individual bishops and lavishly decorated.

Bestiary and Physiologus. The Book of Beasts, *bestiarium*, consisted of descriptions and moral interpretations of animals, birds, fantastic creatures and, sometimes, stones and plants. The bestiary was immensely popular during the twelfth and thirteenth century, functioning as a didactic reading, picture book, schoolbook, and a homiletic source material. The text was usually richly illustrated. The *Physiologus*, a predecessor of the bestiary was arranged in a similar way and served the same purposes. The *Physiologus* was compiled in Alexandria in the second century A.D., was translated into almost all Christian languages, and retained its influence over Europe for more than a thousand years.

Biblical concordances. Verbal indexes to the Bible, or lists of biblical words arranged alphabetically with indications to enable the inquirer to find the passages of the Bible where the words occur.

Bifolium. A sheet of writing support material folded in half to produce two leaves (four pages). A number of bifolia folded together form a [quire](#) or [gathering](#).

Binder. A person wholly or partly responsible for sewing a [codex](#) together and supplying it with covers. Although there is evidence that scribes occasionally undertook the preliminary sewing of their own sections of manuscripts, the binder was often another member of [scriptorium](#). Following the rise of universities in the late twelfth century, [binding](#) became the preserve of a [stationer](#). The term binder can also be used of a [binding medium](#).

Binding. The sewing and covering of a book. When the leaves of a [codex](#) had been written and illuminated, they were assembled into [gatherings](#) and sewn together. Generally they were sewn onto supports ([cords](#)). The loose ends of the cords were then attached to [boards](#).

Binding medium. An ingredient on paint or ink that binds pigment and makes it adhere to the surface to be embellished. Clarified egg white (glair) was the principal binding medium used in manuscript illumination. Gum (such as gum arabic from the acacia) glue (such as *ichthyocollon*, a fish glue, casein, a dairy-product glue, and gelatin, made from the [parchment](#) offcuts) were also used for this purpose as well as for [gilding](#).

Blocked. A technique of decorating [bindings](#) in which a design or picture is stamped into the leather cover by a block, into which the image has been carved or incised.

Boards. The stiff covers at the front and back of a book. Wood was the material generally used until the early sixteenth century, preferably oak or another hardwood to minimise worming. These covers could be very thick and often had beveled edges. Pasteboard became popular in the sixteenth century. The boards were attached to the [quires](#) by the [cords](#), which were threaded through the boards and secured. The [boards](#) and [spine](#) were then usually covered with damp leather (although [parchment](#), fabric, or [paper](#) might also be used), which was folded over the edges of the boards (forming what are known as [turn-ins](#)) and glued down, [pastedowns](#) could then be applied to conceal this mechanism.

Bookmarker. A variety of devices for making key openings in a book have survived, most of them dating from the twelfth century on. Tabs or knotted strips of [parchment](#), sometimes colored, were attached to the [fore edge](#) of the book at appropriate points; ribbons of linen, silk, or parchment could be attached to the headband and descend vertically into the book. Some bookmarkers even carry a device used in conjunction with the text to be marked to assist in relevant chronological or astronomical calculations. Flowers and other pressed organic materials were also used as bookmarkers.

Book of Hours, also called a *primer* or *horae*. This variation of the [Breviary](#) was mostly used in private devotion. Its central text, the Little Office of the Blessed Virgin, is modelled on the Divine Office and represents a shorter version of the devotions performed in the eight canonical hours. The text, known from the tenth century, entered into lay use by the end of the twelfth century, often being attached to the [Psalter](#).

Bounding lines. The marginal lines supplied during [ruling](#) to guide the justification of the text and its ancillaries.

Breviary. Liturgical book containing the texts, hymns, and notation necessary for daily prayer. Often richly decorated with initials and miniatures.

Burnishing. Enhancing the smoothness and shininess of a surface such as metallic [pigment](#) by polishing with a [burnishing tool](#).

Burnishing tool. Tool used to polish gold once it has been applied to the manuscript page.

Calendar. A list of liturgical feasts.

Canon tables. A Gospel concordance system devised in the fourth century by Eusebius of Caesaria, in which Gospel passages are numbered in the text and correspond to tables, arranged in columnar form, indicating the concordance of passages among the Gospels. Canon tables were usually placed at the beginning of the book and were popular in Gospel books, Bibles, and New Testaments.

Capitulare. A list of biblical passages (*pericope*) with marks indicating on which Sunday or feast they are to be read.

