

# **STOP-PRESS VARIANTS IN THE GUTENBERG BIBLE**

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## ABSTRACT

The Gutenberg Bible (the B42) is considered to be the first substantial book printed in Europe with movable metal type. Extensive studies of earlier scholars succeeded in putting forward various hypotheses concerning the complex printing process employed for the B42. There still remains, however, at least one important goal for researchers: a precise collation. To answer the pressing need to collate the B42 and to make good use of the possibilities offered by digital technology, the present study proposed new methods of collation and performed a precise collation using digital images to reveal stop-press variants in the B42.

The results of the collation conclusively show that stop-press correction was already being executed in the first printing shop. Although there are many simple typographical mistakes left uncorrected – even on the same page showing variants – the number of variants is large enough to suppose they are not accidentally but intentionally made, although not very systematically. The results strongly support the hypotheses that the stop-press variants were made at an early stage in the print run of each page, and only once; and that the vellum pages were printed after the corresponding paper pages. In addition, a number of accidental changes in spacing were found. They suggest the types of the each page of the B42 tend to have been rather loosely set. These variants are irregularly distributed among the text units. These pieces of evidence suggest that stop-press correction was made by each press-crew rather than a corrector in charge of all the printed sheets. As for a chronological change, the stop-press variants more frequently appear in the latter half of the printing. Furthermore, there are nine examples of careful hand correction presumably executed in the B42 printing shop, which also appear on the pages produced in the latter half of the stage of printing. It is assumed that the procedure of stop-press correction was gradually established as the printing progressed, except in unit A.

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## Introduction

The Gutenberg Bible, or the Mazarin Bible, or the 42-line Bible (hereafter “the B42”), to a student of the history of printing is considered to be the first substantial book printed in Europe with movable metal type.<sup>1</sup> Although this Latin Vulgate has no printer’s name, date of publication or place of printing, it is now commonly accepted that Johann Gutenberg of Mainz produced this Bible around 1455. The B42 and the subsequent early books printed in the infancy of the new art of printing before 1501 (i.e. by 31 December 1500) are now specially called *incunabula*.<sup>2</sup> The first printer left no statement about his invention or the technical details of the new art. There are only a few pieces of evidence to reconstruct the invention: a handful of manuscript documents relating to Gutenberg, a few surviving examples of the early printing, and the B42 itself. Since new external sources of information can hardly be hoped for, answers to the questions still remaining about it can be gained only by the examination of every detail of the B42 itself.

Anniversaries of the invention of printing and Gutenberg’s birth have been regularly celebrated over the centuries, and these anniversaries have encouraged the study of the history of printing and have produced invaluable results; although the exact year of Gutenberg’s birth is unknown, it is traditionally and conveniently commemorated at the turn of each century. A few examples will illustrate this. Konrad Haebler in *The Study of Incunabula* called the year 1640 “the birth-year of the study of incunabula,”<sup>3</sup> when the two-hundredth anniversary of the invention of printing was celebrated, since this anniversary led to the publication of the first list of incunabula in 1643, and this served as the first step to the subsequent incunabula catalogs such as Ludwig Hain’s *Repertorium bibliographicum* (1826-1838).<sup>4</sup> The phrase “prima typographicae incunabula” appeared in a publication for the first time in the year 1640.<sup>5</sup> More recently, in 1900, several festschrifts were issued. Among them, the monograph on the B42 by Paul Schwenke was published, which remains one of

the most comprehensive and detailed studies. Just before 1940, Douglas McMurtie successfully stimulated both public and academic interest in Gutenberg and his invention. The latest anniversary was held in the year 2000 with good exhibitions and stimulating conferences.

The invention of printing changed the major medium by which knowledge is transmitted from manuscripts to printed books. In 1620, Francis Bacon counted the invention of the art of printing among the three most influential medieval inventions alongside gunpowder and the mariner's compass (*Novum Organum* 129),<sup>6</sup> and in 1997 *Life* ranked first the printing of the B42 among the most important events in the millennium.<sup>7</sup> The impact was such that it is often referred to as “the printing revolution.” Printing made it possible to produce books on a massive scale, to disseminate books and encourage literacy not only among the clergy but also among the laity, to achieve standardization, to develop vernacular languages, and to spur on the translation of the Bible and the Reformation.<sup>8</sup> There is good reason to use the word “Gutenberg” as a symbol of print culture, as in the title of Marshall McLuhan's *The Gutenberg Galaxy*<sup>9</sup> and an increasing number of “From Gutenberg to *something*” (for example, the Internet, Cyberspace, and the Global Information Infrastructure), or a symbol of typography as in *Goodbye, Gutenberg*,<sup>10</sup> to mention a few.

No account of the impact of printing would be complete without a clear understanding of its birth and the art itself. An enormous amount of literature on it has been and doubtless will be written in various languages, but as Paul Needham stated “[m]ost of what has been written about Gutenberg and the invention of printing is not scholarship — most has no value at all —.”<sup>11</sup> It is necessary to sort out the valuable first-hand studies from the second-hand stories, especially because there still remain numbers of unanswered questions. Even one of the fundamental elements of the invention, the method of type casting by the metal punch and matrix system which had been ascribed to Gutenberg, is now questioned; two scholars raised the issue at the symposium “Incunabula and Their Readers” organized by the British Library, the Society for Renaissance Studies, the Institute of Classical Studies and the Institute of English Studies as a part of the Gutenberg 2000 events.<sup>12</sup>

Fortunately, there are still a good many serious studies, as will be reviewed in chapter I, and especially those by German scholars around the beginning of the twentieth century were of great importance and formed the foundation for later research. It was this early research that proved the B42 to be the first printed book, and their extensive investigations of traditional methodology – research on the paper, type, pinhole patterns, binding, hand illumination, and so forth – led to various hypotheses about the complex printing process employed for the B42. More recent researches with the aid of both traditional and modern methodologies have shown that the hypotheses of the German pioneers were essentially correct but naturally need some amendments.

The B42 study is the epitome of various approaches to the study of the history of printing. They range from traditional tools to large-scale modern technologies. In the physical examination of books and manuscripts, methods of scientific investigation in conjunction with the traditional approach have proved to be useful since the nineteenth century,<sup>13</sup> and the importance as the first incunabula always gives the B42 the advantage of being a candidate for the application of such new and expensive technologies of nondestructive inspection as particle-induced X-ray emission (PIXE) analysis and Raman Spectroscopy. These have brought fruitful results to the B42 study, and in return have proved the value of applying these new technologies to bibliography.

A review of these existing studies, however, makes it clear that there still remains at least one important area of investigation – that is, a systematic and precise collation. Without collation, stop-press variants which resulted from corrections while the actual print run was in progress are always difficult to detect because they are often so subtle. In spite of the general recognition of the need for collation,<sup>14</sup> difficulty of access and the limitations of the method of collating the early printed book have prevented researchers from making a precise and comprehensive comparison of the extant copies of the B42. First, the 48 extant copies are scattered among major libraries in 14 countries and it is not easy to get access to each copy, let alone compare them in detail. Second, to collate such a bulky book as B42 — 1,282 text pages of 84 column lines each — with the naked eye or an optical collating machine is at once labor-intensive and

time-consuming; errors will inevitably occur.

The recent development of digital technology suggests a solution to these problems. An increasing number of institutions around the world started digitizing their materials such as illuminated manuscripts and hand-finished early printed books at the turn of the century. Digital technology offers new possibilities for the study of the history of printing, and it is particularly valuable in the study of the B42. In 1997, a copy in the possession of Keio University (the former Doheny copy) was first digitized by the HUMI (Humanities Media Interface) Project of Keio University (hereafter HUMI). Since then, thirteen other copies have been digitized, eight of them by HUMI. These digital images allow a researcher to examine the B42 without the slightest risk of damaging the originals and thus free from conservation restrictions, and regardless of the opening hours and the location of the holding institutions. What is more, digital image processing offers the possibility of conducting precise, high-speed collation on a computer.

To answer the pressing need to make a collation of the B42 and to make good use of the possibilities offered by digital technology, a new method of collation is proposed in chapter III. Collation on computer by superimposing digital images has several essential advantages over earlier methods, and at present it is the only efficient way for a single researcher to collate the early printed books. This makes it possible for the first time to attempt a thorough and accurate collation of the B42.

It is necessary to define the term “collation” here, because it has three meanings: (1) to put the sections of a book in order; (2) to compare one copy of a printed and bound book with another copy of the same impression; (3) to describe in terms of standardized formula the physical make-up of a book.<sup>15</sup> In the present study, “collation” is used in meaning (2), the comparison of one copy with another of the same impression, page by page, letter by letter, whether with or without an aid of any kind.

In modern books, copies belonging to the same edition are identical by definition.<sup>16</sup> In the hand press period, however, it is normal to find variants within the same setting of a work. If any defect was found in an earlier printed

sheet while the actual print run was still in progress, the press-crew could and did briefly stop printing to correct it (without reference to copy).<sup>17</sup> These last-minute corrections are thus called “stop-press” corrections. Copies of the book were made up at random with earlier uncorrected sheets as well as with corrected sheets. According to Philip Gaskell, this practice was established around 1600 in English printing houses.<sup>18</sup> The stop-press correction leads to variants among the copies of the same impression of a work, both accidentals and substantives. For example, W.W. Greg showed that twelve known copies of the first quarto of *King Lear* (London: 1608), which consists of 42 leaves, have 167 alterations, nearly 150 of them substantive, and only two pairs of copies were made up in the exactly same way.<sup>19</sup> The stop-press variants are important clues in reconstructing the practices in the printing house.

The previous B42 studies have revealed that there are two different settings in certain portions of the B42 (all of parts of ten different quires in the total of sixty-five quires) as a result of the increase of the number of the copies to be printed. However, variants within the same setting which result from stop-press corrections, have not been comprehensively studied. Collation is the only approach to answer the question of whether the first printing house in Europe already employed this practice on a regular basis.

This study makes a systematic and precise collation of the B42 by computer and using all the digital images available to reveal stop-press variants, and the results will be shown in chapter IV and analyzed in chapter V. My previous collation of the two paper copies of Volume 1 of the B42 proved that corrections during the print-run were already being made in the first printing shop.<sup>20</sup> These changes should rather be called stop-press variants than stop-press corrections, since not all of them are in fact corrections. The results also led to the hypotheses that most of the stop-press variants were simple typographical improvements rather than textual corrections, that each vellum page was printed after the corresponding paper page, and that a page seems to have been corrected only once in an early stage of the printing of each page.

The result of the first collation also suggested that some of these stop-press variants should be analyzed in the light of the manuscript tradition, by

which the B42 is presumed to have been influenced. It is common to say that incunabula in general and the B42 in particular “imitated” the look of a manuscript.<sup>21</sup> A series of ongoing studies on the transition from manuscripts to print by Margaret M. Smith, however, shows that to characterize the design relationship between manuscripts and incunabula as imitation is too simplistic and unproductive, and better characterized as “emulation”.<sup>22</sup> Moreover, this notion that the B42 imitated manuscripts has not been substantiated by a detailed comparison with manuscripts of the time. Therefore, in chapter II, a detailed comparison will be made between the physical characteristics of the B42 and those of some manuscript Latin Vulgate Bibles of the fifteenth century which came from German-speaking countries and represent the kinds of manuscripts that might have served as a model for the B42.

