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Book Production on Paper and Vellum in the fourteenth and fifteenth centuries¹

From the earliest years of Johann Gutenberg's mid-fifteenth century invention of typography, printing was done on both vellum and paper, in just the way that, for well over a century before, books and documents could be and were written on both vellum and paper.² The decision to use one or the other support – occasionally both together – depended on various considerations, especially of price and purpose, but also of tradition. Gutenberg's quarto edition of the *Sibyllenbuch* [is00492500], a rhymed prophecy on the return to life of Frederick Barbarossa and possibly the earliest surviving example of typography (c. 1452?), survives in only half of a single paper leaf. Conversely, fragments of the *Ars minor* of Donatus [id00314700, id00314750, id00314800], printed in the same primitive state of Gutenberg's first type as the *Sibyllenbuch*, are on vellum. Indeed, all the many early Mainz printings of Donatus survive only as vellum fragments. In both instances, the support material of the printed editions corresponds to the support material of the preceding manuscript tradition of the respective texts. The reason for the difference must be, on the one hand, that the *Sibyllenbuch* was a literary occasional piece in a less than high genre. Vernacular readers would have had no use, and created no demand, for vellum copies, whether from the standpoint of wanting to own a copy of higher dignity, or of longer permanence of preservation extending from one generation to the next. All the early manuscripts of the *Sibyllenbuch*, from roughly the first decade of the fifteenth century onward, were written on paper. As for the customers of the printed Donatus editions, they were schoolmasters who used the copies incessantly, day after day, and needed sturdy copies that would stand up to heavy handling. And so, just as in the fourteenth and fifteenth centuries

¹ I am greatly indebted to Dr. Eric Marshall White for much useful information and advice, going well beyond what is mentioned in the notes; and to Dr. Falk Eisermann for sending extracted records of incunables in the GW (Gesamtkatalog der Wiegendrucke) database for which copies on "Perg." are noted. Incunable editions are uniformly cited in-text by their ISTC (Incunabula Short Title Catalogue) numbers, in the form [ib00526000]. The ISTC online entries include links to the GW online entries, both of which should be consulted for all incunables. Their website addresses are: <http://www.bl.uk/catalogues/istc/index.html>, and <http://www.gesamtkatalogderwiegendrucke.de/>.

² I use the word vellum as a synonym for parchment, and not as an indicator of a particular quality or source of parchment; this corresponds to the traditional vocabulary of the Anglo-French book world, as attested for instance in the titles of J. B. Van Praet, *Catalogue des livres imprimés sur vélin* (Van Praet 1822) and R. C. Alston and B. S. Hill, *Books printed on vellum in the collections of the British Library* (Alston and Hill 1996).

Donatuses were typically written on vellum, so were the early typographic Donatuses printed on vellum.

Other early Mainz productions, up to roughly the early 1470s, demonstrate that their producers, Johann Gutenberg and – with a much more substantial publishing program – Johann Fust and Peter Schöffer, were well aware of the uses of both vellum and paper, and made conscious decisions in selecting them. The two printings of the *Cyprus Indulgence* of Pope Nicholas V in late 1454 (Gutenberg) [ic00422600] and early 1455 (Fust and Schöffer) [ic00422400] survive only in vellum copies. The tradition that indulgences would be written on vellum was strong but not invariable: of twenty hand-written examples of the same indulgence, executed between January 1454 and April 1455, fifteen are on vellum and five on paper. But beyond that, these “new” printed versions, created in large number, were clearly intended to be documents of desirable dignity, carefully laid out and sharply printed, much neater and more elegant than any of the surviving handwritten examples, some of which were directly but rapidly copied from the printed forms.

Small pamphlets from Gutenberg’s shop such as the *Türkenkalender*, late 1454 [it00503500], and the Latin and German editions of the *Bulla Calixti*, later 1455 [ic00060000, ic00060100], survive in unique paper copies. The same is true of Gutenberg’s broadside *German Cisianus* [ic00699680] and, in the same format, his Latin bloodletting calendar calculated on the New and Full Moons of 1457 [ia00051700]. It is notable, by contrast, that a more elaborate German astronomical calendar, or Planet Table, printed by Gutenberg about 1458 [ip00749500], was issued on vellum. Only a fragment survived to modern times. It was brought to light in Wiesbaden in 1901, then lost or destroyed in World War II. The fragment comprised the front and back pastedowns of a folio paper manuscript from the Benedictine abbey of Schönaue (Nassau). When joined together the two pastedowns, with the loss of one line at the join, formed a single column of the months January–February–March–April. The total column height with margins would have been about 70 centimeters; and the width of this wall calendar – for such it must have been – would have been about 80 centimeters and possibly more. It is hard, in fact, to visualize how the entire text was printed. Almost the only possibility would have been to print separately three tall (70 centimeters), but relatively narrow (c. 25–30 centimeters) vellum strips, to be assembled side by side to display the whole year. No paper made would have accommodated these dimensional requirements, so perhaps the very design of this Planet Table was premised on vellum printing.

To be able to speak clearly about the use of paper in the late Middle Ages, a few words must be said about the different sizes of fourteenth- and fifteenth-century European paper. In 1389 a statute of the commune of Bologna required that a standard stone, displaying the required dimensions for four sizes of paper, should be set up in the market, the increasing sizes being named as *Reçute* – *Meçane* – *Realle* –

Inperialle.³ A standard stone corresponding to the 1389 statute is preserved in the Museo Civico of Bologna, from which the dimensions of each size can be taken, and Briquet so recorded them. For our purposes it is useful to keep, with slight modification, the size-names, but to record the dimensions as actually found in fifteenth-century paper. It is also useful to record both full-sheet dimensions and those of a half-sheet, folded once in parallel with the shorter sides. Reams, the fundamental unit of sale, were constructed of quires of folded sheets; and folio codices, if uncut, have just those dimensions:

Chancery (Reçute): c. 31–32 × 45–46 cm || half-sheet 31–32 × 22.5–23 cm

Median (Meçane): c. 34–35 × 51–52 cm || half-sheet 34–35 × 25.5–26 cm

Royal (Realle): c. 41–42 × 62 cm || half-sheet 41–42 × 31 cm

Imperial (Inperialle): c. 48–49 × 72 cm || half-sheet 48–49 × 36 cm

The “c.” is important, for in the late fourteenth and fifteenth centuries, parallel with an increase in paper consumption, new paper mills were set up in various centers north of the Alps, and though the size names continued in use with various adaptations to the different vernaculars (except Reçute, which died out: in the fifteenth century Italian stationers called this size *Comune*), the exact dimensions on the Bologna stone were not necessarily transmitted to new mills. In particular, it seems that Chancery papers from the region Champagne – Bar – Lorraine, as used in many printing shops of the Lower Rhine, Low Countries, Paris and England, were slightly smaller in dimension than the Bologna standard required.⁴ Uncut, they may have had short dimensions of only 30 centimeters, or even less.

Another complication is to be kept in mind. The 1389 Bologna statute names and defines four sizes, but in the fifteenth century four other less common sizes have been identified: Half-Median (perhaps made only for a few years in the mid to late 1470s at the request of one or more Venetian printers), Super-Chancery, Super-Median, and Super-Royal. This is not the place to discuss in detail these “new sizes” beyond stating that in every case we can point to specific early printed editions using these sizes. In the case of Super-Royal, its use in Italy for folio manuscripts, particularly texts and commentaries of civil and canon law, goes back to a generation or more before the invention of printing. The Bologna statute and corresponding standard stone are historically significant, but their evidence is secondary. The primary evidence for the study of paper sizes in any period is uncut sheets of paper.

It follows that all paper codices (as also broadsides, which will not concern us here except in passing) can be defined by a combination of format (the ratio of a full sheet occupied by a leaf of the codex or by the entire broadside) and paper size, and when we have these two factors in mind, we see the codices through essentially the

³ Briquet 1907/1968, I, 2–3; Gasparinetti 1956.