Chalk. Chiefly composed of calcium carbonate, chalk was used for a variety of purposes in manuscript production: as a pounce when preparing the [parchment](#) surface;

as a component of [gesso](#) or another [ground](#); as a white [pigment](#); as an alkaline component in pigments (serving to modify the color of certain organic pigments, such as *folium*, and to lighten and increase the opacity of others); or as a drawing medium.

Channelling. A system of grooves cut into binding boards to carry the [cords](#) that attach the [boards](#) to [quires](#). The use of channels meant that the cords would not stand proud on the inside of the boards.

Chemise. The medieval precursor of the modern dust jacket, a chemise is a slip-on cover of leather or of a textile such as velvet or linen that protected the [binding](#) of a book and its [fore edge](#). Chemises varied in form from high-grade luxurious embellishments for Books of Hours and Prayer Books to functional wrappers for administrative records and library books.

Clasp. A metal fitting attached to the [boards](#) at the [fore edge](#) of a [binding](#) in order to hold the book shut and to preserve the [parchment](#) (unless kept at an appropriate temperature and humidity level, parchment tends to cockle and return to the original shape of the animal skin). Clasps became popular during the fourteenth century initially as a combination of metal fittings and leather straps and then entirely of metal.

Classical texts. Manuscripts, containing classical texts of Greek and Roman Antiquity, normally did not merely reproduce the full text but either presented a compilation or digest of it, or supplied the text with extensive commentaries, to the effect of creating a peculiar layout of such manuscripts.

Clothlet. A piece of cloth impregnated with [pigment](#) (generally a vegetable dye). A portion of such cloth, when soaked in a little [binding medium](#), releases its colorant and produces an artist's pigment. Cloth lets were convenient way of carrying or shipping vegetal pigments, and they were especially popular from the fourteenth century on, with the growth of the textile trade. Glazes of vegetal dyes were often used to enhance other colors in a book illumination, since they created a rich, glowing, and transparent effect.

Codex. Originating on the first century, the codex (from caudex, the Latin word for the tree bark) is a book composed of folded sheets sewn along one edge, distinct from other writing vehicles such as the [roll](#) or [tablet](#).

Cord. The horizontal supporting band onto which [quires](#) are sewn at the [spine](#) to form the book. cords are generally bands of leather (or sometimes other materials such as hemp) and could appear in single or double form; in the latter, the cords are split along most of their length to allow a double, figure-eight sewing around them for additional strength. The ends of the cords are then threaded into [boards](#) and the structure covered. The cords appear as raised bands when seen through the covering of the spine, but beginning in the later sixteenth century could fit into grooves "sawn-up" to the quire to produce a flatter spine.

Cornerpiece. Cornerpieces are metal plaques attached to the corners of the [boards](#) of a [binding](#) to protect them, a popular feature from the fifteenth century on. The term also refers to a decorative motif in the corners of miniature or border.

Directorium. The same as *Ordo*. Liturgical book prescribing the order of the Mass.

Egg glair. White of an egg used as a [binding medium](#) in mixing pigments into paints.

Egg tempera. A paint which uses egg as a [binding medium](#).

Endbands. Endbands are bands placed at the [head](#) and [tail](#) of a [spine](#) of a book in order to consolidate its ends, strengthen the attachment of the [boards](#), and impede the entry of worms. They consist of cores generally of [alum tawed](#) leather, hemp, [parchment](#), or linen [cord](#) (with cane and rolled paper also used at later dates) and are usually covered by silk or thread embroidery, with highly varied patterns and techniques. Ideally, the endbands should be tied down in the centres of the [quires](#) (often at the same point at the [kettle stitch](#)) and their ends laced into the binding boards (see [channeling](#)). The identification of different details of endband sewing technique and patterning may help us group books together and assign them to specific production centres.

Endpapers. Two or more blank or decorated leaves at the beginning or end of a book that can either line the boards (fulfilling the function of [pastedowns](#) or decorative doublures) or serve as [flyleaves](#).

Epistolary. Liturgical book containing the Epistle readings for the Mass arranged according to the liturgical year. The Epistles were taken from the New Testament Epistles.

Evangelary. Liturgical book containing those portions of the Gospels which are read during Mass or in the public offices of the Church.

Evangelistary. the same as the [Capitulare](#). Tables indicating the biblical passages to be read at the Mass, as well as the Sundays and Holy Days on which they are to be read.