The purpose of this study is to make a systematic and precise collation of the B42 with computer and digital images to reveal stop-press variants in the hope of shedding some new light on the printing process. In the present study, both volumes of all the copies whose digital images are available were minutely collated. Any stop-press variants found are analyzed in terms of typographical, economic, and textual reasons, and the influence of the manuscript tradition in conjunction with the preceding studies. The results make it possible to have an overview of the printing and correcting process of the B42 during the whole period of printing, to reveal how often and what kind of corrections were made, and several tendencies they demonstrate, to verify and modify my hypotheses, and to consider why and how these stop-press variants were carried out.

#### Notes to Introduction

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1 GW 4201.

2 For the concise definition, see John Carter and Nicolas Barker ed., *ABC for Book Collectors*, 8th ed. (New Castle, DE: Oak Knoll Press; London: British Library, 2004), 128. For the limits of the incunabula period, see Konrad Haebler, *The Study of Incunabula*, trans. Lucy Eugenia Osborne (1933; reprint: New York: Kraus Reprint Corporation, 1967), 1-6

3 Haebler, *Study of Incunabula*, 7.

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4 Ludwig Friedrich Theodor Hain, *Repertorium bibliographicum, in quo libri omnes ab arte typographica inventa usque ad annum MD. typis expressi, ordine alphabetico vel simpliciter enumerantur vel adcuratius recensentur*, 2 vols. (Stuttgartiae et Lutetiae Parisiorum, Tubingæ [printed], 1826-38).

5 Bernardus A. Mallinckrodt, *De ortu ac progressu artis typographicae dissertatio historica, in qua ... pro Moguntinis contra Harlemenses concluditur* (Coloniae Agrippinae, 1640).

6 Francis Bacon, *The Oxford Francis Bacon*, vol. 11, *The instauratio magna part II: Novum Organum and Associated Texts*, ed. Graham Rees and Maria Wakely (Oxford: Clarendon Press, 2004).

7 "The 100 events," *Life* 20, no. 10a (1997). Academic Search Premier, <http://www.ebsco.com/home/> (accession number 9709300468; accessed 2005-12-08).

8 Elizabeth L. Eisenstein, *The Printing Revolution in Early Modern Europe* (Cambridge: Cambridge University Press, 1983). See also Lucien Febvre and Henri-Jean Martin, *The Coming of the Book: The Impact of Printing, 1450-1800*, trans. David Gerard (London and New York: Verso, 1997). Originally published as *L'apparition du livre* (Paris: A. Michel, 1958).

9 Marshall McLuhan, *The Gutenberg Galaxy: The Making of Typographic Man* ([Toronto]: University of Toronto Press, 1962).

10 Anthony Smith, *Goodbye, Gutenberg: The Newspaper Revolution of the 1980s* (New York: Oxford University Press, 1980).

11 Paul Needham, preface to *Johann Gutenberg and His Bible* by Janet Ing (New York: Typophiles, 1988), 12.

12 For the detail, see chapter II.C.3.a.

13 For a historical overview of the scientific methods and tools, either for the purpose of interpretation or preservation, see Jeffrey Abt, "Objectifying the Book: The Impact of Science on Books and Manuscripts," *Library Trends* 36, no.1 (1987): 23-38. For the trend in the late 1980s, see Paul S. Koda, "Scientific Equipment for the Examination of Rare Books, Manuscripts, and Documents," *Library Trends* 36, no.1 (1987): 39-51.

14 For example, Paul Needham wrote in 1985 that "then B42 has not yet found its Hinman, and may be a long way from doing so." Paul Needham, "The paper supply of the Gutenberg Bible," *The Papers of the Bibliographical Society of America* 79, no. 3 (1985): 339.

15 Geoffrey Ashall Glaister, *Encyclopedia of the Book*, 2nd ed. (New Castle, DE: Oak Knoll Press, 1996), 101.

16 For example, *The OED* defines edition as "[a]n impression, or issue in print, of a book, pamphlet, etc.; the whole number of copies printed from the same set of types and issued at the same time." *The Oxford English Dictionary*, 2nd ed. (Oxford: Clarendon Press; New York: Oxford University Press, 1989), 5: 72.

17 Philip Gaskell, *A New Introduction to Bibliography* (1972; reprint, Oxford: Oxford University Press, 1974), 336-360. See also Percy Simpson, *Proof-reading in the Sixteenth, Seventeenth and Eighteenth Centuries* (London: Oxford University Press, 1935).

18 Gaskell, *New Introduction*, 353.

19 Two pairs (BM1 and BOLD2, and TCC and HARV) were identical. W.W. Greg, *The Variants in the First Quarto of 'King Lear'* (London: Bibliographical Society, 1940), 10.

20 Mari Tomioka, "Fine Detail: Collating the Gutenberg Bible with Digital

Images” (master’s thesis, Keio University, 2001). A much revised version was published as: Mari Agata, “Stop-press Variants in the Gutenberg Bible: The First Report of The Collation,” *The Papers of the Bibliographical Society of America* 97, no. 2 (2003): 139-65.

21 For example, “It is often asserted that the Gutenberg Bible was made to resemble a medieval manuscript.” Christopher De Hamel, *The Book: A History of the Bible* (London: Phaidon, 2001), 205.

22 For example, Margaret M. Smith, “The Design Relationship between the Manuscript and the Incunable,” in *A Millennium of the Book: Production, Design and Illustration in Manuscript and Print, 900-1900*, ed. Robin Myers and Michael Harris, 23-43 (Winchester: St Paul’s Bibliographies, 1994); Smith, “From Manuscript to Print: Early Design Changes,” *Archiv für Geschichte des Buchwesens* 59 (2005): 1-10.



## I. Review

### A. Early studies

#### 1. Identification of the inventor

##### a. Gutenberg and his rivals

This chapter gives a review of the B42 studies and clarifies what is known and what needs further study.<sup>1</sup> A review shows that there have been several phases, which can be described in roughly chronological order. Before the late nineteenth century, most studies focused on the identification of the inventor of printing and his first work. Around the end of the nineteenth century, the B42 in itself became the center of focus, and started to be minutely examined by the traditional method of bibliography. In the late twentieth century, several new techniques of scientific research were applied to the B42 to reveal further details. Around the turn of the twenty-first century, another piece of equipment, the computer, proved to be useful for bibliographical study.

Although Johann Gutenberg of Mainz is now commonly accepted as the inventor of printing, over the centuries several other people had been regarded in this way. He is and will remain more or less a shadowy figure. This thesis focuses on what helps to elucidate details of the printing process of the B42; the question of who invented the art of printing or what else he printed other than the B42 is beyond this thesis, but a brief summary will serve as a useful background.

There is no extant record of Gutenberg's date of birth, boyhood, education, or family life; he left no autograph,<sup>2</sup> no contemporary portrait,<sup>3</sup> or his name in his own work. Our knowledge of Gutenberg consists of (1) passing reference to him as the inventor of printing in printed books by his contemporaries and successors, and (2) a series of documents in manuscript relating to Gutenberg, which did not come to light until the early eighteenth century.

The earliest tribute to Gutenberg was made in the colophon of the *Institutiones* published on 24 May 1468 (a few months after Gutenberg's death) by Peter Schöffer, the former assistant to Gutenberg: "He, Who is greater than

Solomon, pleased to recognize men honored in art, brought forth these two men skilled in cutting letters – the two Johns of Mainz, distinguished first printers of books” (in English translation).<sup>4</sup> “Two Johns of Mainz” is presumed to mean Johann Gutenberg and Johann Fust, Gutenberg’s investor and Schöffer’s father in law. Schöffer did not mention the first names, and it did not lessen the confusion among the following various statements.

The first reference to his full name in the form of “Ioannes Bonemontanus” [Latinized Johann Gutenberg] appeared in a book of 1471 *Orthographia* printed in Paris, in which a printed letter of Guillaume Fichet, a professor at the Sorbonne, is quoted: <sup>5</sup> “For they say that not far from the city of Mainz, there was a certain Johann who bore the surname Gutenberg, who first of all men thought out the art of printing by which books are made, not written with a reed as former books were made, nor by pen as we make them, but by metal letters — and that indeed with speed, elegance and beauty” (in English translation; see figure I.1).<sup>6</sup>

At the same time, there was growing confusion concerning the inventor even in the fifteenth century. Consequently there appeared many other theories about the man, the place, and the date of the birth of printing. For example, three different printed chronicles — printed at Rome in 1474, at Venice in 1483, and at Cologne in 1499 — refer to Gutenberg as a native of the city of Strasbourg. The last one, the Cologne Chronicle of 1499 (GW 6688) printed by Johann Koelhoff the Younger even stated that “...although the art was first invented in Mainz...the first stages of the development are found in Holland in the Donatuses, which were printed before this time” (in English translation).<sup>7</sup> The view of Gutenberg as a native of Strasbourg was repeated in much later literature such as in Hornschu’s 1608 *Orthotypographia*, the first technical manual specially written for correctors of the printing shop.<sup>8</sup>

Some authors believed that “Gensfleisch,” his family name, and “Gutenberg,” the name by which he was commonly called, were the names of two different persons. An example of this misunderstanding can be seen in *The Origin of Printing* of 1776: “There were two John GENSFLEICHES of Mentz, the senior called GENSFLEICH; the other distinguished by the name of GUTENBERG.”<sup>9</sup>

Furthermore, the names of Johann Gutenberg and his financial partner, Johann Fust, whose name was often spelled Faust, were often mixed up.

Other early printers such as Lourens Janszoon Coster of Haarlem, Johann Fust of Mainz, Nicolaus Jenson of Venice, Johann Mentelin of Strasbourg, Pamfilio Castaldi of Feltre, Prokop Waldfogel of Avignon, and Jean Brito of Bruges, have been identified as the inventor of printing in various local chronicles and colophons, some of which made the claim intentionally and others which were naive misunderstandings. Every story is basically the same: printing was invented somewhere other than Mainz, but the true inventor was robbed of his secrets by one of his men [Gutenberg], who went to Mainz and started printing.<sup>10</sup> Coster of Haarlem, Holland, was the strongest rival to Gutenberg from the sixteenth to the nineteenth centuries. An outline of the international controversy on this matter is given in E. C. Bigmore and C. H. Wyman's *A Bibliography of Printing*.<sup>11</sup> In 1588, Adriaan de Jonghe Hadrianus Junius of Haarlem first claimed that Coster had invented printing, but one of his workmen named Johann, possibly surnamed Faustus – another example of confusing Gutenberg with Fust –, had stolen the secret and gone to Germany and set up a printing office in Mainz. The Coster legend had been supported not only by Dutch scholars but also by French, English, Belgian, and even by German scholars. Although most of their studies were based on conjecture and legend and not on bibliographical evidence, there are several good reasons why Coster was thus treated. First, there is a cluster of undated but clearly early printings in Holland; since they look less elegant, they were assumed to be earlier. Second, there are primitive woodblock prints, which had been thought to precede the wooden or metal type. In addition, nationalistic sentiments and political maneuvers in the then young Dutch Republic are said to have played a part in these claims.<sup>12</sup>

A Dutch scholar, Antonius Van der Linde, published a monograph in 1870 which disputed the Coster legend.<sup>13</sup> His study almost settled the matter. Later analyses in the twentieth century of type, ownership inscriptions, and paper evidence showed that the early Dutch printed materials, which were once called “Costeriana,” were actually printed after the mid-1460s.<sup>14</sup> Although a few dissenting opinions still remain, Gutenberg is to this day honored as the true

father of printing.