⁴ Zaar-Görgens 2004, 93–96; Kälin 1974, 357, 359, 384.

same eyes as those of their original makers, whether printers or scribes, who obviously knew well the sizes and formats they were handling.⁵ Unfortunately, neither manuscript nor incunable catalogues record both factors consistently. Only a minority of incunable catalogues record leaf dimensions, though essentially all identify format (sometimes with errors). The only German incunable catalogue I am aware of that records leaf dimensions is that of the Universitätsbibliothek Heidelberg, whose editors agreed with a recommendation I made some years ago as their project was underway.⁶ Manuscript catalogues much more frequently record leaf dimensions, yet almost never identify the format of paper manuscripts. A noteworthy and commendable exception is the series *Manoscritti Datati d'Italia*, inaugurated in 1996 under the general editorship of Stefano Zamponi.⁷

Returning to the early Mainz printing shops and their productions, it is noteworthy that, in addition to the numerous editions of Donatus, all the major productions of both shops were marketed in vellum copies. Either the entire edition was on vellum, or there were separate issues: one, more expensive, on vellum, the other on paper.⁸ For example: we find separate vellum and paper issues of the Gutenberg(-Fust) Latin Bible of 1455 (Royal folio) [ib00526000], where the vellum issue amounted to a quarter or more of the print run of 158 or 180 copies; for the 1460 edition (Gutenberg) of the *Catholicon* of Johannes Balbi (Royal folio) [ib00020000], where the surviving copies of the first printing divide almost evenly between vellum and paper; and for the 14 August 1462 Latin Bible of Fust and Schöffer (Royal folio) [ib00529000], of which more vellum copies were printed than paper. Similarly, more vellum than paper copies were printed of Fust and Schöffer's folio editions of Cicero *De officiis*, 1465 and 4 February 1466 (Chancery folio) [ic00575000, ic00576000].

Moreover, Fust and Schöffer printed a group of finely produced large format editions that were issued entirely, or almost entirely, on vellum. This includes the Psalters of 14 August 1457 (Royal folio) [ip01036000] and 29 August 1459 (Imperial folio) [ip01062000]; Durandus, *Rationale divinorum officiorum*, 6 October 1459 (Royal folio) [id00403000]; the *Constitutiones* of Pope Clement V, 25 June 1460 (Imperial folio) [ic00710000]; and the *Liber sextus* of Pope Boniface VIII, 17 December 1465 (Royal folio) [ib00976000]. After Fust's death Peter Schöffer reprinted the *Constitutiones* of Clement, 8 October 1467 [ic00711000], this time in Royal folio rather than Imperial folio format. Of twenty-one surviving copies of the 1467 edition, only two are known to be on paper. A similar situation is found in Schöffer's reprint of the *Liber sextus* of

⁵ Needham 2014.

⁶ The Bodleian incunable catalogue (Bod-inc) did the same.

⁷ On this continuing project see the website <http://www.manoscrittidatati.it/>.

⁸ It is hard to find direct contemporary information on the relative prices of vellum against paper. See Needham 2000, 34 n. 15 for comparanda in the 1476 inventory of a Florentine cartolaio, suggesting that in this time and place the per-sheet cost of vellum was between eleven and thirteen times that of a sheet of paper in equivalent size.

Bonifacius, 17 April 1470 (Royal folio) [ib00968000]: of seventeen surviving copies, at least thirteen are definitely on vellum. In the well-known book *L'Apparition du livre*, the authors wrote that without paper, printing could not have been successful.⁹ To the actual inventors of printing, this would have been a puzzling remark.

Two subsidiary points must be addressed. First, one might ask, how is it even meaningful to refer to books that were printed entirely on vellum as being, like the 1457 and 1459 Psalters, Royal folio and Imperial folio, thus associating them with paper sizes even though paper was not a constituent of the editions? Yet it is meaningful and necessary to do so, for although we have no early documents to make the point, the early printers clearly ordered and purchased vellum sheets in sizes that corresponded closely to the standard paper sizes. Thus, even when it was not used, paper determined the sizes of early printed books.

There is one exception whose uniqueness emphasizes the strength of the general rule: the two folio editions by Fust and Schöffer of Cicero's *De officiis*, 1465 and 4 February 1466. The 1465 edition was probably printed late in the year, for a number of copies are recorded with mixed sheets of the two editions. Just over one hundred copies of the two editions together have been recorded, of which almost three-fifths are vellum, and just over two-fifths are paper. However, no copy survives with an expected leaf height of 30 centimeters, or approaching that height: unusually tall copies, whether on paper or vellum, have heights of about 26 centimeters.¹⁰ The explanation must be that the vellum sheets used by Fust and Schöffer were prepared to their specification to a measure of about 26 × 36 centimeters. The paper copies, printed on ordinary Chancery paper, were cut down to equivalent dimensions, probably before printing began. This reflects a conscious decision by the printers to produce an elegant "small" folio book which nonetheless, because of the artificially small type area (154 × 86 millimeters, which would fit very comfortably on Chancery quarto pages), would show luxuriously ample margins.

A second point is that with all these early printings on vellum, whether entirely or in substantial number, at the proofing stage cheaper paper would have been used, not vellum. The clearest example of this is the Bayerische Staatsbibliothek's copy of the 6 October 1459 *Durandus* (BSB-Ink D-324), this being the only copy recorded on paper, although it includes a few vellum leaves. When Dr. Lotte Hellinga examined it, she found that the paper leaves were to be seen as proof sheets, some with correction markings and some not.¹¹ The proofing sheets must have been set aside as printing progressed, then gathered to make up a saleable copy, with just a few vellum leaves

⁹ Febvre and Martin 1958, 26–27: "L'invention de l'imprimerie eût été inopérante si un nouveau support ... le papier, ... n'avait fait son apparition en Europe." At the same place they state, against all evidence, that only uterine vellum would have been "supple" enough to be easily printed upon.

¹⁰ Needham 1994, 127.

¹¹ Hellinga 1986.

brought in to supply lacunae. The only known proof of the Gutenberg-Fust Bible, a portion of one leaf preserved as a binding wrapper, is also on paper.¹² Even in the case of an early incunable printed entirely on paper, Mentelin's Latin Bible (Strasbourg, not after 1460, Royal folio [ib00528000]), less expensive Chancery paper was used for proofing, one sheet per leaf of the edition. As with the paper 1459 *Durandus* in Munich, after printing was completed, the proof sheets were gathered to make up a saleable copy.¹³ We see this also in the famous "Cracow proofs", waste material that must have come, through preservation in an unidentified binding, from Gutenberg's first printing shop in Mainz. These are partial leaves taken from the account book of a Mainz cloth merchant of the 1390s, very possibly an ancestor of Gutenberg's. The printed material on the recycled paper leaves consists of proofs of the already mentioned Planet Table, which as noted was issued on vellum; of a *Donatus*, which would have been issued on vellum [id00314650]; and of a 40-line Bible, apparently never completed, of which a partial issue on vellum would have been expected [ib00526500].¹⁴ In the case of the 40-line Bible, the breadth and height of the double columns shows that what was planned was almost certainly an Imperial folio — larger, that is, than the format of the Gutenberg-Fust Bible, which was printed with a somewhat smaller type.

It must be noted that Gutenberg's original printing type, the so-called DK (*Donatus-und Kalender*) type found in the *Sibyllenbuch* and all his other printing up through 1458 including the Cracow proofs, was used to print a Latin Bible in Royal folio format, but with the columns reduced to 36 lines per page to allow proper margins on the smaller sheet. This is the so-called B36, an unsigned Bible produced in Bamberg by Albrecht Pfister at the costs of the bishop of Bamberg, Georg von Schaumburg, completed not after 1461 [ib00527000]. Here too there was a vellum issue, but a hidden one. The fourteen substantially surviving copies are all on paper.¹⁵ We only know of the vellum issue through the channel of recycled binding waste fragments. Based on varying rubrication styles, Dr. Eric White suggests that these many fragments can be grouped into four original copies, one of which was in the Jesuit college of Munich where it was broken up in the early seventeenth century.¹⁶ The situation flirts with paradox: it is the paper copies that have endured, while the vellum copies proved ephemeral.

In the first half of the 1470s Peter Schöffer's large vellum issues of his major publications began to diminish. New printing shops in Strasbourg were successfully competing for some of his market with editions issued only on paper. The earliest

¹² Meckelnborg 1991.

¹³ Needham 1986.

¹⁴ Wehmer 1948.

¹⁵ White 2013.

¹⁶ For a "raw" list of B36 vellum fragments see Freys and Nickel 1975; private communication with Dr. White. At least two paper copies of B36 similarly survive only as binding waste.

reflection of this change in the market came with Schöffer's 6 March 1467 Royal folio edition of the *Secunda secundae* of Aquinas's *Summa theologia* [it00209000]. The vellum issue was in notably smaller proportion than for other of the recent Mainz editions: of seventy-two recorded copies, twelve are vellum, sixty paper. In this case, Schöffer's was a second edition. Johann Mentelin in Strasbourg had printed the first edition in 1463 [it00208000], all its fifty-five recorded copies being on paper. With so many copies already having been sold, Schöffer presumably calculated that the potential market for expensive vellum copies had become constricted.