Flesh side. The side of a sheet of [parchment](#) that originally faced the animal's flesh. This is generally whiter and softer than the [hair side](#). The two sides are often readily distinguishable.

Flyleaf. Flyleaves at the beginning or end of a book serve to protect the text in the event of worming or damage to the [binding](#). They often carry pen trials and inscriptions concerning provenance. Flyleaves were sometimes used for trying out designs.

Folio. A sheet of writing material, one half of a [bifolium](#). The front and back of a folio are referred to as the [recto](#) and [verso](#), respectively. The numbering of leaves, as opposed to pages, is termed foliation and is commonly found in manuscripts. "Folio" and "folios" (or "folia") are often abbreviated as *f.* and *ff.* The term can also be used to denote a large volume size.

Fore edge. The edge of a book opposite the [spine](#). The fore edge sometimes carries painted decoration or images (fore edge painting) or labeling for shelving purposes.

Gallnut. A swelling that forms on the bark of an oak tree after it has been stung by an insect laying its eggs. Tannic and gallic acids contained in gallnuts can be soaked out in water, the gall solution forming the basis of [ink](#). Gall can also be used in tanning processes.

Gathering. The same as [quire](#). Folded section of [parchment](#) or [paper](#) leaves which can be bound together with other [gatherings](#) to form a book.

Gesso. A thick, water-base paint commonly formed of plaster, chalk, or gypsum bound together with a glue. Gesso is used in manuscript illumination as a [ground](#) for some [gilding](#) processes, since it forms a raised surface ideal for [burnishing](#) and tooling. Methods of gesso preparation varied.

Gilding. The application of gold or silver to a surface. Gold could be applied as an [ink](#), in an expensive powdered form, for use in detailed work, but it was more frequently applied in medieval illumination in the form of gold leaf. The gold leaf could simply be laid down on an area to which a [binding medium](#) such as glair or gum (perhaps mixed with honey to prevent it from cracking) had been applied, as was the case during the early Middle Ages; it could also be laid on a raised ground of [gesso](#). In order to enrich the tonality of the gold and to make the areas to which the [ground](#) had been applied more visible, a colorant such as bole (a pink earth color) was often added to the base. Gesso grounds enabled the gilded surface to be [tooled](#). However it was applied, the gold could be [burnished](#) or left in its slightly duller state. Gilding formed the first state in the painting processes of illumination, since it was a messy activity, the gilded area often requiring trimming with a knife. The gilding of a manuscript illustration was carried out by the artist or by a specialist.

Gradual. Liturgical book, the same as the [Antiphonary](#). The name derives from the practice of singing the gradual on the steps (gradus) of the raised pulpit.

Ground. The writing or painting surface which may already have been covered with a layer of paint, or the base for metallic [pigment](#) such as [gesso](#) or gum.

Hair side. The side of a sheet of [parchment](#) that once carried the animal's hair. This side is generally darker and smoother than the flesh side and may carry speckled traces of hair follicles.

Hardpoint. A pointed implement of metal or bone (often a *stylus*) used for [ruling](#), drawing, and annotation. A hardpoint leaves a ridge-and-furrow effect on the writing surface rather than a graphic mark.

Head. The top edge of a manuscript.

Ink. The word derives from Latin *encaustum* ("burnt in"), since the gallic and tannic acids in ink and the [oxidation](#) of its ingredients cause it to eat into the writing surface. The basis of medieval ink was a solution of gall (from [gallnuts](#)) and gum, coloured by the addition of carbon (lampblack) and/or iron salts. The ferrous ink produced by iron salts sometimes faded to a red-brown or yellow. Copper salts were occasionally used too, sometimes fading to grey-green. Ink was used for drawing and [ruling](#) as well as for writing and, when diluted, could be applied with a brush as a wash.

Kettle stitch. A stitch at or near to the [head](#) and [tail](#) of a manuscript that links a [quire](#) to the preceding one during sewing.

Leadpoint see [plummet](#).

Lectionary. The word *lectionarium*, in a wider sense, may be applied to any liturgical book containing passages to be read aloud at the Mass. In a stricter sense, however, the *Lectionarium*, also known as *Comes*, *Liber comitis*, *Liber comicus* (from *comes*, companion), is a liturgical book containing the daily lessons from the Old Testament, the Epistles from the New Testament, and portions of the Gospels to be read during the Mass.