#### b. Gutenberg documents

In the early eighteenth century, various “Gutenberg documents” began to appear, throwing new light on his life and invention. Although these manuscripts are fragmentary and ambiguous and fail to provide conclusive evidence that he was the inventor of printing, they contain some vague references to printing and printing materials. Up to now, about thirty documents relating to Gutenberg have been discovered and many scholars have compiled, translated, and interpreted them. The most comprehensive one was published in 1900 by Karl Schorbach as a part of the quincentenary celebrations.<sup>15</sup> With these documents, however, there still remains a gap in his life, which is unlikely to be filled. In the early nineteenth century, in ill-conceived attempts to fill this gap several documents were forged and published as genuine; for example, Franz Josef Bodmann, a professor and archivist at Mainz, forged at least two documents.<sup>16</sup> There was also a naive report on a discovery of a piece of Gutenberg’s “first printing press.”<sup>17</sup> Without ruling out these fabrications and misleading information, a valid chronological record of Gutenberg’s career cannot be made on the basis of the genuine archival sources.

Around 1740 Jakob Wencker, the chief archivist of Strasbourg, found the official records of a lawsuit against Gutenberg in Strasbourg dated 12 December 1439, according to Johann Daniel Shöpflin. The so-called “Strasbourg document” records that Jerge and Claus Dritzehen had demanded either a refund of the money contributed by their deceased brother Andreas Dritzehen, or admission into partnership in his place. In this lawsuit, several witnesses used the term “four pieces,” which might refer to a four-piece type casting mold.<sup>18</sup> There was a direct allusion to printing in the testimony of one witness, Hans Dünne: he stated that he had earned nearly a hundred gulden from Gutenberg “solely for that which belonged to printing [alleine das zu dem trucken gehöret],”<sup>19</sup> although no clear explanation was given. The entire original document, which consisted of six entries, was lost to fires in 1793 and 1870. Fortunately, the full text was recorded in Shöpflin’s book of 1760 and some parts had been reproduced by lithography in

Léon de Laborde's book of 1840.<sup>20</sup> Some scholars, notably Jan Hendrick Hessels, have seriously questioned its authenticity, but it is now accepted as genuine.<sup>21</sup>

In 1734, the full text of the most important document, whose whereabouts had been unknown, was published. This document is written on vellum in German and called the Helmasperger Instrument, because it was signed on 6 November 1455 by Ulrich Helmasperger, a clerk of the Bishopric of Bamberg and public notary at the Court of the Archbishop of Mainz.<sup>22</sup> Johann David Köhler, a historian at Göttingen University, published the full text and the results of his examination of it in a book entitled *Ehren-Rettung Guttenbergs*; this provided some new insights into Gutenberg research and contributed to the vindication of Gutenberg as the inventor of printing.<sup>23</sup> In the same year, Köhler donated the original document to Göttingen University Library.<sup>24</sup> After the donation, the location of the original document was left unknown until the Göttingen librarian Karl Dziatzko rediscovered it in 1886. Dziatzko published a facsimile and detailed discussion in 1889.<sup>25</sup>

This manuscript relates to part of the proceedings in the suit of Johann Fust against Johann Gutenberg: Fust made a claim against Gutenberg for the repayment of two loans with interest, which amounted to 2,026 gulden. This is the only contemporary account of the business relationship between Gutenberg and Fust. It suggested Gutenberg's printing activities: terms such as tools, parchment, paper, and ink are listed, and reference is made to "the work of the books" [Wercke der Bucher]. Furthermore, two representatives of Gutenberg — Heinrich Keffer and Bechtolff von Hanau — are identified as early printers of Würzburg and Basle, respectively.

Since this document does not refer to the outcome of the dispute, there is no way of knowing definitely whether Gutenberg was bankrupted or whether he was able to keep some of his type-casting tools. Traditionally Fust is said to have taken away the printing instruments from Gutenberg, set up his own printing shop with Schöffer, and later allowed Schöffer to marry his daughter. Nowadays, Gutenberg is assumed to have kept one printing shop. Gutenberg did not pay the annual interest to St. Thomas Chapter of Strasbourg from 1458, but it does not automatically mean he had been bankrupted.<sup>26</sup> There is a growing agreement that

Gutenberg continued printing in the late 1450s and possibly in the 1460s.

### c. Outline of Gutenberg's life

This section and table I.1 gives a brief outline of Gutenberg's life reconstructed from the handful of legal documents mentioned above.<sup>27</sup> His full name was Johann Gensfleisch zur Laden zum Gutenberg, and he was born the second son of Mainz patrician parents, Friele and Else Gensfleisch, in Mainz sometime between 1394 and 1406 (1400 is usually chosen for the sake of convenience). He moved to Strasbourg by 1434, and is presumed to have started to experiment in the art of printing there. He was in Mainz again in October 1448, and started producing small prints. He borrowed 1,600 gulden in two installments from the Mainz money-broker named Johann Fust probably in 1450 and 1452, to be spent for the B42. In 1455, when the printing of the B42 came near completion, Fust brought a suit against him, and the court decreed that Gutenberg should repay with interest any money lent by Fust and not spent on their joint project.

After the partnership broke up, Gutenberg still printed several works such as the *Catholicon*. His financial situation was unknown, but he received a kind of pension from the Archbishop of Mainz in January 1465. In early 1468, he died (the date is usually given as 3 February). He was certainly dead by 26 February, because on that date the Mainz jurist Dr. Konrad Humery affirmed in the now lost manuscript that he owned various instruments of printing that had been left after Gutenberg's death.

## 2. Identification of the B42

Once Gutenberg became accepted as the first printer, scholars naturally started to search for the first book he printed with movable metal type. The earliest account of the first printed book is found in the Cologne Chronicles of 1499; it is stated that the first printed book was a Latin Bible with unusually large type. Two candidates existed: the 36-line Bible (GW 4202; hereafter "the B36") and the B42. The former was first described in 1760 by Johann Georg Shelhorn, and the B42 was first identified in 1763. In that year, Guillaume-François de Bure found a copy of the B42 in the Cardinal Mazarin Library and described it as the first

printed Bible (although he attributed it not to Gutenberg but to Johann Fust).<sup>28</sup> After that, copies of the B42 started to be discovered one after another in different institutions.

The precedence of the B42 to the B36 was urged by the discovery of notes by a contemporary rubricator, Heinrich Cremer of Mainz, in one of the copies now in the National Library of France in Paris. Cremer stated he had finished rubricating and binding the second volume on 15 August 1456, and the first volume on 24 August 1456 (see figure I.2). Furthermore, it was recognized that the types used in the B36 are identical to those books printed in 1461 and 1462, which were printed by Albrecht Pfister of Bamberg. These facts convinced many scholars of the precedence of the B42. The B42 studies in the following hundred years were centered on dating the two Bibles and resolving the question of whether one or both Bibles and other undated fragmentary works had been printed by Gutenberg.

There were also a few studies on the B42's paper. Some authors such as De Bure noted briefly that the primary stock was watermarked with a Bull's Head. Later in 1845, Samuel Leigh Sotheby identified four different papers stocks: watermarked with a Bull's Head, Grape Cluster with a tendril, Grape Cluster with a stem, and a Running Ox.<sup>29</sup> But such studies were not scientific enough during the eighteenth and nineteenth centuries.

## B. Foundations

### 1. Early twentieth century

#### a. Dziatzko's pioneering research

The B42 studies developed to a great extent at the turn of the twentieth century, especially thanks to several German scholars, Karl Dziatzko, Gottfried Zedler, and most notably Paul Schwenke. Their results were of great importance and formed the foundation for later research.

Dziatzko, who may be called the first scholarly investigator of the B42 as well as a great figure in library science, published a monograph in 1890.<sup>30</sup> The primary purpose of his monograph was to prove definitively the precedence of the B42 to the B36. After reviewing previous discussions, he compared the two

Bibles, using a vellum copy of the B42 in the Göttingen University Library and a paper copy of the B36 in the Jena University Library. In addition, paper copies of the B42 in the State Library of Frankfurt am Main and in the University of Leipzig<sup>31</sup> were partially examined.

The analysis of textual variants led Dziatzko to conclude that the B36 was a reprint version of the B42, except for a few early pages that must have been set from another manuscript. He also pointed out an error made by the B36's compositor, which confirmed his conclusion.<sup>32</sup> This error occurs on I 342v in the B36, which corresponds to I. 247v of the B42. As shown in figure I.3, in the B42, the last two words of chapter one of 4 Ezra, "vocat[us] [est]", are placed at the end of the first line of chapter two (starting with "Ego eduxi") to save space; this practice is quite normal in the B42. In the copy shown as figure I.3 left, this is indicated by a red underline. In the B36, however, these two words are included in the first line of chapter two and read "Ego vocat[us] est. eduxi"; it seems that a compositor of the B36 failed to understand this practice and wrongly read straight across the line. This misreading could only have occurred if the B42 was used as the printer's copy of the B36, and not vice versa. Dziatzko thought that the same printer produced both Bibles. He also suggested that Gutenberg had had two printing shops: one for the B42 and another for calendars, grammars, and other small works. The B36 is now commonly considered to have been printed by Albrecht Pfister not after 1461.<sup>33</sup>

He also made analyses of the structure of the quires, the watermarks and their distribution, the shape and handling of the types, irregularities of layout and treatment of the text, and textual variants. Based on the paper evidence, he clearly showed that the number of lines per page was 40 at the first stage of the production, then 41, and finally 42. Recurrences in the pattern of paper use indicated that there were four main composition sections and that they had been composed and printed concurrently: printing started from quires I 1 (Volume 1, quire 1); then I 14; then II 1; and finally II 17.