The same factor was probably in action in the case of another Schöffer (presumed) second edition, that of Gratian's *Decretum*, 13 August 1472, an Imperial folio [ig00362000], coming a year after Heinrich Eggestein's first edition, Strasbourg, 1471, likewise an Imperial folio [ig00360000]. More than forty copies survive of Eggestein's edition, none on vellum. Eggestein produced another edition in 1472 [ig00361000], though whether before or after Schöffer's is uncertain, of which about sixty copies survive, again none on vellum. Of Schöffer's edition some ninety-five copies are known, twenty on vellum: a significant but not preponderant proportion, for many buyers had already shown themselves to be happy enough with Eggestein's paper copies of the *Decretum*. It is worth noting that in all three editions of Gratian of 1471–1472, the Imperial paper used was strong, substantial, and of high quality.

The diminishing role of vellum issues in Schöffer's publishing program is similarly highlighted in his successive editions of the *Institutiones* of Justinian: 24 May 1468 [ij00506000], 29 October 1472 [ij00508000], and 23 May 1476 [ij00512000], all Royal folios. Of the first edition, apparently all thirty-two surviving copies are on vellum. Of his 1472 reprint, thirty paper and four vellum copies are recorded. Of his 1476 reprint, all sixty-three recorded copies are on paper. Just a few weeks before Schöffer's second edition, Heinrich Eggestein in Strasbourg completed a Royal folio edition, 15 September 1472, of which thirty-six copies are recorded on paper against a single copy on vellum [ij00507000].

A rare business document relating to Schöffer's enterprise confirms what the copy censuses tell us: the role of vellum issues was diminishing in the early 1470s. On 28 April 1477 Schöffer and his brother-in-law Johann Fust (son of the late Johann) agreed by contract that they held equal shares in Schöffer's edition of the *Decretales* of Gregory IX, an Imperial folio with colophon date 23 November 1473 [ISTC ig00447000], each share being calculated at 180 paper and 20 vellum copies: thus a total edition of 400 copies, ten percent of which was a vellum issue.¹⁷ Because they were all offered in essentially the same market, it seems likely that the already-mentioned *Institutiones* of Justinian, 29 October 1472, and the third edition of the *Liber sextus* of Boniface, 5 April 1473 [ISTC ib00981000], had similar edition runs and similar vellum-issue proportions; and this may well be the case also of Schöffer's above-mentioned *Decretum*

17 Köhler, *Ehren-Rettung Johann Gutenbergs*, ed. Halle and Eck 2000, 99–100; Ruppel 1937, 39.

of Gratian, 13 August 1472. A broadside advertisement survives in which Schöffer announced jointly the *Decretum* and the *Decretales*, the former apparently already completed, and the latter well under way (*decretales ... iam pridie incepti*) [ISTC is00320970].

A noteworthy curiosity appears in two of Schöffer's canon law editions of 1473, the *Liber sextus* of Boniface of 5 April, and the *Decretales* of Gregory IX of 23 November. For both, and apparently only these, editions, a few copies survive with mixed quires of vellum and paper, of just the same make-up as a substantial number of handwritten codices of the late fourteenth and fifteenth centuries (on which more below). That is, for each quire the outermost and innermost bifolia are vellum, "sandwiching" three (usually) bifolia of paper.¹⁸ Therefore, these two canon law books saw three different issues at increasing sale prices: a paper issue, a mixed vellum-paper issue, and a full vellum issue.

Schöffer's decision in the early 1470s to cut back on extensive vellum issues marks the end of a defining feature of the first two decades of printing in Mainz. From this time onward, in Mainz and the many other printing towns of a rapidly expanding trade, printed books were primarily produced on paper. Substantial, and sometimes, possibly, entire vellum issues became almost entirely reserved for liturgical books (primarily Missals, Breviaries and Psalters in folio format) and personal prayer books (Books of Hours, Psalters in smaller formats). In both classes, there existed a long-established tradition of hand-written copies on vellum. But even in these two categories there were, concurrently, many printed editions that were primarily or exclusively on paper. The same may be said of broadsides, where Indulgences and Letters of confraternity were often printed, for greater dignity, on vellum, and yet where many other similar editions were on paper.

Regarding printed Missals, special notice must be given to the Canon of the Mass, the core of prayers surrounding the Consecration that are the focal point of every mass, making the Canon by far the most frequently handled section of a Missal. In 1458 (dated by typographical evidence) Fust and Schöffer printed on vellum, in Royal folio format, a Canon of the Mass of twelve leaves in a single quire [im00736000].¹⁹ The hoped-for market would have been religious houses whose long-used large-format manuscript Missals would benefit from being given a fresh, clean Canon. Sales must have been gradual. In a broadside advertisement of c. 1470 Peter Schöffer listed copies as still available, as were also the 1459 Psalter and the 1462 Bible.

¹⁸ Of the Boniface VIII, mixed-quire copies are recorded in the Hunterian collection at the University of Glasgow, the Bodleian Library, the Bibliothèque nationale de France, and the former Martin Schøyen copy sold at Sotheby's New York, 12 December 1991, lot 15 (in contemporary Viennese binding). Of the Gregory IX, mixed-quire copies are recorded at the Universitätsbibliothek Graz, the Landesbibliothek Stuttgart, the Library of Congress, and the former Doheny – St. Mary's of the Barrens copy, sold at Christie's New York, 14 December 2001, lot 32.

¹⁹ Falk and Wallau 1904; Masson 1954.

The same year copies of all three works, *two bibulen, veffteyn psalter unde twintich canones* gedrucket, were sent from Lübeck over Hanseatic trade routes to the eastern Baltic, Reval (Tallinn), and Riga.²⁰ Of the three surviving integral copies of the *Canon Missae*, the copy in Vienna must have been part of the original marketing, being the Canon of a fourteenth-century Salzburg Missal from Wiener Neustadt.²¹ The other two copies, at Columbia University Library and at the Bodleian Library (Bod-inc M-284), stayed in Schöffner's shop for a long time. The Columbia copy is the Canon in a copy of Schöffner's Royal folio *Missale Cracoviense*, 10 November 1484 [im00658000]. The Bodleian copy, now separated, was the Canon in a copy of Schöffner's Royal folio *Missale Moguntinum*, 3 April 1493 [im00674500].

Other early printers also understood the purpose of printing the Canon on vellum even for Missals otherwise on paper. Examples include the *Eichstätt Missal* printed in Eichstätt by Michael Reyser, 19 February 1489 [im00659500] (Cambridge University Library copy); the *Freising Missal* printed in Augsburg by Erhard Ratdolt, 17 March 1492 [im00660300] (two copies at the Bayerische Staatsbibliothek with the Canon on vellum, another with the Canon on paper); and the *Brixen Missal* from the same press, 17 August 1493 [im00653000] (the Bibliothèque nationale de France copy with the Canon on vellum, the Morgan Library copy entirely on vellum).²² In 1488 and 1489 Peter Drach in Speyer commissioned Johann Sensenschmidt in Bamberg to print two folio Missals, of Olomouc and Prague use respectively [im00677000, im00685000]. In his day book he recorded details of both commissions: 400 copies on paper but with the Canon on vellum, and twenty more copies entirely on vellum.²³ In Nuremberg in the 1490s Georg Stuchs, who printed many liturgical books, produced two editions of what were probably the Canon of the Mass only, on vellum and both with crucifixion woodcuts on fol. 1v facing the *Te igitur* beginning on fol. 2r [im00731850, im00736300]; as each survives out of context in a single copy, we cannot be entirely certain of the original form of publication.

The large vellum issues marketed by Fust and Schöffner, and then by Schöffner alone stand in strong contrast with the practice of other printing enterprises of the 1460s and early 1470s: Johann Mentelin and Heinrich Eggestein in Strasbourg, Ulrich Zel in Cologne, and Conrad Sweynheym and Arnold Pannartz, in Subiaco then in Rome. In Strasbourg, none of Mentelin's book editions had vellum issues, although a recently discovered Indulgence broadside that he printed in 1461 was, as one would expect, on vellum.²⁴ The other major early shop of Strasbourg, that of Heinrich Eggestein,

²⁰ Falk and Wallau 1904, 38.

²¹ Holter 1938.

²² Stevenson 1967, 292, note VI 34. The online incunables repertories ISTC and GW do not consistently provide this level of copy-specific information.