Limp binding. A [binding](#) composed of [parchment](#), [paper](#), or fabric, without [boards](#). Limp bindings were generally used during the later Middle Ages and early modern period for less expensive books.

Lunellum. Crescent-shaped knife for scraping skin during the preparation of [parchment](#).

Metal point. A writing implement, made of metal and used for annotation, drawing, and [ruling](#), which leaves a trace element to the metal used (and any alloys present), with a ferrous point leaving a brown mark, silver and lead ([leadpoint](#)) leaving a silver-grey trace, and copper alloys sometimes leaving a grey-green mark. The marks produced are more discreet than those made with [ink](#) but more visible than those made with a [hardpoint](#).

Missal. Liturgical book containing all texts necessary for the performance of the Mass. The first missals appeared in the tenth century; by the thirteenth century, the *Missal* completely replaced such older liturgical books as the [Directorium](#), the [Sacramentary](#), the [Antiphonary](#), the [Evangelary](#), the [Epistolary](#).

Oxidation. A chemical reaction resulting from exposure to oxygen. This can cause certain metal-based [pigments](#) (notably silver and white, yellow, or red lead) to fade and/or turn a silver-black and to bleed. A coating of glair (see [binding medium](#)) is thought to reduce such tendencies in certain cases, but the conditions in which a manuscript is stored and the length of exposure to adverse atmospheric conditions seem to determine the extent of oxidation.

Palette. The range of colours used in a work. The term derives from the name of the flat surface on which paints are sometimes mixed, although shells were more commonly used to contain prepared [pigments](#) during the Middle Ages.

Palimpsest. From the Greek *palimpsestos* ("scraped again"), a palimpsest is reused writing support material from which the underlying text has been erased (by washing in the case of [papyrus](#) and by using scraping devices in the case of [parchment](#)). Erasure was not always complete and an underlying text can often be read with the assistance of ultraviolet light.

Panels. In the context of [binding](#), panels are engraved metal blocks used to impress a design on a large part or the whole of a book cover, producing either a blind or gilded impression (see [tooling](#)). Panels were first used in the thirteenth-century Flanders. See also [blocked](#).

Paper. In the mid-eighth century, the Arabs learned techniques of paper manufacture from the Chinese. The oldest Greek paper manuscripts were produced during the ninth century. Paper (*carta* or charter) was made in Muslim Spain beginning in the late

eleventh century. During the twelfth and thirteenth centuries, it was used in Italy and the Mediterranean for merchants' notes and by notaries for registers; from the thirteenth century on, paper was actually manufactured in Italy. During the fourteenth and fifteenth centuries, production spread to Switzerland, the Rhineland, and France. In England there was limited production in the fifteenth century; only in the mid-sixteenth century was the paper making industry permanently established. (In the late fifteenth century, the famous publisher William Caxton and his colleagues were still largely importing supplies from Italy and France.) Correspondence was often written on paper beginning in the fourteenth century, and paper was commonly used in low-grade books from c. 1400 and in legal documents from the sixteenth century (although [parchment](#) also continued to be used). [Ruling](#) on paper generally consists of frame ruling only. The humanists revived [hardpoint](#) ruling for a time, but it damaged the paper. In general, [ink](#) or [leadpoint](#) was used for ruling paper [codices](#). In early paper books, [quires](#) are often protected by parchment outer sheets or guards. Paper was traditionally made from cotton or linen rags, although more exotic substances such as silk were often employed in the Orient. The rags were soaked and pulverized until reduced to a pulp and were then placed in a vat with a solution of water and size. A wooden frame strung with wires (producing horizontal laid lines and vertical chain lines) was dipped into the mixture and agitated until the fibers fused to form a sheet of paper. This was then placed between sheets of blotting paper and pressed. The paper produced was then either trimmed or left with its rough (deckle) edge. Paper frames often incorporated wire devices (in the form of designs or monograms), which leave an image in the paper known as a [watermark](#). There exist reference volumes containing reproductions of watermarks from broadly datable or localizable contexts, and it is frequently possible to identify watermarks by matching them against such reproductions.