#### b. Schwenke's investigation of the type

Once the precedence of the B42 was proved, the B42 studies naturally became



more intensive. Ten years later, in 1900, Paul Schwenke, who was then in charge of printed books at the Berlin Royal Library, published a treatise that remains the most comprehensive and detailed study of the B42.<sup>34</sup> He started the monograph with a census of known copies (*Untersuchungen*, 2-8), and described how the first and second settings were distributed in them (*Untersuchungen*, 16-17). His study was mainly based on examination of a vellum copy in the Berlin Royal Library and a paper copy in the Pelplin Seminary Library which he discovered. His study ranges from an analysis of type and paper, to a description of the illuminations, rubrics, and bindings.<sup>35</sup>

The most remarkable aspect of this monograph is Schwenke's minute and painstaking investigation of the type (*Untersuchungen*, 18-45). He developed Dziatzko's study and much more precisely analyzed the relations of the individual letters to one another, both for different letters placed side by side, and for the same letter as it appears in different parts of the Bible. Because the designer of the B42 font aimed to equalize the gaps between perpendicular strokes as much as possible, secondary forms, or abutting types, of almost every letter of the alphabet were made (see figure I.4). The left or hind side of an abutting type was flat without the diamond shaped spur, so it could be placed close to the preceding type according to a certain rule. For example, the letter that follows the long s (ſ) is the main form, except when it is also a tall one, such as the letter *b*. In such a case, the secondary form is used, or long s (ſ) is slightly filed to fit against the next letter in its main form. After *c*, *e*, *f*, *g*, *r*, *t*, *x*, and *y*, the secondary form is used (*Untersuchungen*, 18-22). With only a few exceptions, this rule was strictly followed.

Another rule concerns the position of a punctuation mark at the end of a line. Although the line endings of the B42 were not always smoothly justified, a guiding principle is clear. A full stop (.), a double hyphen (//) which indicates a word separation over lines, and a final *s* (shaped like the figure 5 and standing above the line) protrude outside the column when they come at the end of a line. A colon (:) does not protrude. For the raised point (•), there was at first no rule; however, in the later parts it is always flush. Figure I.5 clearly demonstrates this rule of justification. The fact that these rules for setting the B42 were neglected in

the B36 convinced Schwenke that the Dziatzko was wrong and the two Bibles could not have been printed by the same printer.<sup>36</sup>

Furthermore, Schwenke described various changes to the type, which had been made during the course of production. There were two different settings in some parts of the B42, because it was decided to print more. The fact that the column height on a 42-line page (second setting) is almost the same as that of a 40-line page (the first setting) was already known; it had convinced a few scholars that a thin filling of paper or vellum had been inserted between lines on 40-line pages. Schwenke's analysis of the type, however, definitely proved that it was due to a change in the size of the type. Measurement of the type showed that on 41-line pages type height was reduced by about 0.3mm compared with type on 40-line pages. According to Schwenke's measurements, line height is 7.26mm on 40-line pages, 6.96mm on 41-line pages, and 6.91mm on 42-line pages (*Untersuchungen*, 30). He concluded that this reduction had been effected by filing individual types. Consequently, several capitals, abbreviation marks, and ascending lower-case letters were damaged in the process; the upper edge of these letters was somewhat flattened and rounded, and the marks were thinner. Soon after this filing, there was a second reduction; the types on 42-line pages were further reduced in height by about 0.05mm — that is, by 0.35mm in all. This reduction was very slight, but its effect is clearly seen in the semicircular stroke over the letter *i*, which is often broken. At a slightly later stage, smaller letters were cast from fresh punches and gradually replaced the old filed letters.

Schwenke did not attribute this change of line numbers to a need to economize on paper, because only 32 leaves (5%) were spared. He did not make any firm conclusion, but suggested that it might be attributed to a reduction in the amount of work performed by the pressmen, or more likely, to the imperfection of Gutenberg's casting instruments in the very early stages. He stated that letters on 40-line pages were less perfectly aligned because the size of the body was not consistent.

Correlating these small typographical clues with the paper evidence, Schwenke developed a much more detailed picture of the probable sequence of concurrent production (*Untersuchungen*, 51-60; for its revised version, see figure

I.6). His chart shows that the change in line number occurred when only a small part of the first volume had been printed. The first ten pages in unit A and the first seven pages in unit B: 40-line on f. I 1r to 5r and I 129r to 132r, and 41-line on f. I 5v. On 40-line pages incipit and explicit were printed in red.<sup>37</sup> Then immediately after the printing of the fourth unit — unit D — had been started, the number of copies to be printed was increased. The second setting, which was required because the type of the first setting had been already distributed, was presumably printed after all the work was done. As a result, they used the late-coming Running Ox paper instead of the Bull's Head paper.

The pure runs of the primary paper stock, the Bull's Head paper, appeared in six separate places; thus, Schwenke inferred that two further subdivisions of composition units — unit Aa and Ba (as Schwenke named them) — had been made, before the Grape papers came into use. Therefore, six units were concurrently printed on six presses. When the production was near to completion, several final quires of the second volume were further subdivided into a number of small units and printed concurrently. These divisions of work were assumed to be the result of an effort to keep the presses and pressmen occupied. He also inferred from this chart that the printing of the B42 had begun in early 1454 or at the close of 1453, then finished some time between June to August of 1455. Later, Schwenke considerably revised this chart in the 1923 *Ergänzungsband*, published posthumously based on the paper stock of twenty-seven copies (see figure I.6).<sup>38</sup> After this, little basic progress was made regarding the chronology of the B42 printing until the 1980s.

Another German scholar, Gottfried Zedler at the Wiesbaden State Library, who often disagreed with Schwenke, published a mass of studies of the types and their usage in the B42, the B36, and other early Mainz printings.<sup>39</sup> Zedler continued the analysis of type distribution begun by Schwenke. He stated that the usage of a round “r,” which was shaped like the figure 2, was different in each unit, and suggested the possibility of identifying a compositor. A number of his investigations are not free from deficiencies, and a follow-up has not been carried out, although some of them still deserve attention. He proposed the idea that Gutenberg's first intention had been to print a missal, but gave up the project in

favor of the B42. This hypothesis was based in part on the account in the 1499 Cologne Chronicle stating that the first printed Bible was set in a large type suitable for missals. However, few scholars have adopted this thesis because there has been no trace of such a project.

These early studies revealed many details of the B42, but there still remained a number of questions to be answered. For example, a consensus on the edition size was not achieved: Zedler's calculation ranged from 70 copies (54 on paper and 16 on vellum) to 270 copies (240 on paper and 30 on vellum); Schwenke proposed between 180 to 200 (150-170 on paper and 30-35 on vellum).

## 2. Mid-twentieth century

### a. Synthesis of results

Scholars in the following decades seem to have concentrated on making a census of extant copies;<sup>40</sup> compiling, translating, and interpreting the known Gutenberg documents;<sup>41</sup> making a critical review of the early studies; and studying aspects of individual copies, rather than doing a physical examination of the B42 itself. Carl Wehmer made a substantial contribution to the Gutenberg study by the painstaking investigation of the so-called *Astronomical Calendar*, which were sometimes believed to have been printed in 1447, and showed that it was printed no earlier than 1457.<sup>42</sup>

The standard and reliable book on Gutenberg was first published in this period by Aloys Ruppel, who was the director of the Gutenberg Museum in Mainz founded in 1900.<sup>43</sup> The state of B42 studies in those days was described in the 1972 *Gegenwärtige Stand* and in 1979 *Kommentarband*.<sup>44</sup>

The text of the B42 was studied also in this period. Dziatzko and Schwenke already briefly referred to it, and the latter pointed out that the inclusion of 4 Ezra was extraordinary because the B42 text was close to the so-called "Paris Bible" established in the thirteenth century. Neither of them, however, made a comparison with contemporary manuscript Bibles. A German biblical scholar, Heinrich Schneider, compared parts of the B42 with manuscripts that were probably produced near Mainz. He showed that some manuscripts were very close to the B42, although none of them could be an exemplar of the B42. He

attributed peculiar readings in the B42 to the incorrect expansion of abbreviations from a heavily abbreviated small-format Bible.<sup>45</sup>

#### b. Discoveries of accidents

New findings sometimes result from detailed cataloguing. For example, there were two reports of the detection of replacement setting pages found in a vellum copy in the Berlin Royal Library (see chapter I.D. below). The sale also offers an opportunity for a book to be examined carefully, especially in the case of such a valuable book as the B42. Two discoveries were made in 1978, when three copies of the B42 were to be sold. The first was found in the then General Theological Seminary copy (now in the Württemberg State Library in Stuttgart). The text of f. II 279v was accidentally printed twice; once in the proper place (II 279v), and once on f. II 272v, hence the text of f. II 272v is missing from this copy.<sup>46</sup> This means printing was done by a page, and not by the forme.

A second printing accident in the then Pforzheimer copy (now in the Humanities Research Center of the University of Texas) was discovered by William B. Todd.<sup>47</sup> On f. I 40r, lines 3 and 4 of both columns were transposed.<sup>48</sup> He attributed this accident to an unusual composition method, what Needham called the a-to-b setting. Todd's hypothesis was that the compositors of the B42 set the text across the page, rather than down the column. The sequence was line 1 of the left column, (quads), line 1 of the right column, line 2 of the left column, (quads), and so on. His hypothesis was, however, completely contradicted by Needham.<sup>49</sup> According to the Todd hypothesis, the B42 must have been a faithful reproduction of its manuscript exemplar — faithful in the number of lines per page, the structure, the placement of blank leaves, and the text. This seemed very unlikely, considering the changes and irregularities found in the B42.

#### c. Studies on the illumination

Studies on the binding and illumination of the B42 progressed in this period. A 1961 census by Don Cleveland Norman is of unique importance, in spite of its many errors in description; it describes the binding of almost all copies, with photographs, if sadly in black and white, serving as a useful guide for the study of

the binding of the B42, which had been begun by Schwenke.<sup>50</sup>

In 1966, Hellmut Lehmann-Haupt suggested the possibility that Gutenberg had been associated with the earliest known copper engraver, the so-called Master of the Playing Cards, and had a major share in the early development of copper engraving.<sup>51</sup> He proposed that Gutenberg had planned but failed to use elaborate engravings in the B42 to make it a rival to a luxury manuscript such as the Giant Bible of Mainz now at the Library of Congress (Washington, D.C., the Library of Congress, MS. 8).

Eberhard König showed that an art historian's approach could add some information to the B42 study.<sup>52</sup> In 1979, König published a detailed study on the binding and illumination of all known copies as an art historian; he not only listed and identified the local style, but also showed the system of creating spaces for the illuminator and rubricator.<sup>53</sup> His examination led him to conclude that the B42 had not been intended as a rival to a luxury manuscript; it was intended, rather, as a relatively inexpensive Bible. It led him to think Lehmann-Haupt's hypothesis seemed doubtful. König and several other art historians, however, proposed the possibility that the engraved cards had been made in the early 1440s, and they served as a kind of model book in printed form.<sup>54</sup> Thus, Gutenberg might possibly have had something to do with the Master of the Playing Cards when he was in Strasbourg in the early 1440s.