²³ Geldner 1962, 76–77; see also 77, recording that the cost of a paper copy was 5 Hungarian gulden, and of a vellum copy 20 Hungarian gulden.

²⁴ Hägele 2014.

produced vellum copies of only three editions, in each case with a very limited issue: two Vulgate Bibles [ib00530000, ib00531000] and the already-noted civil law *Institutiones*. In Cologne, between 1466 and 1472, Ulrich Zel printed nearly one hundred Chancery quarto tractates, of which only one, Augustine, *Enchiridion de fide, spe et caritate*, datable to 1467 [ia01265000], had a modest vellum issue: three surviving copies against thirty-two on paper. Sweynheym and Pannartz printed only four editions with known vellum issues, all in Rome between 1468 and 1470, these combined producing a total of six surviving vellum copies against about 180 paper copies. Of one other Sweynheym and Pannartz edition, the 1468 *Speculum vitae humanae* of Cardinal Rodericus Zamorensis [ir00214000], three copies are known with just the first sheet printed on vellum.²⁵ In this instance we may feel sure that this was done at the request of the cardinal himself, who wanted a vellum major page for illumination in a certain number of copies: one of the three is his presentation copy to Pope Paul II, the other two bear his coat of arms.²⁶ Two years later Rodericus's *Historia Hispanica compendiosa* was printed by Ulrich Han in Rome [ir00211000], and here too at least two copies have the "major sheet", with the beginning of the text, on vellum. It should be noted, however, as we see even with the Gutenberg-Fust Bible, that, on the one hand, paper copies could, though of cheaper price, still be supplied with handsome and relatively expensive illumination (Scheide Library, Cambridge University Library, Keio University Library), and on the other, the purchasers of expensive vellum copies did not invariably take on the additional cost of having them richly illuminated, being content with less expensive rubrication in red and blue (Library of Congress; British Library G.1226).

Incunable liturgical books and private prayer books with vellum issues jointly amount to something over five hundred editions. These apart, in the years between roughly 1470 and 1500 we find some five hundred other codex editions of all types of which vellum issues are attested. Something over fifty are the Latin grammar of Donatus or similar grammatical guides, yet many Donatus editions were also printed on paper. For the rest, there is a great variety of texts of no predictable pattern. For a number of editions, such as those published by Antoine Vêrard in Paris in the 1490s, the vellum issues clearly were intended to be luxury books, comparable in some degree with commissioned manuscripts written on vellum and, like them, inviting the addition of fine illumination.²⁷ But a large number of the editions, perhaps the majority, cannot be considered luxurious even in their vellum form. For instance, in 1492 in Cologne, Heinrich Quentell printed in Chancery quarto format the *Promptuarium argumentorum*, a (here anonymous) scholastic tract of Heymericus de Campo in defence of Albertism against Thomism [ih00010550], the focus of lively controversy at

²⁵ Goff 1966.

²⁶ Information from Martin C. Davies, to whom I am indebted.

²⁷ Winn 1997.

Cologne's university. Something over two dozen copies of the *Promptuarium* survive on paper and a single copy on vellum. Yet even on vellum it is a very ordinary item of printing, enlivened only by a *Magister cum discipulis* cut on the title. Its *raison d'être* is unclear.

It is probable that in a large number of instances, these vellum issues were not part of the marketing proper of the editions, that is, aimed at general customers who could decide between two different prices; but instead were off the market, reserved for particular parties including such figures as dedicatees and silent investors in the costs of the edition. This is surely the case with the vellum-printed books owned by Petrus Ugelheimer, a native of Frankfurt am Main who migrated to Italy and prospered as a merchant in Venice, becoming a major investor in the printing enterprises of Nicolas Jenson (of whose estate he was executor), Johannes de Colonia and Johannes Herbort. Ugelheimer's copies, often splendidly bound and illuminated, survive of thirteen editions produced by these presses; in the majority of cases his is the only vellum copy known.²⁸ We must suppose that they were made at his commission, and in similar cases we may suspect the same even when we have no clue to the identities of recipients.

In the last decade of the fifteenth century, a generation after the primal years of printing, Johann Trithemius, abbot of Sponheim, famously wrote in *De laude scriptorum* (Mainz, 1494 [it00442000]), that printing was a "paper thing" (*res papirea*), implying that the hand-written book was in its nature a "vellum thing." His argument, addressed primarily to Benedictine monks of the Bursfeld reform congregation, was that even in these days when printed books were everywhere, and could be gotten at modest prices, there remained strong reason to write texts on vellum for their longer preservation. If a paper book, he wrote, subsisted for two hundred years it would be a great event, whereas a manuscript book on vellum could easily subsist for a thousand. In fact, to achieve longevity of texts it made good sense to copy out on vellum even printed books (*a studio suo scriptor deuotus nequaquam deberet desistere: sed etiam impressos vtiles per scripturam perpetuare*).²⁹

Few figures of his time had a broader, more knowledgeable, and more passionate relationship with books both printed and hand-written than Trithemius, an assiduous author and a bibliophile. One of his chief concerns was to strengthen the library at Sponheim, which was pitifully inadequate when he took on the abbacy in 1483. Yet in *De laude scriptorum* he was writing to so constricted a brief, attempting to maintain a modern rationale for the ancient Benedictine tradition of scribal labor, that unvoiced qualifications and ironies abound within his argument. One of these is that Trithemius believed deeply in printing, as witnessed not least by his having *De laude scriptorum* circulated in print. Between about 1493 and 1500 the small Mainz printing

²⁸ Haebler 1924, 30–39 passim; Hobson 1989, 38–41, 50–57; Nuovo 2013, 31–33.

²⁹ *De laude scriptorum* 1494, b2r; Trithemius, *De laude scriptorum*, ed. Arnold 1973, 62–64.

bores vestros. tam pios. tam viles. tam necessarios eccle
sie. non sine maxima retribucōne transibit.

Quod propter impressurā a scri bendis volumibus nō sit desistendū. ¶ Cap. vii.

Emo cogitet fratres nemo dicat: qd necesse
est me scribendo fatigari. cum ars impressoria
tot tantosq; libros trāsundat in lucē: ut mo
dico ere magnam bibliothecam possumus in
struere. Vere quicūq; talia loquitur: ocio suo tenebras
facere conatur. Quis nesciat: quāta sit inter scripturā et
impressurā distantia? Scriptura em̄ si membranīs inn
ponitur. ad mille annos poterit p̄durare: impressura autē
cū res papirea sit. q̄sdiu subsistet? Si in volumine papi
reo ad ducentos annos p̄durare potuerit: magnū est.
quāq; multa sint qui p̄pria materia impressurā arbitren
tur consumendā. Hoc posteritas iudicabit. Enūvero etiā
si multa volumina impressa sint: nūquā tamen adeo inn
primuntur. quin semp ad scribendū qd̄ impressū nō sit
valeas inuenire. Nec facile quisq; omnes impressos li
bros vel inuenire potest vel emere. Quod si etiā omnes libri
totius mūdi imprimerentur: a studio suo scriptor deuot
us nequaquā deberet desistere: sed etiā impressos viles
p̄ scripturā perpetuare: qui alioquin diu nō valent sub
sistere. Hoc em̄ faciens dabit scripturis nutantib; firmi
tatem: paruis precij magnitudinem: caducis temporis
longeuitatem. Deuotus autē scriptor semp inueniet. cui
incumbens officio mereatur. Non patitur costringi sub
condicione impressoris. Liber est: et libertatis sue gau
debit officio. Neq; em̄ impressori inferior est: ut studiū
suū deserat. propter illius impressuram. Sed eo consulte
preterito letus via cepta progreditur: sciens suā coronā
apud deū nō minuendā: quacūq; importunitate alterius
Qui autē a scribendī studio cessat: propter impressurā:
b ij

Fig. 1: Johann Trithem, *De laude scriptorum*. Mainz: Peter von Friedberg, 1494. 4°. Capitulum vii (b2r). Universitätsbibliothek Heidelberg Q1238 A oct. INC: [5] (Schlechter-Ries 1756).

shop of Peter von Friedberg produced fourteen different programmatic writings of Tritheim in nineteen distinct editions, whose chief audience was the monks of the Bursfeld observance: all Chancery quartos, ranging in extent from ten to ninety-eight leaves.³⁰ Various other of Friedberg's publications were produced within Tritheim's ambit, including works by his friends Jacob Wimpfeling and Dietrich Gresemund the younger. Setting aside Friedberg's several broadside almanacs and other single-leaf printings, more than half of his publications show a connection with Tritheim; Friedberg was essentially "house printer" for Tritheim and the Bursfeld congregation.