Papyrus. A writing support material made from the papyrus plant, a species of water-grown sedge that grew abundantly in ancient Egypt, where it was used from about 3000 BC. The outer skin of the stem of the papyrus plant was peeled off and the rest cut into strips that were laid side by side vertically, with another layer of strips then overlaid horizontally. The whole was dampened and beaten or pressed in the sun. The resin released by the fibers during this process fused them into a sheet that was then trimmed and smoothed with [pumice](#). The next step was to attach the sheets with a flour paste to form a [roll](#). Papyrus was also used for single sheet documents or folded to form [codices](#). The side with the horizontal fibers visible would generally be used for writing with a reed [pen](#): the horizontal fibers guided the writing on the inner surface, while the vertical fibers strengthened the outside. Papyrus was sturdy and plentiful, and it apparently was rarely reused. There is some indication that trade embargoes during Antiquity led to experiments with other materials, such as [parchment](#). In fact, in the fourth century, parchment generally replaced papyrus. But it was the collapse of the western Roman Empire and, more significantly, the spread of Islam from the seventh century on, with a consequent reduction of Mediterranean trade, that led to the abandonment of papyrus as an all-purpose writing material. It continued to be used, however, for documents produced in the chanceries of Merovingian Gaul and Ravenna during the sixth and seventh centuries, and the papal chancery used it as an exotic material until the eleventh century.

Parchment A writing support material that derives its name from Pergamon (Bergama in modern Turkey), an early production centre. The term is often used generically to denote animal skin prepared to receive writing, although it is more correctly applied

only to sheep and goat skin, with the term *vellum* reserved for calf skin. Uterine vellum, the skin of stillborn or very young calves, is characterized by its small size and particularly fine, white appearance; however, it was rarely used. To produce parchment or vellum, the animal skins were defleshed in a bath of lime, stretched on a frame, and scraped with a [lunellum](#) while damp. They could then be treated with [pumice](#), whitened with a substance such as [chalk](#), and cut to size. Differences in preparation technique seem to have occasioned greater diversity in appearance than did the type of skin used. Parchment supplanted [papyrus](#) as the most popular writing support material in the fourth century, although it was known earlier. Parchment was itself largely replaced by [paper](#) in the sixteenth century (with the rise of printing), but remained in use for certain high-grade books. See also [flesh side](#) and [hair side](#).

Parchmenter. (also Parchment-maker). A person responsible for making [parchment](#). Before around 1200, parchment making was presumably conducted largely within monasteries, the primary producers of books. As lay and commercial production of manuscripts increased, parchmenters often formed a trade group, with shops located in the same part of a town, near the water supply needed for production. See also [stationer](#).

Passional, the same as the *Legendary*. Collection of narratives of variable length, in which are recounted the life, martyrdom, translation of relics, or miracles of the saints.

Pastedown. A leaf pasted onto the inside of a [board](#) to conceal [channeling](#) and [pegging](#) and other mechanics of the [binding](#). Pastedowns are often formed of fragments of earlier manuscripts that were considered dispensable.

Pegging. The securing of [cords](#) to the [boards](#) of a [binding](#) by means of dowels or pegs, generally of wood.

Pen. A split reed, termed calamus in Latin (qalam in Arabic), was used to write on [papyrus](#) during Antiquity; a frayed reed was used as a brush. These were replaced in the sixth century by the quill pen and animal-hair brushes, which were more flexible and thus better suited for work on [parchment](#), a tougher material than papyrus. A quill is formed of the flight feather (one of the first five feathers) of the wing of a bird, often a goose - the word "pen" derives from the Latin for feather, penna. The feather was first hardened by heating or by soaking it in water and then immersing it in sand. Nibs were often then cut with a knife, the angle of the cuts affecting the appearance of the script produced. Cursive (i. e. more rapidly written) scripts were generally produced with a thin pen and formal bookscripts with a broad pen. A nib cut at an oblique angle to the shaft produces a formal, straight-pen script that has horizontal head to the letter strokes.

Pigment. The colouring agent in paint. The paints used in illumination consist of vegetable, mineral, and animal extracts, ground or soaked out and mixed with glair as a [binding medium](#), perhaps, with some glue and water added. Other additives were also used, including stale urine, honey, and ear wax, to modify color, texture and opacity; inert whites such as chalk, eggshell, or white lead were added to increase opacity. Some pigments were obtained locally (such as turnsole, or *crozophora tinctoria*); others were exotic imports (such as ultramarine, made from *lapis lazuli* imported from Persia or Afghanistan). During the early Middle Ages, scribes and/or illuminators ground and prepared their own pigments, perhaps, with the aid of an assistant, but with the growth of specialised, more commercial production around 1200, they often purchased their