König showed the localization of illumination also gives a clue to trace the early book trade. For example, he concluded a vellum leaf preserved at the British Library (London, BL, IC.56a) and the vellum copy at the Lambeth Palace Library (London, the Lambeth Palace, MS. 15) consisting only the New Testament, were both illuminated in England, but the former had not belonged to the latter.<sup>55</sup> This means at least two vellum copies (or rather un-illuminated and unbound sheets) of the B42 had been shipped to England, while written sources are silent about the importation of the earliest printed books into England. König further suggested that "there was someone who master-minded the acquisition and illumination of both Bibles" [p. 43], and the same was true of other groups of the B42. He also pointed out the possible relationship between the B42 and the church reform movements in fifteenth century Germany led by Nicholas

Cusanus.<sup>56</sup> Albert Kapr suggested that Cusanus and Gutenberg might have known each other.<sup>57</sup>

#### d. Discovery of an eyewitness

In 1982, a new witness to the B42 printing was reported. It is the only new document discovered after Schorbach's compilation of "Die unkundlichen Nachrichten" in 1900. A German historian, Erich Meuthen, republished a critical edition of a letter based on four manuscripts, which was dated 12 March 1455 and written by Aeneas Silvius Piccolomini (Pope Pius II, 1458-1464), during his stay in Wiener Neustadt.<sup>58</sup> Piccolomini wrote to the Spanish Cardinal of Sant'Angelo, Juan de Carvajal (c. 1399-1469) that he had seen several quires of the Bible in Frankfurt am Main in October 1454 and at Wiener Neustadt in early 1455, that copies had found ready buyers even before completion, and that he had been told the number of copies was 158 or 180.

Some scholars suggested that the smaller number 158 represents the original edition size, while the larger number 180 represents the final size after the edition increase.<sup>59</sup> However, Paul Needham has rejected this assumption on the basis of paper evidence.<sup>60</sup> In 1996, Martin Davies pointed out that Piccolomini's letter in question was included in the edition printed by Arnold the Hoernen in Cologne around 1480, and its content closely agree with these four manuscripts.<sup>61</sup>

This letter does not provide definite answers to questions of the date of completion or the edition size of the B42, but it gives a good reason to believe that the edition size was around 160 to 180, which is roughly consistent with Schwenke's calculation, and that the printing was finished some time in 1455.

### C. Recent studies with new technologies

#### 1. Paper supply

In the 1980s, several pieces of important information were added to our knowledge of the printing process of the B42 through new methods which had not been available to pioneering researchers. The paper stock has been of crucial importance in the study of early printed books, and watermarks have been

reproduced and indexed since the eighteenth century — for example, by Briquet's *Filigranes*.<sup>62</sup> In the mid-twentieth century, Allan Stevenson recognized the need for identifying and dating of paper and developed a method of improved photographic techniques which has greater precision than the previous methods of watermark tracing by hand.<sup>63</sup> For watermark reproduction, beta-radiography and Dylux printing are standard. The beta-radiograph is thus described: "The paper that is to be examined is simply sandwiched between a sheet of Perspex impregnated with carbon-14 and an unexposed photographic film, and left in the dark for a few hours... the film therefore takes a perfect image of the mould pattern and watermark in the paper but does not register the printing on the surface."<sup>64</sup>

In 1985, the first beta-radiographs of all the B42 paper stocks were published by Paul Needham (see figure I.7).<sup>65</sup> His study developed Schwenke's discussion of the primary paper stock, the Bull's Head paper, with greater precision. Schwenke had already showed that the Bull's Head paper was used in the first stage, and that a little over halfway through the printing, the two Grape papers were adopted; still later, the Running Ox paper came into use. The Bull's Head paper in the B42 was later classified into four groups; this was one result of the study of the 1460 Mainz *Catholicon* published in 1980 by Eva Ziesche and Dierk Schnitger.<sup>66</sup>

Needham's analysis of changes in the Bull's Head paper (BH I, BH IIa, b, c) enabled him to detect four chief stages in paper use, which essentially corresponded with Schwenke's hypothesis. Each stage was divisible into two or more sub-stages. (1) In the earliest stage, only BH IIa or BH I was used. (2) In the second stage, all the BH papers were used; BH IIc was mostly used with varying admixtures of BH I, BH IIa, and BH IIb. (3) The introduction of the Grape papers (Gr I, Gr II) marked the third stage. The BH papers were still used with the Grape papers, but it was almost pure BH IIc, with only a little of BH I, BH IIa, and BH IIc. (4) In the fourth stage of production, the Ox paper came into use and the BH papers and the Gr I paper were used up halfway; finally, only the Ox paper was used.

There were two distinct patterns in the use of the BH papers in the first



two stages, prior to the introduction of the Grape papers. This led Needham to think that the BH papers had been brought into the printing shop in two separate purchases, not in a single purchase. The second purchase was the larger, and the reams were in a perceptibly later stage. He pointed out that the paper from the second purchase appeared shortly after the edition size had been increased.

## 2. Ink analysis

In the 1980s, a new technique of chemical investigation was applied to the B42 study: cyclotron analysis. A team consisted of Richard Schwab, Thomas A. Cahill and other scholars studied the printing ink of the B42 and other incunabula at the Crocker Nuclear Laboratory of the University of California, Davis. They used proton milliprobe analysis: billions of sub-atomic particles known as protons are accelerated to a high velocity in a cyclotron, then passed harmlessly through the test object, setting off x-ray emissions as they collide with the atoms of the paper and ink.<sup>67</sup> They analyzed twenty-eight separate leaves of B42 in 1980; all the verso and some recto pages of the first volume of the then Doheny copy (now at Keio University) in 1982; most pages of the last part of the second volume, using the Lilly Library copy; and the rest of the second volume, using the Harvard copy in 1985.<sup>68</sup>

This research revealed a surprisingly high metallic content of the ink in the B42: especially copper and lead. The composition is unique to the B42, and unlike the ink of the few other early printers. Only the ink of the B36 is somewhat similar. It is worth noting that no lead and virtually no copper was detected in the red printing ink; instead, mercury was detected.

They found that the copper to lead (Cu/Pb) ratio varied significantly from one page to another, one part to the next. On the assumption that the different inks, which they called batches or mixtures, could be identified through chemical analysis, they selected the Cu/Pb ratio as an index and charted the results using Schwenke's chronological chart (see figure I.8). From the pattern of ink usage they found that the sixth leaf in quire 14 (f. 134) of the present Keio copy is the replacement setting, or what Schwenke called the Ersatz leaf; and that the first and the tenth leaves in the same quire (leaves 129 and 138) are the second setting,

while the remaining leaves in this quire are the first setting.<sup>69</sup>

The results of the ink analysis essentially agreed with Schwenke's hypothesis of concurrent composition and printing, but it seemed to require several amendments. For example, the Davis team concluded that the printing of quire I 25 (f. 239r-249v) began before quire I 24 (f. 229r-238v) was completely finished, although Schwenke had assumed that the printing proceeded smoothly from quires I 24 to 25. Schwenke had good reason to assume so, because 2 Ezra ends on the last leaf of quire I 24 (f. 238v) and 3 Ezra begins on the first leaf of quire I 25 (f. 239r), and there was no anomaly in the paper use. This hypothesis of the Davis team was reinforced by Needham with evidence of copy fitting in quire 24. The last seven pages in quire I 24 were heavily abbreviated so that 2 Ezra ends properly within quire 24, which means quire I 25 had been already set.<sup>70</sup>

While the analyses of the Davis team succeeded in supplying several pieces of useful information, it is still necessary to be cautious about accepting their results, as Philip M. Teigen points out.<sup>71</sup> There is potential ambiguity in the Cu/Pb ratios. For instance, many pages which were assigned to different ink batches by the Davis team have the same or similar ratios. Besides, the Cu/Pb ratio alone might not be sufficient to distinguish different mixtures of ink. Furthermore, they examined only a single copy for each page; the examination of a single copy may not be enough to rely on, and a double-check will not be made because of lack of access to equipments and original copies. However, in conjunction with other bibliographical methods, their results may be helpful to our understanding of the B42 printing process.

### 3. Computer use: 21st century

#### a. Computer analysis

In the late 1990s, a developing technology began to be applied to the field of bibliography: that is, digital technology. Again the B42 enjoyed the merit of being the first incunabulum. In 1997, the copy of the B42 held at Keio University, Japan, was the first in the world to be digitized by HUMI. Since then, thirteen other copies out of the total of forty-eight extant copies have been digitized, as listed in table I.2. Eight of them were digitized by HUMI; pursuing the field of "digital

bibliography,” HUMI gives special priority to digitizing the extant copies. Some of these images are accessible freely through the Internet, some are on a commercial CD-ROM, and some can be used on campus alone. These digital images allow a researcher to examine the B42 with fewer restrictions. Being reproduced in full color, they will bring special benefits to the study of illumination. Furthermore, they open the path to study aided by a computer.

The strongest responses have been without a doubt given to the interim report of the computer analysis jointly performed by Needham (the Scheide library at Princeton University) and Blaise Agüera y Arcas (a physician at Princeton University).<sup>72</sup> This combination of a bibliographer and a scientist will become quite common in this kind of research. The Princeton team digitized by a scanning camera the 1456 *Bulla Thurcorum*, a 20-page Papal Bull of Calixtus III printed in the DK type (Donatus-Kalender type), which is accepted as Gutenberg’s first fount. They chose a single representative letter, the lower-case *i*, for analysis; all *i* characters were identified and classified by a special software using a “pairwise clustering” algorithm coded by Agüera y Arcas. As a result, several hundred “i” clusters were discovered; a far greater number than expected (see figure I.9).<sup>73</sup> They did not claim that number was definitive or even accurate, and admitted that there is still room for improvement in cluster assignment. Nevertheless, they claimed, the surprisingly high variability means that these “i” types could not have been made from a common punch, and thus does not support the standard hypothesis of type casting by steel punches, copper matrices, and a hand mould. They suggested that “[e]ither many matrices were used in parallel, or equivalently, the matrix was temporary and needed to be re-formed between castings, – or both”[11]. The results also disagreed with the standard idea of static whole-letter punches, and a matrix consisting of multiple overlapping strokes was suggested.

Their paper was first read at the conference held in December 2000, almost the end of the Gutenberg 2000 events, followed by several other conferences, and finally published in 2003. Their presentation attracted not only scholastic attention but also public interest. It was reported in the academic journals as well as major newspapers such as the *Times*,<sup>74</sup> the *New York Times*,<sup>75</sup>

and there was even a feature program on TV by the British Broadcasting Corporation.<sup>76</sup>

In spite of the considerable attention it immediately attracted, there were only a few passing references published until very recently.<sup>77</sup> Counter-arguments have just started to be published by practitioners such as Stephen Pratt<sup>78</sup> and Paul W. Nash.<sup>79</sup> This question has not yet been fully discussed, and there will be further arguments to come.