Tritheim also knew about, and believed in, the value of printing, and not just writing, on vellum. Of his Mainz quarto tractates, just mentioned, vellum copies are attested of nine of the editions. The situation fits the common pattern of most printing on vellum outside the categories of liturgical and private prayer books: a highly limited issue that presumably lay outside the usual marketing system. Of this entire group of Tritheim tracts, some 770 copies are recorded, of which fourteen are on vellum. This small figure reflects an even smaller number of survival paths: five of the fourteen, at the Morgan Library, are in one *Sammelband*; three more at the Morgan Library, now separate, were probably once in a *Sammelband*; two, at the Universitätsbibliothek of Frankfurt am Main, are in a *Sammelband* with other paper copies of Tritheim and related tracts. As the vellum issues of the nine recorded editions were obviously very small, it is possible that other of the editions also had vellum issues that have not survived. In any case, the printing of a few copies on vellum of these tracts has not helped significantly in assuring the physical survival of Tritheim's writings.

Of *De laude scriptorum* itself, thirty-five copies are known, none on vellum. Two manuscript copies of this tract, in Kiel and Berlin, are in a version preceding its final printed form.³¹ Tritheim dedicated his tract to Gerlach von Breitbach, abbot of Deutz. These two early versions are in scribal hands, but with corrections by Tritheim. In the Kiel codex the dedicatory letter to Gerlach is dated to the 4th nones of October 1492 (reduced to just the year in the printed edition), and this is in fact the copy Tritheim sent to Gerlach. Its Chancery quarto *Sammelband* contains two other tracts by Tritheim in manuscript, and seven of the Tritheim tracts printed by Peter von Friedberg. The Berlin codex contains *De laude scriptorum* along with four other writings by Tritheim, and is almost certainly a volume from the library of Sponheim. The significant feature relating to our immediate point is that both were written on paper.

Similarly, we may consider Tritheim's magnum opus of the 1490s, his *De scriptoribus ecclesiasticis*, listing the Latin writings of nearly nine hundred authors, including many still living. In terms of both length of text and potential audience, this

³⁰ Needham 1994, 138–140: Appendix II, The Tritheim Vellums. In the present study I have updated the counts of surviving copies according to the current records of ISTC Online and GW Online.

³¹ Kiel Universitätsbibliothek Ink. 50 (item 8); Berlin SBPK cod. lat. 410; see Trithemius, *De laude scriptorium*, ed. Arnold 1973, 22–23.

work was beyond the capabilities of Peter von Friedberg. Through Jacob Wimpfeling, Trithem offered his work to the major Basel printer-publisher Johan Amerbach, who published it in the last months of 1494 [it00452000]: a Chancery folio of 74 sheets, buttressed front and back with a commendatory letter by Johannes de Lapide and laudatory couplets by Sebastian Brant (both of whom were included in the text). Some two hundred fifty copies survive of this edition, none on vellum. It should be noted that Trithem's dedication manuscript of *De scriptoribus ecclesiasticis*, presented to Johann von Dalberg, Bishop of Worms, survives, though its current location is unstated.³² This manuscript, with a dedication dated 26 April 1492, is an earlier version of the text, which Trithem expanded considerably for Amerbach's edition. Another copy of this version of the text is in the Berlin manuscript mentioned above (note 31) as containing also a copy of *De laude scriptorum* of the same year: that is, the Sponheim abbey's own copy. Thus, just as with *De laude scriptorum*, two more or less official copies of *De scriptoribus ecclesiasticis* were executed directly under Trithem's aegis, and again both were written on paper, not vellum, except that in the presentation copy, the dedicatory letter is written separately on a vellum leaf.

To underline Trithem's own acquiescence in paper, we may further note a paper manuscript from the Sponheim library written at his instance in 1487: a collection of the *Epistolarium* and other writings of Hildegard of Bingen, transcribed from the famous "Riesencodex" of Hildegard's writings written in her lifetime at her convent of Rupertsberg near Bingen and now preserved in the Landesbibliothek Wiesbaden.³³ Other paper manuscripts from Sponheim written by or for Trithem include the letters of St. Boniface transcribed in 1497 from an ancient manuscript in Mainz, and a collection of Greek texts, including the fables of Aesop in both Greek and Latin, written by Trithem himself, *ad usum meum ac fratrum grecitancium*.³⁴

To summarize: *De laude scriptorum* urges that monks should copy texts, even already-printed texts, on vellum, because of the millennial durability of that material. This argument emphasizes just one facet of the multi-faceted reality of books in later fifteenth-century Europe: books were written by hand on both paper and vellum;

³² Arnold 1991, 119 (but not at Yale University, as stated); Lehmann-Haupt 1957. The manuscript has been for many years in an anonymous private collection. We may hope that its owner will not keep it permanently walled off from the world of scholarship, for Lehmann-Haupt's brief survey shows that a collation with the Amerbach printed edition will reveal much about how Trithem formed his text.

³³ London British Library Ms. Add. 15102, paper Chancery folio (Embach and Wallner 2013 no. 153, 26.8 × 19.5 centimeters); Trithem's autograph colophon is quoted by Embach 2003, 480 n. 3: *de quo* ["Riesencodex"] *hee omnes que sequuntur epistole licet cum festinacione scripte sunt ... per quendam monachum sancti Benedicti de cenobio Spanheim iubente me eiusdem monasterii abbate licet indigno.*

³⁴ Munich, Bayerische Staatsbibliothek Clm 830, and Copenhagen, Kongelige Bibliotek Ms. Ny kgl. S. 212b, see Lehmann 1961, 34 and 31 respectively. He describes other paper manuscripts written at Sponheim by or for Trithem, and in other cases is not explicit about whether the codices in question are vellum or paper.

books were printed by typography on both paper and vellum; printed books were copied from both hand-written books and other printed books; hand-written books were copied from both other hand-written books and from printed books. All these variations must be considered in forming an understanding of the way of the book world in the fifteenth century, and especially of the second half of the century, when the “printed” feature arises. If someone living in the late fifteenth century were to have been deputed to write from personal knowledge on all these sides of bookmaking and book use in the period, few would have been better qualified for the task than Trithem himself. But a multifaceted picture was not his remit in his treatise of 1492.

As for Trithem’s general argument that there is purpose in hand-copying printed books onto vellum, this undoubtedly happened frequently. Or, to state the situation somewhat more comprehensively, there are undoubtedly a large number of instances in the later fifteenth century when new books were made by transcribing the texts of printed books, and in some proportion of those instances, the writing support was vellum.³⁵ At least two examples are connected with Trithem. Although there was no printed vellum issue of Trithem’s *De scriptoribus ecclesiasticis*, there survives a vellum manuscript directly copied from Amerbach’s 1494 printed edition. This is Ghent Universiteitsbibliotheek Ms. 67, one of the substantial group of vellum manuscripts made for the abbey of St. Bavon in Ghent by its abbot Raphael de Marcatellis, bastard son of Philip the Good.³⁶ The same volume also contains Richard de Bury’s *Philobiblon*, and Latin versions of several tractates of St. John Chrysostom. These too were copied from printed editions. As Albert Derolez has noted, a high proportion of the texts in the manuscripts commissioned by Marcatellis must have been copied from printed editions. It is even conceivable that the printed books serving as exemplars were already in the library of St. Bavon; but in any case, as the manuscripts were written in Bruges, the printed books underlying them were presumably available in that city.

There is no reason to suppose that Trithem knew of the copy of *De scriptoribus ecclesiasticis* commissioned by Marcatellis, though he would have approved the impulse. He certainly was the instigator of a finely written but imperfect vellum manuscript in large format (38 × 26 centimeters), preserved in the Universitätsbibliothek Würzburg, which contains copies of twelve of his fourteen tracts as printed by Peter von Friedberg.³⁷ The tracts are followed by eight leaves of Trithem’s liturgical and devotional services for the feast of S. Anna, and other miscellaneous prayers to saints, these last items with internal dates of 1503. The texts must have been written by a professional scribe engaged by Trithem (whose autograph corrections appear

³⁵ For a good general orientation see Bühler 1960, 32–39.

³⁶ Derolez 1979, no. 35, its format essentially equivalent to Royal folio: 41 × 29.5 centimeters; cf. *ibid.*, 305–306.