ingredients in prepared form from a [stationer](#) or an apothecary. With the rise of experimental science and international trade in the fourteenth century, many colours were added to the traditional [palette](#), which significantly affected styles of illumination. The production of synthetically manufactured pigments (such as mercury-based vermilion and copper blues) and imports (such as saffron yellow from crocus stamens and red flakes from Brazil woods largely imported from Ceylon) increased at this time. Pigments are difficult to identify precisely without chemical analysis, although other techniques of analysis, such as radiospectroscopy and X-ray fluorescence, as well as reconstructions from medieval recipes, are advancing rapidly. Some pigments also change in a consistent fashion over time: for example, the red lead often used for rubrics frequently fades and turns silver-black through [oxidation](#), and copper-based verdigris green sometimes eats through the support as it corrodes.

Plummet. A leadpoint, also known as plummet, is a piece of lead alloy, sometimes contained in a holder (the precursor of a pencil), which could be used for drawing, annotation, and [ruling](#). Leadpoint began to be widely used in the eleventh and twelfth centuries. Graphite, derived from carbon, was not generally used before the seventeenth century.

Pontifical. Liturgical manual containing episcopal offices (ordination, consecration of the church, confirmation, etc.)

Pounce. A substance like [chalk](#), ash, powdered bone, bread crumbs, or [pumice](#) is rubbed into a writing surface in order to improve it. Pounce can reduce greasiness, raise the nap, and whiten [parchment](#)). The term is also used for a post-medieval technique employed in the transfer of an image by reproducing a dotted outline on a sheet beneath.

Pricking. The marking of a [folio](#) or [bifolium](#) by a point of a knife to guide [ruling](#). The term also refers to the series of marks that resulted. Pricking was generally conducted before the bifolia were folded to form a [quire](#).

Psalter. Collection of Psalms serving as the main prayer-book for the celebration of the Divine Office.

Pumice. Volcanic glass, used in powdered form as [pounce](#) on [parchment](#); in its consolidated form, it was employed to scrape parchment for reuse as a [palimpsest](#).

Quire. [Gathering](#) or "booklet" of which a book is formed. Quire numeration, which began in the Late Antique period, consists of numbers written on a quire (usually on its final [verso](#)) to facilitate arrangement during [binding](#).

Recto. The front side of a [folio](#) or leaf, abbreviated as *r* and sometimes denoted as *a*.

Ritual. Liturgical manual containing the prayers for the administration of all the sacraments except the Eucharist.

Roll. The roll was, along with the [tablet](#), the principal vehicle for writing during Antiquity. Rolls were originally formed of sheet of [papyrus](#) pasted together and were stored in capsae, cylindrical boxes. They were unrolled horizontally from left to right, with about four columns of text visible at any one time. The drawbacks of the roll form

in terms of portability and cross-referencing led to its general replacement by the [codex](#) in the fourth century. The roll survived, however, throughout the Middle Ages, fulfilling certain specialized functions -- although it was now made of [parchment](#) (sewn or glued together) and was read vertically. Such forms were useful for storing lengthy records and thus were frequently used for administrative purposes. Rolls also carried genealogies and pedigrees, and some of these manuscripts were finely illuminated. Roll chronicles often accompanied royal genealogies. Illuminated Exultet rolls, with texts for the blessing of the Easter candle, were designed for public viewing, with the text facing the reader and the image placed upside down in relation to the text, to face the congregation over the lectern. Prayer rolls also survive; they may have been carried as amulets.

Ruling. The process by which a frame and/or horizontal lines are produced to guide the hand in writing; the word also refers to the linear guide thus produced. Ruling was guided by [pricking](#). Beginning in the Carolingian period, templates were sometimes used in pricking and ruling. Before the late eleventh century, ruling was generally executed with a [hardpoint](#), producing a ridge-and-furrow effect. Thereafter [leadpoint](#) was used in the layout of individual pages, enabling greater flexibility. When the thin [pen](#) used to produce cursive scripts was revived in the later twelfth century, ruling was also done in [ink](#), especially from the late thirteenth century on. Colored inks were employed in some manuscripts, such as the pink ruling in fifteenth-century Book of Hours. The Italian humanists revived the use of hardpoint for ruling. When [paper](#) was used as the writing support material, this could result in tears in the paper.

Sacramentary. Liturgical book containing the prayers recited by the celebrant during the Mass.

Scriptorium. Room set apart for writing, especially in a monastery.