An even more drastic hypothesis was reported in the fall of 2004, although few researchers seem to have seriously responded. An Italian researcher, Bruno Fabbiani, based on the observations that some letters were slightly superimposed (see figure I.10), claimed that B42 was not printed with movable type, but “with a brilliant metallographic invention”, similar to a typewriter.<sup>80</sup> However, this seems highly unlikely to be the case, and the results of the previous and the present collation of the author can strongly disprove his claim. It is true that there are some letters which seem to be overlapped; several experts in printing suggested, however, that they are caused by a slight difference in height of types.<sup>81</sup>

#### b. Raman Spectroscopy

A joint project of the British Library and the Department of Chemistry, University College London, made an analysis of the pigments used for the illuminations using a laser technique called Raman spectroscopy to determine the palette of pigments.<sup>82</sup> Three pages from the paper copy at the British Library once owned by King George III (C.d.9.3, 4) were examined on site, and compared with the result of analysis of debris material collected from the gutters of several illuminated pages of six other copies (in total fifteen pages). The BL paper copy was found to have ten pigments which had been mentioned in medieval recipes for pigments: azurite, cinnabar/vermilion, carbon-based black, lead tin yellow (type 1), malachite, an organo-copper complex (verdigris), calcium carbonate (chalk), gypsum, gold leaf, and basic lead carbonate (lead white). The result showed that other six copies had the similar palettes in spite of the differences in style and splendor among copies, except for the Göttingen vellum copy in which

sixteen pigments were identified.

There is a certain limitation in their *ex situ* method, since not all the pigments had fallen into the gutter, or not everything in the gutter came from illuminations; however, it proved to be effective in examining such rare books as the B42 with limited access.

## D. Collation of the B42

### 1. Barriers and limitations

A review so far makes it clear that there still remains at least one important area of investigation – that is, a systematic and precise collation. Existing studies have revealed that there are two different settings in certain portions of B42 (all or parts of ten different quires) as a result of the increase of the number of the copies to be printed. However, variants within the same setting, which result from corrections made while sheets were going through the press, have not been comprehensively studied. Although there have been a few reports of collations of the same setting of B42, they have been neither accurate enough nor sufficient. A systematic collation of a large number of pages of B42 has never before been conducted.

There were several early reports of a comparison of the extant copies, both among the two settings and among the same settings. In 1896, Russel Martineau compared the different readings among twelve copies and noticed the presence of the two settings in certain portions of the B42.<sup>83</sup> Schwenke listed one word per page, which was useful to identify the setting which a copy belongs to, and showed the distribution of these two settings among copies in 1900.<sup>84</sup> However, their purposes were not to find a stop-press variant within the same setting. In a similar way, several replacement setting pages were identified in various copies. There are more replacement settings yet to be found, as the results of the ink analysis and the present collation suggest.

In the early 1950s, “a page-by-page comparison” of the Library of Congress’s vellum copy with the facsimile of the Berlin copy was made in the process of cataloguing; and it revealed that f. I. 192r in the Berlin copy was a replacement setting, unique to this copy.<sup>85</sup> In 1965, another replacement setting

in the same copy was reported, which was discovered through a full descriptive cataloguing of the Harvard copy.<sup>86</sup> The Harvard copy was compared with the facsimile of the Berlin copy, and the replacement setting on I. f. 265r in the latter – again unique – was detected. All the other copies, including the Library of Congress's copy, were reported to be the same as the Harvard copy; this means that the replacement setting on f. I. 265r of the Berlin copy escaped notice on the former occasion. This example of the detection and overlooking demonstrates how difficult and erroneous it is to work with the naked eye.

With luck and naked but trained eyes, stop-press variants were found as valuable by-products from time to time. In 1986, Needham discovered one stop-press variant in the first volume and two in the second volume of the copy held at the Cambridge University Library, thanks to manually added words in the margins, when he examined the paper stock and casting off marks.<sup>87</sup> Gerhardt Powitz made a detailed study of the manuscript notes and corrections in the Frankfurt copy, and during it, he noticed one stop-press variant in the second volume, where that copy was beautifully corrected by hand.<sup>88</sup> Several indications of accidents in printing, such as transposed lines in the Texas copy and duplicated pages in the Stuttgart copy, were also found.<sup>89</sup>

These findings are invaluable in elucidating the printing process of the B42. However, any differences so far discovered have served as signs of accidents in printing rather than those of stop-press variants per se. There are two reasons why a comprehensive collation of B42 has not been attempted before: barriers to access and limitations of method. First, 48 extant copies are scattered among major libraries in 14 countries and it is not easy to have access to each copy, let alone compare them in detail. Second, to collate such a bulky book as B42 – almost 1,300 pages of 84 column lines each – with the naked eye or an optical collating machine is at once labor-intensive and time-consuming; errors will inevitably occur. These difficulties have so far prevented researchers from making a precise and comprehensive comparison of the extant copies of B42.

## 2. The first collation

The first precise collation of the B42 was done by the author in 2000 and

published in 2003 with the benefits of the digitization of the B42.<sup>90</sup> The digital images produced and lent by HUMI allowed the author to develop a new method of collation and contributed to the B42 study. The method will be described with technical details in chapter III.

As a result of collation between the first volume of the two paper copies, twenty stop-press variants were detected on thirteen pages of the same setting, of which only one had previously been recorded. It proved the usefulness of applying digital technology to the B42 studies, especially as regards the detection of these subtle stop-press variants, and that it is worth doing to make a comprehensive collation. The variants detected were temporarily classified into eight categories. Most of the variants were simple typographical improvements, such as the correction of an inverted type, while other obvious mistakes were left untouched. Nor do they always serve for better reading. A spot-check of these thirteen pages in eighteen other copies showed that there are only two states of variant; even the three pages that have more than one variant show only two states. In addition, in every case there were fewer copies of the first state than those of the second, corrected, state. Therefore, it is assumed that the stop-press variants were made at an early stage in the print run of each sheet, and only once. Leaves of these two states seem to be irregularly distributed among the copy examined, but all the eight vellum copies always represent the second, corrected, state. The results of the previous collation thus provide strong evidence that each vellum page was printed after the corresponding paper page.

Some of these variants cannot be explained by the known rules and compositional practices of the B42 revealed by the previous studies. Therefore, they should be analyzed in conjunction with the manuscript tradition, by which the B42 is presumed to have been influenced.

## E. Chapter Conclusion

The B42 studies have thus ranged from the traditional methodology — research on the paper, type, binding, illumination, and textual sources — to the modern methodology such as chemical analysis and computer analysis. These studies proved that the B42 is the first substantial book printed with movable metal type

in Europe around 1455 by Johann Gutenberg of Mainz, and led to various conclusions and hypotheses about the complex printing process employed for the B42.

A brief summary of what we know about the printing process of the B42 from various pieces of evidence can be described as below. There are four major text units, that is, the work was divided among compositors, which enabled concurrent composition. They are labelled A, B, C, and D, and subdivided into twelve subdivisions as A1, A2, etc. to represent later additional divisions of copy, as shown in table I.3. The work started on the unit A1 (I: 1r), soon followed by the unit B1 (I: 129r). After sixteen pages had been printed, the line number per page was changed from 40 into 41, and then finally 42. After the change in the number of lines to a page, the printing of the unit C1 (II: 1r) started. Just after the unit D1 began (II: 162r), at the point where I: 32r and 158v and II: 16r and 162r of each unit were printed, a decision was made to increase the edition size; from this point, all the leaves belong to the common setting only, except for several replacement setting pages.<sup>91</sup> It required resetting pages that had been already printed and distributed. All the second setting pages are printed in 42-lines. Apart from small spelling and typographical differences, the text is not much revised from the first setting, except for the first units (I: quires 1 and 14, and II: quire 1) which show an effort to correct and improve the text of the first setting. Much later, the printing of A2 and B3 started at the same time, and the rest of the units were printed one by one at the available press. Only on the 40-line pages, rubrics are printed in red.

The number of pinholes is 10 in the first two printed quires (I: 1 and 14) of the first setting: one pinhole for each column edge in the upper, lower, and outer margins. In the rest of the first setting and all the second setting copies, the number is 6: one pinhole for each edge of the printed area in the upper, lower, and outer margins. The pinholes come through always from a recto to a verso, are small, and are not symmetrical (when a page is turned upside down, patterns do not match).<sup>92</sup>

Even after these studies, however, there still remain many open questions. For example, the problem which color, red or black, was printed first is not fully



investigated yet. Schwenke stated that the red ink was printed after the black ink, because the types in the red printed line were filed and sometimes the red ink was printed over the black;<sup>93</sup> on the contrary, Goff concluded the red printing was evidently earlier than the black, because the latter was printed over the red ink.<sup>94</sup> Although it is generally said that the portions of the text printed in red were invariably printed first, as far as later incunabula are concerned, a precise examination is necessary to solve the two-color printing in B42.<sup>95</sup> Other questions are still waiting to be answered; how many presses and workers exactly were engaged in the printing;<sup>96</sup> how many copies were printed;<sup>97</sup> how many times each individual type was reused, and how often types were recast – and now, the method of making types is under question —; what was the primary motivation of printing the B42; and what other changes sheets received during the printing of each sheet, to mention a few. Needham published some of the different readings of the first and the second settings,<sup>98</sup> but there is no comprehensive study on the differences between the first and the second settings yet, let alone the differences in the same setting.

Since new external sources are scarcely to be hoped for, the answers, if any, will be gained only by examination of every detail of the B42. The result of the first collation of the B42 proved that it is worth doing and able to lead further findings. Making a systematic and precise collation of the extant copies of the B42 and analyzing the results in conjunction with the preceding studies as well as the manuscript tradition will make it possible to reveal further details of the printing process of the B42.

## Notes to Chapter I

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1 This chapter is an updated, corrected, and revised version of part of my MA thesis submitted to Keio University. Tomioka, “Fine Detail.”

2 On the back of the Helmasperger Instrument (see note 22 below), a short title is written by a different hand from the notary or the scribe: “Instrumentum eyns gesaczten dages daz Fust sine recheschafft gethane vund mit dem eyde beweret hat.” A. Wyss assumed that Gutenberg might have written it. See Karl Schorbach, “Die unkundlichen Nachrichten über Johann Gutenberg,” in *Festschrift zum fünfhundertjährigen Geburtstag von Johann Gutenberg*, ed. Otto Hartwig (1900; reprint, Wiesbaden: Otto

Harrassowitz, 1968), 261.

3 The earliest known portrait is a woodcut in Heinrich Pantaleon's *Prosopographiae Heroum atque Illustrum Virorum totius Germaniae ... a condito mundo (ad ... annum ... millesimum quingentesimum sexagesimum sextum usque)*, etc, 3 vols (Basileae, 1565-1566). See George D. Painter, "II. The True Portrait of Johann Gutenberg," and "III. The Untrue Portraits of Johann Gutenberg," in *Studies in Fifteenth-century Printing* (London: Pindar Press, 1984), 32-38, 39-45. Previously published in *Gutenberg Jahrbuch* (1965):73-79; (1967): 54-60, respectively.