³⁷ Würzburg UB M. p. th. f. 64b: Thurn 1973, 88–92; cf. Lehmann 1961, 51–52 and Trithemius, *De laude scriptorum*, ed. Arnold 1973, 21–23.

on several pages) while he was still abbot of Sponheim, and perhaps were taken by him to Würzburg in 1506 when he was elected abbot of the Scottish Benedictine house of that city. Arnold has suggested that the book was intended eventually as a fine dedication copy, but was never completed, and lacunae may have arisen when it was brought together and bound in the seventeenth century. It is also possible that Trithem commissioned the work as a personal memorial of his literary activity.

Trithem was not alone in seeing the value of writing out copies on vellum even of printed books, although it is by the nature of things rare that the circumstances of production should lead the scribe to signal that this is the case, or to give a reason for doing so. Exceptional, therefore, is a manuscript of the *Orationes* of Cicero written in France with a colophon date of 4 August 1483 (British Library Ms. Harl. 2681), which concludes with elegiac couplets, “the gist of which is that great works of literature should be preserved on parchment: perishable papers suits the grating utterances of tedious casuists.”³⁸ The scribe’s exemplar was a copy of Sweynheym and Pannartz’s 1471 edition [ic00541000], a Royal folio of which no vellum copies are known.

An unusually elaborate example is a large-format (51 × 36 centimeters) vellum manuscript at the Bodleian Library consisting of the Vulgate Pentateuch with the commentary of Hugh of St Cher, bound in five volumes and totaling some 1,073 leaves, or about 535 sheets.³⁹ This giant work was commissioned by a well-off Italian cleric, Guichardus de Papia, alias de Rovedis, who held several benefices within the diocese of Lyons. The project extended over five full years, 1507–1511. The first two volumes were written in Brescia by a French scribe, Henricus de Bello Orto (Henri de Beaujardin, of Amiens). He died in 1510 before finishing the third volume, and his work was continued by another French scribe, Johannes Broquet. Illuminations were supplied by an artist from Lyons, Petrus Vanyer. At the end of the first volume, Beaujardin explained the motive: Guichardus saw that a great many copies of Hugh of St Cher’s work had appeared in modern times, but these were miserably produced on paper, and could not last long (*sed in papiro pauperrim[e] reduct[i]: ... ipsa volumina ... perdurari non possent multo tempore*). Guichardus decided, therefore, to have a copy made not on paper but on good parchment, and not with types, but with gold and silver letters. Doing so would perpetuate the name of God and His works (*Ut in hoc perpetuetur nomen dei omnipotentis et opera eius*).

The printed edition referred to is the Median folio corpus of the complete Bible commentaries of Hugh, a massive undertaking printed in seven volumes by Johann Amerbach in Basel at the costs of Anton Koberger, 1498 to 1502 [ib00610000]. However, Guichardus’s two scribes and illuminator, over five years, did not copy all of the Amerbach-Koberger edition of nearly two thousand five hundred text-crammed leaves. They copied only the Pentateuch portion: the first 186 leaves only of the first

³⁸ Reeve 1983, 12: a study to be highly recommended.

³⁹ Watson 1984 no. 150, pl. 810.

volume, Genesis-Job. A commission for a manuscript copy, at this degree of luxury, of the entire printed edition would have required twelve times the labor of the five-year Pentateuch-only project. Scribes, illuminators and parchminers would have been happy to help, but the cost would have been enormous. It should be said, moreover, that although Guichardus saw the production quality of Amerbach's printing as meager, this edition is in fact very clearly printed and efficiently laid out. To judge from the reproductions in Watson 1984, the scribal hands fell short of what good types can produce.

We do not know whether Guichardus knew Trithem's *De laude scriptorum*, but his doubt about the durability of paper is in exact parallel with Trithem's. As Trithem wrote, posterity will decide, and more than a half-millennium later, posterity has made its decision: fifteenth-century paper is strikingly durable, and at least on this time scale, the fifteenth-century printers produced books for the ages. In fact, generally speaking, fifteenth-century paper survives today in much better condition than the great majority of book papers manufactured in the twentieth century. And, the "posterity" of today has an additional answer to the broader worries of Guichardus and Trithem – worries that still should concern us today – about the preservation of the world's literary heritage. That answer is, that the invention of typographic printing in Europe has made an immense contribution toward the preservation of this heritage. There are indeed a large number of early printed editions that have disappeared entirely, or whose strand of survival is so thin, in the form of a single copy or even a fragment of a single copy, that we must suppose many more similar editions to have disappeared without trace. But early printed editions that were aimed for sale to religious institutions, or to learned readers who might bequeath them to such institutions, tend not to be rare at all.⁴⁰ As already noted, of the quarto tracts of Trithem printed by Peter von Friedberg in the 1490s, more than seven hundred fifty copies can be traced today; of his folio *De scriptoribus ecclesiasticis*, about two hundred fifty copies are preserved. Of the Amerbach-Koberger edition of Hugh of St Cher's Bible commentary, which Guichardus worried would prove ephemeral, more than two hundred twenty-five copies are preserved. If the larger goal is preservation, we can say that the "strategy" of hand-copying printed books on vellum is itself ephemeral. That is, it satisfied the short-term wishes of those who did it or had it done, but did not affect the long-term calculus of survival of the texts in question.

A sense that the value of individual copies of books, however fine, in individual libraries was being overwhelmed in effect by the new invention of printing must have been felt by many learned book users of the later fifteenth and early sixteenth centuries. This sense can be detected in Trithem, despite, and even within, his own defense of hand-copying on vellum. It was very clearly expressed by Polydore Vergil in his *De*

⁴⁰ On the survival paths of early printed books, see Needham 2004; on survival of printed fragments as binding waste, Needham 1996.

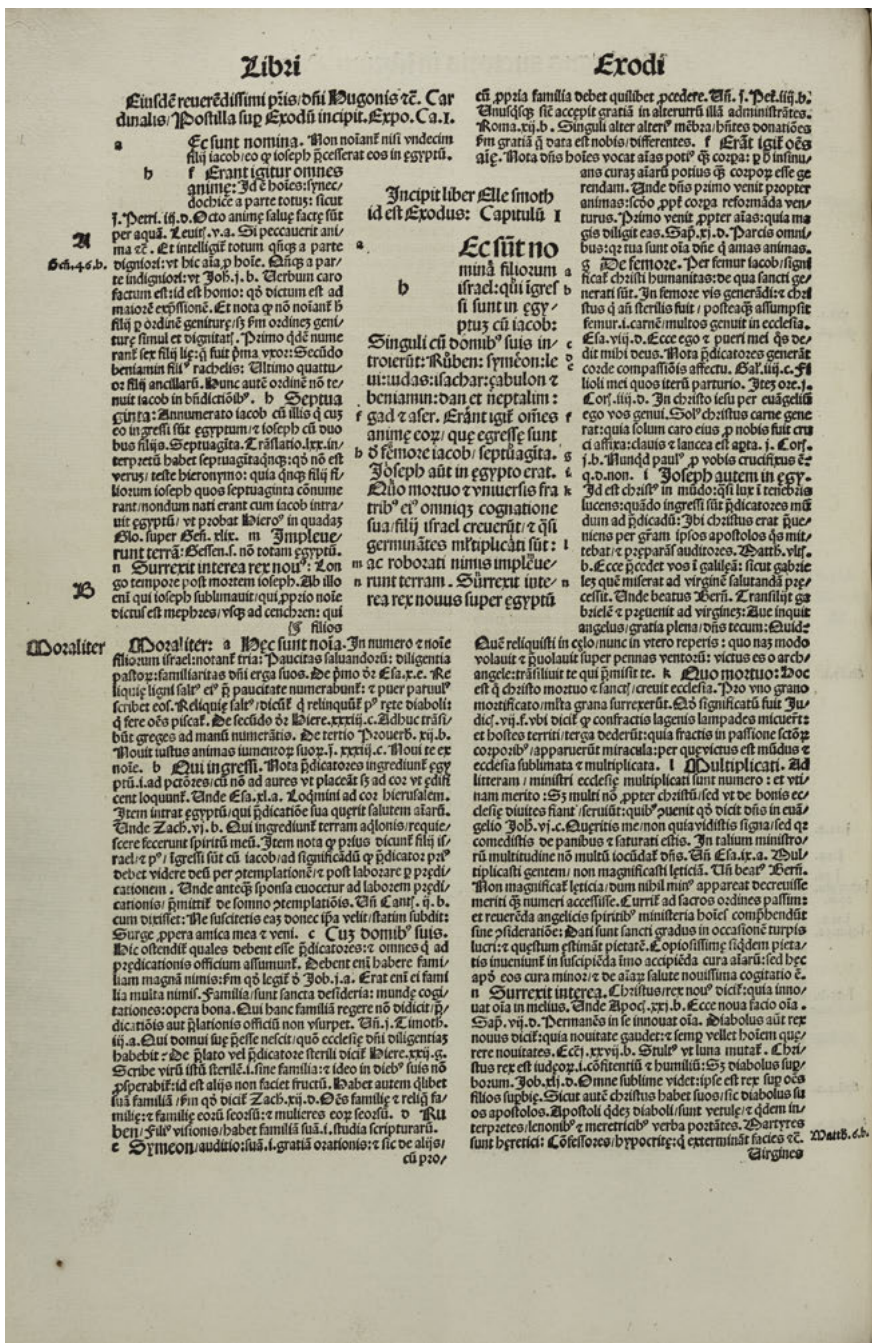


Fig. 2: *Biblia latina* (cum postillis Hugonis de Sancto Caro), Pars I. [Basel]: Johann Amerbach for Anton Koberger, [after 29 October 1498]. F^o. Exodus (m1v). Universitätsbibliothek Heidelberg Q539-8 B fol. INC (Schlechter-Ries 322).