'Shell' gold. Powdered gold mixed with gum arabic into a kind of gold ink, and applied with pen or brush.

Shoulder. The place where one of the [boards](#) of a book joins the [spine](#).

Spine. The edge at which a book is sewn together. Rounded, glued spines that were hammered into shape were first introduced in the early sixteenth century. Prior to this, spines were flat, apart from the raised [cords](#). Spines sometimes carry protective extensions at either end known as end tabs.

Stationer. Following the rise of the universities around 1200, the growth in secular production and in consumer demand led to increasing specialization and commercialization in book production. A group of middlemen, known as [stationers](#) (cartolai in Italy, libraries in France), emerged. They supplied materials to craftsmen and received and subcontracted commissions, often with formal recognition from the universities. This decentralization stimulated new techniques of book production, such as systematic marking up of leaves and [quires](#) for assembly by the [stationer](#) and the provision of instructions.

Tablet. Tablets of wood, or sometimes ivory, were used as writing surfaces in two ways: either [ink](#) was applied on them; or they were hollowed out and filled with wax so

that one could write with a stylus. Along with a [roll](#), the tablet was the principal writing vehicle during Antiquity, being used for informal purposes, teaching, letters, drafting, and for records (such as letters of citizenship). The gradual substitution of sheet of [parchment](#) for wood or ivory may well have stimulated the development of the [codex](#) form. Tablets continued to be used into the twelfth century for informal financial accounts (by French fishermen, for example). During the Middle Ages, they fulfilled a variety of functions: drafting texts; trying out artistic designs; recording liturgical commemorations; note taking during study; accounting and legal contexts; as proto-Filofaxes; and as love token filled with amorous poetry. Tablets ranged in format from robust teaching tablets to portable girdle books. Although different colors of wax were used, black and green predominated. A number of tablets were sometimes bound together with leather thongs or within a leather case. Tablets were also made with handles, whose shape could serve as a decorative motif.

Tail. The foot or lower end of a manuscript.

Tanned. Tanning is the process of manufacturing leather by soaking animal skin in tannin, an acidic substance made from tree bark, [gallnuts](#), or a similar plant source. Tanning gives leather a red-brown coloration.

Tooling. Tooling is the decoration of a surface with the aid of metal hand tools and stamps (a technique employing the latter being termed stamped). On [bindings](#), the tools were used to impress the decoration into the leather covering, which was often dampened. The impression or indentation produced is called blind if it remains uncoloured. Gold tooling became popular in the fifteenth century. In this process, gold leaf was laid onto a coating of glair and impressed into the leather with a heated tool, leaving an image in gold after the excess was rubbed away. Gilded surfaces (see [gilding](#)) in illumination were also sometimes tooled.

Turn-ins. The edges of the covering material of a [binding](#), which are folded over the [head](#), [tail](#), and [fore edge](#) of the [boards](#) and secured to their inner sides.

Underdrawing. Preliminary drawing that lies under the final painted or inked image. Prior to the eleventh century, under drawing was often executed with a [hardpoint](#), but thereafter a [metal point](#), especially a [leadpoint](#), or diluted [ink](#) was generally used. Styli, dividers, and compasses were sometimes employed in the laying out of a design throughout the Middle Ages.

Vellum The word has the same origin as veal or *veau* in French (calf, *vitellus* in Latin), and is strictly the writing material made from cow skin.

Verso. The back of a [folio](#) or leaf, abbreviated as *v* and sometimes as denoted as *b*.

Watermark. Distinguishing mark or design on [paper](#), visible only when held up to the light, and made when the paper is in a pulp form.

Workshop. As known by the French name atelier, a workshop is a studio in which a number of artists work together, generally under a master, either on regular or ad hoc basis. The term also refers to a group of artists who work together and is sometimes used in this sense to denote the secular equivalent of the monastic [scriptorium](#) during

the Gothic and Renaissance periods (and during Antiquity as well). Artists working on the same project need not necessarily have belonged to a workshop, since they frequently lived in the same urban neighborhood and might join together for a single commission. In the context of attributing a work of art to a particular artist, the term "workshop product" is used when the art is in the style of a master, but is thought to have been executed by an assistant emulating that style.

The [Glossary](#) is based on Michele P. Brown. *Understanding Illuminating Manuscripts: A Guide to Technical Terms*. London: The J. Paul Getty Museum, and The British Library Board, 1994.

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