4 Justinianus, *Institutiones (with Glossa ordinaria of Accursius)*, f. 103v (GW 7580). For a list of early tributes to Gutenberg in printed books, see Margaret Bingham Stillwell, "Appendix A: 2: The Gutenberg tradition as stated in the printed books of the fifteenth century 1468-1499," in *The Beginning of the World of Books 1450 to 1470: A chronological survey of the texts chosen for printing during the first twenty years of the printing art* (New York: The Bibliographical Society of America, 1972), 89-96.

5 Gasparinus Barzizius, *Orthographia* [Paris: Ulrich Gering, Martin Crantz and Michael Friburger, soon after 1 January, 1470/71], 1v-2v. (GW3691).

6 Stilwell, *Beginning*, 92

7 Stilwell, *Beginning*, 94.

8 Hieronymus Hornschuch, *Hornschuch's Orthotypographia ... Edited and translated by Philip Gaskell and Patricia Bradford* (Cambridge: Cambridge University Library, 1972), 4.

9 W. Bowyer and J. Nichols, ed., *The Origin of Printing: In Two Essays*, 2nd ed. (London, 1776), 76.

10 A list of the discussion on this matter, see Aloys Ruppel, *Johannes Gutenberg: Sein Leben und Sein Werk*, 2nd ed. (Berlin: Gebr. Mann, 1947), 223-225.

11 F. C. Bigmore and C. W. H. Wyman, comp., *A Bibliography of Printing: With Notes and Illustrations*, 3rd ed. (1880-1886; reprint, New Castle, DE: Oak Knoll Press; London: British Library, 2001), Original Volume I, 401-406.

12 Lotte Hellinga, *Caxton in Focus: The Beginning of Printing in England* (London: the British Library, 1982), 21.

13 Antonius Van der Linde, *The Haarlem Legend of the Invention of Printing by Lourens Janszoon Coster*, trans. J. H. Hessels (London: Blades, 1871). According to Hessel, Van der Linde had a negative attitude to his native country.

14 Wytze Hellinga and Lotte Hellinga, *The Fifteenth-Century Printing Types of the Low Countries*, [trans. D.A.S. Reid] (Amsterdam: M. Hertzberger, 1966), 1: 4, 6, 7, 10.

15 Karl Schorbach, "Die unkundlichen Nachrichten über Johann Gutenberg," in *Festschrift zum fünfshundertjährigen Geburtstage von Johann Gutenberg*, ed. Otto Hartwig (1900; reprint, Wiesbaden: Otto Harrassowitz, 1968), 163-319. Plates of black-and-white reproductions of the documents are attached to this volume. For English translations, see Douglas C. McMurtrie, *The Gutenberg Documents: With translations of the texts into English, based with authority on the compilation by Dr. Karl Schorbach* (New York: Oxford University Press, 1941) and Stillwell, "Appendix A: 1: The Gutenberg Documents: Notes on the manuscript records 1420-1468," in *Beginnings*, 73-87. The location of transcripts and originals are listed in Ruppel, *Johannes Gutenberg*, 18-20.

16 McMurtrie, "Appendix B: Two spurious Documents Relating to Gutenberg," in *Gutenberg Documents*, 225-228. See also Hessels' series of articles. J. H. Hessels, "The So-called Gutenberg Documents," *The Library, new series* 10 (1909): 152-167, 253-287, 386-417.

17 Francis Fry, "Gutenberg's First Printing Press," *Notes and Queries*, 2nd series 11 (1861), 23-24.

18 Otto W. Fuhrmann, *Gunteberg and the Strasbourg Documents of 1439: An*

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*Interpretation* (New York: Press of the Woolly Whale, 1940).

19 McMurtrie, *Gutenberg Documents*, 101.

20 Johann Daniel Schöpflin, *Vindiciae Typographicae* (Strasbourg: Bauer, 1760), 5-30.

21 For his discussion on this matter, see J. H. Hessels, *Gutenberg: Was he the inventor of printing?* (London: Quaritch, 1882), 23-24, 185-187. and Hessels, "So-called Gutenberg Documents," 253-287.

22 A full color facsimile and translations into German and English are available on CD-ROM. Elmar Mittler and Stephan Füssel, ed., *Gutenberg Digital: Göttingen Gutenberg-Bibel, Musterbuch und Helmaspergersches Notariatsinstrument* (München: K.G.Saur Verlag, 2000), 2 CD.

23 Johann David Köhler, *Hochverdiente und aus bewaehrten Urkunden wohlbeglaubte Ehren-Rettung Johann Guttenbergs* (Leipzig, 1741).

24 For the ownership of this manuscript from the fifteenth century to its printing by Köhler, see Hessels, *Gutenberg*, 69-102.

25 Karl Dziatzko, *Beiträge zur Gutenbergfrage*, Sammlung Bibliothekswissenschaftlicher Arbeiten, vol. 2 (1889; reprint, Wiesbaden: Otto Harrassowitz, 1969).

26 George Painter argued that Gutenberg came off rather well because this instrument shows the dissolution of the partnership without ill will. See George D. Painter, "Gutengerg and the B36 Group: A re-consideration," in *Essays in Honour of Victor Scholderer* (Mainz: Karl Pressler, 1970), 292-322.

27 The best English account is given in Janet Ing, *Johann Gutenberg and His Bible: A Historical Study* (New York: The Typophiles, 1988), 26-32.

28 Guillaume-François de Bure, *Bibliographie Instructive: ou traite de la connoissance des livres rares et singuliers* (Paris, 1763), 32-40.

29 Samuel Leigh Sotheby, *Typography of the Fifteenth-century* (London, 1845).

30 Karl Dziatzko, *Gutenbergs Früheste Druckerpraxis*, Sammlung Bibliothekswissenschaftlicher Arbeiten, vol. 4 (1890; reprint, Wiesbaden: Otto Harrassowitz, 1969).

31 This copy, which had been missing since World War II, is now in the Lomonosov University Library, Moscow.

32 Dziatzko, *Gutenbergs Früheste Druckerpraxis*, 93.

33 A distinguished scholar still raised the question as late as 1970. Painter, "B36 Group."

34 Paul Schwenke, *Untersuchungen zur Geschichte des ersten Buchdrucks. (Festschrift zur Gutenbergfeier herausgegeben von der Koeniglichen Bibliothek zu Berlin. Am 24. Juni 1900.)* (Berlin: Behrend, 1900) (hereafter cited in text as *Untersuchungen*). For its English summary, see Robert Proctor, "The 'Gutenberg' Bible," *The Library, new series* 5 (1901): 60-66. See also Karl Dziatzko, "Satz und Druck der 42-zeiligen Bibel," *Beiträge zur Theorie und Praxis des Buch- und Bibliothekswesens* 7 [Sammlung Bibliothekswissenschaftlicher Arbeiten, vol. 15] (1902; reprint, Wiesbaden: Otto Harrassowitz, 1968), 90-108.

35 See also Paul Schwenke, "Die Buchbinder mit dem Lautenspieler und dem Knoten," in *Wiegendrucke und Handschriften: Festgabe Konrad Haebler zum 60. Geburtstag* (Leipzig, 1919), 122-44.

36 For his further discussion on this matter, see Schwenke, *Untersuchungen*, 75-89.

37 Schwenke stated that the red ink was printed after the black ink, because the types in the red printed line were filed and sometimes the red ink was printed over the black. Schwenke, *Untersuchungen*, 50-51.

38 Paul Schwenke, *Johannes Gutenbergs zweiundvierzigzeilige Bibel: Ergänzungsband zur Faksimile-Ausgabe* (Leipzig: Insel-Verlag, 1923).

39 Gottfried Zedler, *Gutenberg-Forschungen* (Leipzig: Otto Harrassowitz, 1901).; *Die älteste Gutenbergtype*, Veröffentlichungen der Gutenberg-Gesellschaft 1 (Mainz: Gutenberg-Gesellschaft, 1902).; Zedler, "Typographische und zetiliche Stellung", pt. 1 [Das Mainzer Fragment vom Weltgericht] in Veröffentlichungen... 3 (Mainz: Gutenberg-Gesellschaft, 1904), 10-21.; Zedler, *Die 42 Zeilige Bible Type im Schöfferschen Missale Moguntinum von 1493*, Veröffentlichungen... 5,6,7 (Mainz: Gutenberg-Gesellschaft, 1908).; *Die Neuere Gutenbergforschung und die Lösung der Costerfrage* (Frankfurt am Main: Joseph Bauer, 1923).; Zedler, *Die Sogenannte Gutenbergbibel*, Veröffentlichungen... 10 (Mainz: Gutenberg-Gesellschaft, 1929).; idem., *Gutenbergs Älteste Type mit ihr hergestellten Drucke*, Veröffentlichungen... 13 (Mainz: Gutenberg-Gesellschaft, 1934).

40 There are a good many of B42 censuses; according to Roland Folter, they are in all thirty-four in the year 1999. Roland Folter, "The Gutenberg Bible in the Antiquarian Book Trade," in *Incunabula*, ed. Martin Davis (London: The British Library, 1999), 271-351.

Among them, the following four censuses are often referred. (1) Seymour De Ricci, *Catalogue raisonné des premières impressions de Mayence (1455- 1467)* (Mainz: Gutenberg-Gesellschaft, 1911), 25-36. (2) Paul Schwenke, *Ergänzungsband*, 7-22. (3) Ilona Hubay, "Die bekannten Exemplare der zweiundvierzigzeiligen Bibel und ihre Besitzer," in *Johannes Gutenbergs zweiundvierzigzeilige Bibel: Kommentarband*. (München: Idion Verlag, 1979), 127-155. (4) Paul Needham, [Census of copies, in] "The Paper Supply of the Gutenberg Bible," *The Papers of the Bibliographical Society of America* 79, no.3 (1985): 354-373.

41 McMurtrie, *Gutenberg Documents*.

42 Carl Wehmer, *Mainzer Probedrucke: in der Type des sogenannten Astronomischen Kalenders für 1448: ein Beitrag zur Gutenbergforschung* (München: Leibniz Verlag, 1948).

43 Ruppel, *Johannes Gutenberg*. For an English general reading, see Victor Scholderer, *Johann Gutenberg: Inventor of Printing*, 2nd ed. (London: The Trustees of the British Museum, 1970). More recently, very handy and informative work was published and it is the best English account: Ing, *Johann Gutenberg. An English biography of Gutenberg* was published a few years ago. See Albert Kapr, *Johann Gutenberg: The Man and his Invention*, trans. Douglas Martin (London: Scholar Press, 1996).

44 Respectively, Hans Widman, ed., *Der Gegenwärtige Stand der Gutenberg-Forschung* (Stuttgart: Anton Hiersemann, 1972); and Wieland Schmidt and Friedrich Schmidtkünsemüller, ed., *Johannes Gutenbergszweiundvierzigzeilige Bibel: Kommentarband* (München: Idion Verlag, 1979).

45 Heinrich Schneider, *Der Text der Gutenbergbibel* (Bonn, 1954).

46 Paul Needham, "The Compositor's Hand in the Gutenberg Bible: A Review of the Todd Thesis," *The Papers of the Bibliographical Society of America* 77, no.3 (1983): 348.