inventoribus rerum, first printed in Venice, 31 August 1499, by Christophorus de Pensis, Chancery quarto [iv00146000], whose remarks amount to a partial and surely unconscious argument against Tritheim's viewpoint. In chapter 7 of liber II, Polydore praised the library of the Duke of Urbino, Federico di Montefeltre (d. 1482), continued by his son Guidobaldo: by common judgment it was the finest in Italy. This library, largely preserved now within the Vatican Library by seventeenth-century purchase, is famous for the statement made of it by Vespasiano da Bisticci, the Florentine stationer who supplied a major share of the contents: all the books were beautifully written and illuminated on vellum; the duke would have been ashamed to include a printed book – a statement not literally true yet not a pure fabrication.⁴¹ Polydore composed the *De inventoribus* in Urbino, and used the ducal library; he appears to have held some salaried position at the Urbino court. His first publication, of the preceding year, *Proverbiorum libellus* [iv00147000], was dedicated to Duke Guidobaldo, of whom he styled himself a “client”. *De inventoribus* was dedicated to Ludovico Odasio, a Paduan humanist who had been Guidobaldo's tutor. Despite this close connection with the Urbino library, Polydore wrote, almost indelicately, that however great a gift to civilization the ducal library was, it could in no way be compared with (fol. 5r: *sed nequaquam conferendum*) the gift brought by the recent invention of printing, whereby as much could be printed in a single day as could be written in an entire year, and which assured the survival of many precious texts, hitherto in peril of loss.

A final point remains to be made with regard to Tritheim's defence of the scribe. He wrote that printing was a paper thing (*res papirea sit*). Roughly speaking, that is, with many hundreds of exceptions, that was true. As for the ephemerality of paper, Tritheim's discouraging remarks were prophetic, not actual: they fit best the period of the mid-nineteenth century and after, when wood-pulp papers containing acid residues from processing the pulp show rapid deterioration; they are self-destructive. One could say that the secret of making bad paper was finally discovered in the nineteenth century.

But in any case, with regard to fifteenth-century manuscript books, it is necessary to emphasize that they are not inherently a vellum thing, *res membranacea*, in contrast with printed books. As noted in greater detail below, a substantial majority of the manuscript books written in the fifteenth century used paper as the support material, with vellum manuscript books being, though very far from insignificant, in the minority. As several examples cited above show, Tritheim himself was very well acquainted with paper manuscripts, and had no reluctance in making and using them.

The use of paper for writing codex books – books in the broadest sense of literary materials as distinguished from documents, private notebooks, and loose

⁴¹ From the massive literature on the Urbino library may be cited the articles de la Mare 1986 and Michellini Tocci 1986 in Cerboni Baiardi 1986.

memoranda – developed slowly but, in the aggregate, steadily in the course of the fourteenth century. The most active center of European papermaking in its first half-century or more, from roughly 1275 onward, was Fabriano, whose papers were sold through long-distance trading routes across western Europe, even to the remote island of Britain, not later than 1310; and also across the Adriatic into Byzantium. It may well be that until c. 1360 and after, more Byzantine paper books survive than western European.⁴² Within western Europe, the encroachment of paper on vellum as the support material of manuscript books became especially noticeable in the last quarter of the fourteenth century and grew throughout the fifteenth (see Tab. 2). A concise and elegant study by J. P. Gumbert made a first sounding on this topic, as well as on the dimensions and proportions of both vellum and paper books, based on about 2,400 records in the Dated Manuscripts volumes covering the Bibliothèque nationale de France and the Österreichische Nationalbibliothek. Gumbert noted especially, in this sample, the falling off in number of dated manuscripts in the last quarter of the fifteenth century: “the retreat of the hand-written book.”⁴³

With the growing number of Dated Manuscripts volumes, covering medieval and early modern manuscripts in libraries of Germany, Austria, Switzerland, Sweden, the Netherlands, Belgium, France, Great Britain, Italy and the Vatican, we now have descriptions and reproductions of many thousands of dated manuscripts: that is, essentially, manuscripts with colophons stating a completion date, as also, frequently, the name of the scribe(s) (who might also sign manuscripts without dating them), and sometimes the place of work.⁴⁴ The elaborate Pentateuch with gloss of Hugh of St Cher commissioned by Guichardus de Papia, cited above, is an uncommonly elaborate example. Dated manuscripts are probably not in direct correlation with the considerably larger number of undated manuscripts written in the same years, for it is likely that a fashion for adding scribal colophons developed and increased over the fourteenth and fifteenth centuries, before which period they are decidedly rare.⁴⁵ Nonetheless, there must be a reasonably close positive correlation, for no one could argue that a larger number of recorded dated manuscripts over, say, a five-year period

⁴² For Byzantine books using Fabriano paper see especially, among his numerous studies touching on the topic, Irigoin 1950 and 1958. The paper stocks of a large number of Byzantine books are reproduced and analyzed by Harlfinger and Harlfinger 1974; unfortunately, there is no chronological index of the manuscripts examined. Early western European paper books have been studied by Kwakkel 2003 with a sample list of 84 fourteenth-century paper examples (as represented in five volumes of the Dated Manuscripts series), a number that can be very considerably enlarged. Kwakkel also supplies references to many detailed studies of early European paper use (paper both European and “Arab”) in Europe. For early importation of paper into England, see briefly Needham 2007, 311–312.

⁴³ Gumbert 1980, 285.

⁴⁴ The volumes published under the rubric of the Dated Manuscripts/Catalogues de manuscrits datés project are listed on the website of the Comité international de paléographie: www.palaeographia.org.

⁴⁵ Derolez 1995 (and many other essays in this conference publication); and with a slightly different outlook Overgaauw 1999.

in fact reflects a smaller total number of manuscripts from that period, compared to the period before or after it.

Keeping in mind this penumbra of uncertainty, useful information can be drawn from two tables derived from the records of a large number of Dated Manuscripts volumes. First, a table of 11,458 fifteenth-century dated manuscripts (omitting the year 1500), gathered in three-year intervals:⁴⁶

Tab. 1: Dated Manuscripts 1401–1500

Years	Dated Manuscripts	Years	Dated Manuscripts
1401–1403	116	1476–1478	399
1404–1406	127	1479–1481	402
1407–1409	158	1482–1484	260
1410–1412	168	1485–1487	218
1413–1415	169	1488–1490	221
1416–1418	192	1491–1493	202
1419–1421	191	1494–1496	181
1422–1424	207	1497–1499	198
1425–1427	244		
1428–1430	250		
1431–1433	293		
1434–1436	344		
1437–1439	384		
1440–1442	361		
1443–1445	390		
1446–1448	446		
1449–1451	472		
1452–1454	502		
1455–1457	581		
1458–1460	649		
1461–1463	655		
1464–1466	673		
1467–1469	673		
1470–1472	651		
1473–1475	478		

⁴⁶ The figures are compiled from the chronological indexes of nearly all the Dated Manuscripts volumes, except a few recently published.

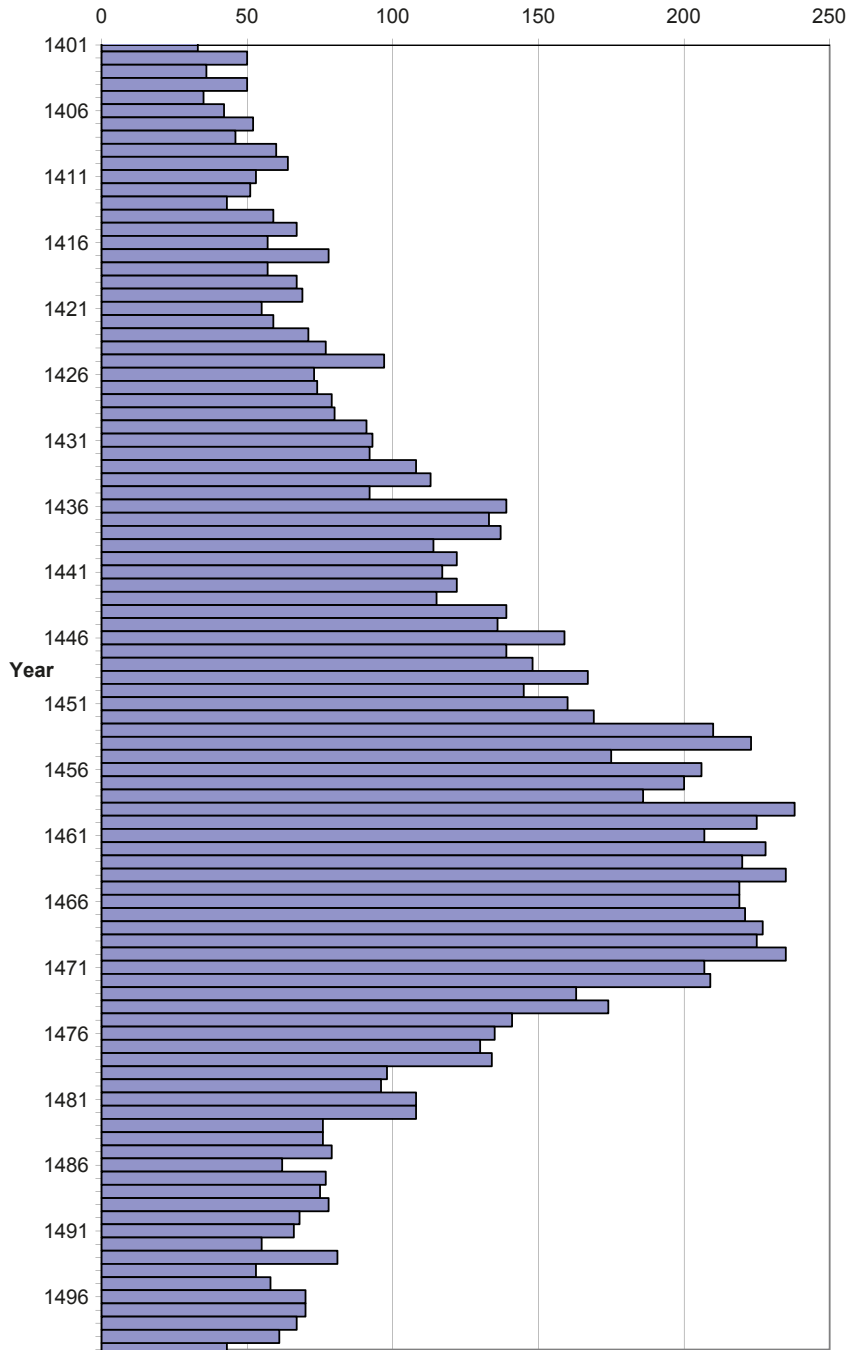


Fig. 3: 11,501 Dated Manuscripts 1401–1500

The “retreat” of the hand-written book in the last quarter of the fifteenth century is self-evident. If one disbelieves this, one must believe rather that the fashion for dating manuscripts fell off dramatically in the 1470s and after.

Second, a table of 5,371 dated manuscripts of the fourteenth and fifteenth centuries, separated into vellum and paper copies (including in the latter count some 250 manuscripts with mixed quires having outer, or outer plus inner bifolia of vellum, sandwiching paper bifolia), gathered in five-year intervals⁴⁷:

Tab. 2: Vellum and Paper Dated Manuscripts 1301–1500

Years	Vellum	Paper	Vellum + Paper
1301–1305	10	1	11
1306–1310	10	1	11
1311–1315	20	0	20
1316–1320	16	1	17
1321–1325	15	0	15
1326–1330	26	1	27
1331–1335	13	1	14
1336–1340	24	2	26
1341–1345	22	3	25
1346–1350	15	5	20
1351–1355	14	3	17
1356–1360	16	5	21
1361–1365	5	8	13
1366–1370	18	5	23
1371–1375	22	6	28
1376–1380	22	18	40
1381–1385	24	25	49
1386–1390	29	34	63
1391–1395	25	36	61
1396–1400	37	39	76
1401–1405	33	32	65
1406–1410	42	53	95
1411–1415	38	59	97
1416–1420	39	68	107
1421–1425	50	81	131
1426–1430	46	105	151
1431–1435	64	119	183
1436–1440	77	148	225
1441–1445	71	187	258

⁴⁷ The figures are compiled from the Dated Manuscripts volumes for Great Britain, Belgium, the Netherlands, and Italy plus the Vatican; France is only partially included. Germany (6 volumes of individual collections) is not included, nor is Austria. The omission of Austria, with a very high proportion of paper manuscripts, may result in an underestimate of the overall ratio of paper to vellum.

Years	Vellum	Paper	Vellum + Paper
1446–1450	122	223	345
1451–1455	158	258	416
1456–1460	139	312	451
1461–1465	147	377	524
1466–1470	127	383	510
1471–1475	106	297	403
1476–1480	62	177	239
1481–1485	69	123	192
1486–1490	52	106	158
1491–1495	52	72	124
1496–1500	34	86	120
Totals:	1911	3460	5371

Here we see the “advance of the hand-written paper book”, which becomes very evident from the last quarter of the fourteenth century and after. The same data, consolidated to quarter centuries, can be expressed as percentages of vellum versus paper manuscripts:

1376–1400: vellum, 47% – paper, 53%

1401–1425: vellum, 41% – paper, 59%

1426–1450: vellum, 33% – paper, 67%

1451–1475: vellum, 29% – paper, 71%

1476–1500: vellum, 32% – paper, 68%

The use of vellum does not diminish dramatically, and we would not expect it to, as liturgical books, Books of Hours, and luxurious books, such as for presentations, continued to be written primarily on vellum. And yet manuscripts on paper predominate from the first quarter of the fifteenth century onward.

With regard to the first table, it is hard not to notice that the “retreat” of hand-written books, beginning even in the narrow interval of the years 1473–1475 compared to 1470–1472, is in close correlation with the expansion in these same years of the printed-book trade. The motive force of the retreat becomes clear. In the second half of the fifteenth century, as in centuries before, books were written when someone, or some corporate body, wanted a particular text. A necessary condition was finding an existing exemplar of that text to copy from. Typographic books simplified the process, for an exemplar, good or bad, became the source of several hundred copies, which then could be widely distributed. The printed-book trade expanded rapidly in the 1470s compared to the 1460s, and this could only have been in response to a growing demand for the convenience, and typically lower price, of printed books. My own rough estimate is that to the end of the 1460s about 200 printed editions had been created, while in the years 1470–1475 about 2,500 more were produced: the expansion is dramatic. Not only did the total of printed copies increase greatly, but

so did the number of texts that were put into print. Thus, as the 1470s progressed an increasingly higher proportion of the texts – especially Latin texts – most widely read and used became available in hundreds and even thousands of copies each. The need and demand for hand-written copies of those texts correspondingly declined, and the diminishing counts of dated manuscripts reflect this. And yet, naturally, the need in many particular cases for hand-written copies of books did not disappear. Even in the eighteenth and nineteenth centuries, impoverished students knew that the most economical way short of theft to take possession of texts they needed would be to copy from printed editions.

We may conclude with a final visit to Tritheim's *De laude scriptorum*, 1494, and his concerns about the longevity of paper, the preservation of texts, and the proper labor of monks. Posterity has judged, and there is no doubt that the paper whose quality he doubted has very great staying power. It does not seem likely that the program he envisioned, of copying out printed books on vellum, ever came to fruition within the Bursfeld Observance, although in various individual instances, especially when luxury copies of manuscripts were commissioned, printed books certainly were copied on vellum. In the aggregate, after five hundred years, the contribution of such vellum copies to the preservation of texts has been minuscule, even microscopic. Tritheim was correct that in his own age printing was mostly – but not entirely – *res papirea*; and hand-written books were also more often than not *res papirea*.

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