47 Digital images of this copy were published on a CD-ROM. The Gutenberg Bible at the Harry Ransom Center (Texas, The University of Texas at Austin, 2004) , 1CD. Also available online (lower resolution) at <http://www.hrc.utexas.edu/exhibitions/permanent/gutenberg/> (accessed 2006-02-26).

48 William B. Todd, *The Gutenberg Bible: New Evidence of the Original Printing* [The Third Hanes Lecture] (Chapel Hill: Hanes Foundation, 1982).

49 Needham, "Compositor's Hand," 341-71.

50 Don Cleaveland Norman, *The 500th Anniversary of the Gutenberg Bible* (Chicago: The Coverdale Press, 1961), 204p.

51 Hellmut Lehmann-Haupt, *Gutenberg and the Master of the Playing Cards* (New

Haven and London: Yale University Press, 1966). For reference, see a full color facsimile of the *Göttingen Model Book* with a transcription of a manuscript text, which is now available on CD-ROM from Göttingen. *Gutenberg Digital*.

52 For example, see Eberhard König, "The History of Art and the History of the Book at the Time of the Transition from Manuscript to Print," in *Bibliography and the Study of 15th-century Civilization: Papers Presented at a Colloquium at the British Library 26-28 September 1984*, ed. Lotte Hellinga and John Goldfinch (London: British Library, 1987), 154-183.

53 Eberhard König, "Die Illuminierung der Gutenbergbibel," in *Kommentarband*, 69-125. It was partly revised in later articles.

54 Eberhard König, "Möglichkeiten kunstgeschichtlicher Beiträge zur Gutenberg-Forschung: Die 42zeilige Bibel in Cologny, Heinrich Molitor und der Einfluß der Klosterreform um 1450," *Gutenberg Jahrbuch* 59 (1984): 83-102.; and Martha Wolff, "Some Manuscript Sources for the Playing-Card Master's Number Cards," *Art Bulletin* 64 (1982): 587-600.

55 Eberhard König, "A leaf from a Gutenberg Bible illuminated in England," *British Library Journal* 9, no. 1 (1983): 32-50.

56 König, "Beiträge," 83-102.

57 Albert Kapr, "Gab es Beziehungen zwischen Johannes Gutenberg und Nikolaus von Kues?" *Gutenberg Jahrbuch* 47 (1972): 32-40.

58 Erich Meuthen, "Ein neues frühes Quellenzeugnis (zu Oktober 1454?) für den ältesten Bibeldruck: Enea Silvio Piccolomini am 12. März aus Wiener Neustadt an Kardinal Juan de Carvajal," *Gutenberg Jahrbuch* 57 (1982): 108-18. For an English translation of this letter, see Needham, "Paper Supply," 309.

59 Leonhard Hoffmann, "Gutenberg, Fust und der erste Bibeldruck... Teil 1," *Zentralblatt für Bibliothekswesen* 97 (1983): 473-81.; Ferdinand Geldner, "Enea Silvio de' Piccolomini und Dr. Paulus Paulirinus aus Prag als Zeugen für die beiden ältesten Bibeldrucke," *Gutenberg Jahrbuch* 59 (1984): 133-40.

60 Needham, "Paper Supply," 303-374.

61 Martin Davies, "Juan de Carvajal and Early Printing: The 42-line Bible and the Sweynheim and Pannartz Aquinas," *The Library*, sixth series 18, no. 3 (1996): 193-215.

62 C. M. Briquet, *Les Filigranes: Dictionnaire historique des marques du papier des leur apparition vers 1282 jusqu'en 1600*, 4 vols. (reprint, New York: Hacker Art Books, 1966).

63 Allan H. Stevenson, *The Problem of the Missale Speciale* (London, 1968).

64 Philip Gaskell, *New Introduction*, 63.

65 Paul Needham, "The Paper Supply," after p. 374.

66 Eva Ziesche and Dierk Schnitger, "Elektronenradiographische Untersuchungen der Wasserzeichen des Mainzer Catholicon von 1460," *Archiv für Geschichte des Buchwesens* 21 (1980), 1303-60.

67 For further technical details, see T.A. Cahill, B.Kusko, and R. N. Schwab, "Analyses of Inks and Papers in Historical Documents through External Beam PIXE," *Nuclear Instruments and Methods* 181 (1981): 205-208.; T.A.Cahill, B. H. Kusko, and R. A. Eldred, "Gunteberg's Ink and Papers: Non-destructive compositional analysis by Proton Milliprobe," *Archaeometry* 26, no.1 (1984): 3-14.; Richard N. Schwab, "The History of the Book and the Proton Milliprobe: An Application of the PIXE Technique of Analysis," *Library Trends* 36, no.1 (1987): 53-84.

68 See respectively, Richard N. Schwab et al., "Cyclotron Analysis of the Ink in the 42-line Bible," *The Papers of the Bibliographical Society of America* 77, no.2 (1983): 285-315.; Richard N. Schwab et al., "New Evidence on the Printing of the Gutenberg Bible: The Inks in the Doheny Copy," *The Papers of the Bibliographical Society of America* 79, no.3 (1985): 375-410.; Richard N. Schwab et al., "Ink Patterns in the

Gutenberg New Testament: The Proton Milliprobe Analysis of the Lilly Library Copy,” *The Papers of the Bibliographical Society of America* 80, no.3 (1986): 305-31.; and Richard N. Schwab et al. “The Proton Milliprobe Ink Analysis of the Harvard B42, Volume II,” *The Papers of the Bibliographical Society of America* 81, no.4 (1987): 403-432.

69 Richard N. Schwab, “An *Ersatz* Leaf in the Doheny Gutenberg Bible Volume I,” *Papers of the Bibliographical Society of America* 81, no.4 (1987): 479-85.

70 Paul Needham, “Division of Copy in the Gutenberg Bible: Three Glosses on the Ink Evidence,” *Papers of the Bibliographical Society of America* 79, no.3 (1985): 411-26.

71 Philip M. Teigen, “Concurrent Printing of the Gutenberg Bible and the Proton Milliprobe Analysis of Its Ink,” *Papers of the Bibliographical Society of America* 87, no.4 (1993): 437-451. For a recent study on incunabula using cyclotron, see Achim Rosenberg et al. “Röntgenfluoreszenzanalyse der Druckerschwärzen des Mainzer Catholicon und anderer Frühdrucke mit Synchrotronstrahlung,” *Gutenberg Jahrbuch* 73 (1998): 231-255.

72 Agüera y Arcas, Blaise. “Temporary Matrices and Elemental Punches in Gutenberg’s DK Type,” in *Incunabula and Their Readers: Printing, Selling and Using Books in the Fifteenth Century*, Jensen, Kristian, ed. (London: British Library, 2003), 1-12.

73 The article shows twelve “i” variants identified by Needham and Janet Ing Freeman in their 1988 unpublished synopsis of DK type. The result of computer analysis “not only confirms this surprising variability, but also shows that the 1988 synopsis identifies only a fraction of the redundant “i” forms in the *Bulla*.” Agüera y Arcas, “Temporary Matrices,” 7.

74 Jim McCue, “History is rewritten,” *The Times* (2001-3-7): 8-9.

75 Dinitia Smith, “Has History Been Too Generous to Gutenberg?” *The New York Times*, vol. 150, no. 51646 (2001-1-27): B9.

76 *Renaissance Secrets*. the British Broadcasting Corporation (broadcasted on 2001/11/19).

77 For example, Stan Nelson, “Starting observations on early printing: re-examination of Gutenberg’s type,” *Journal of the Printing Historical Society*, new series 3 (2001): 49-51. See also Stan Nelson, “活字の鑄造、その歴史をたどる,” trans. 山本太郎, in *日本の近代活字: 本木昌造とその周辺* (長崎: 近代印刷活字文化保存会, 2003), 222-231 (not the translation of the former).

78 Stephen Pratt, “The myth of identical types: a study of printing variations from handcast Gutenberg type,” *Journal of the Printing Historical Society*, new series 6 (2003): 7-17.

79 Paul W. Nash, “The ‘First’ Type of Gutenberg: A note on recent research,” *Private Library*, fifth series 7, no. 2 (2004): 87-96.

80 Rossella Lorenzi, “*Gutenberg Printing Method Questioned*,” Discovery Channel, 2004, <<http://dsc.discovery.com/news/briefs/20041108/bible.html>> (accessed 2005-10-18). On 14 December, the full text cannot be accessible on the web, but I found the page is archived by the Internet Archive at the following URL: <<http://web.archive.org/web/20041113143959/http://dsc.discovery.com/news/briefs/20041108/bible.html>>

81 In personal conversation with Professor James Mosley and the late Mr. Justin Howes at the Type Museum, London. I appreciate their comments.

82 Tracey D. Chaplin et al., “The Gutenberg Bibles: Analysis of the Illuminations and Inks Using Raman Spectroscopy,” *Analytical Chemistry* 77, no. 11 (2005): 3611-3622.

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- 83 Russel Martineau, "Notes on the Latin Bible of Forty-two Lines, 1455," *Bibliographica* 2 (1896): 333-342.
- 84 *Untersuchungen*, 12-17
- 85 Frederick R. Goff, "A variant page in the Gutenberg Bible," *Gutenberg Jahrbuch* 30 (1955): 43-48.
- 86 James E. Walsh, "Another variant page in the Gutenberg Bible," *Gutenberg Jahrbuch* 40 (1965): 68-72.
- 87 Paul Needham, "A Gutenberg Bible Used as Printer's Copy by Heinrich Eggestein in Strassburg, ca. 1469," *Transactions of the Cambridge Bibliographical Society* 9 (1986): 59-60.
- 88 Gerhardt Powitz, *Die Frankfurter Gutenberg-Bibel: ein Beitrag zum Buchwesen des 15. Jahrhunderts* (Frankfurt am Main: V. Klostermann, 1990).
- 89 See chapter I.B.2.b above.
- 90 Tomioka, "Fine Detail"; Agata, "First Report."
- 91 There are pages belonging to the replacement setting, which was not part of the common setting or ordinary reprinting (the second setting) to increase the number of copies to be printed. For a list of these replacement pages, see Needham, "Compositor's Hand," 361, n. 11; Needham, "Paper Supply," 336; Schwab et al., "Inks in the Doheny Copy," 375-410.
- 92 For later developments of this system, see Martin Boghardt, "Pinhole Patterns in Large-Format Incunabula," *The Library, 7th series* 1 (2000): 263-289.
- 93 Schwenke, *Untersuchungen*, 50-51. See note 37 above.
- 94 Frederick R. Goff, "Printing in Red in the Gutenberg Bible (B42)," *Gutenberg Jahrbuch* 56 (1981): 130-135.
- 95 Joseph A. Dane, "Two-color Printing in the Fifteenth-century as Evidenced by Incunables at the Huntington Library," *Gutenberg Jahrbuch*, 74 (1999), 132-145.
- 96 In a frequently encountered quotation Schwenke proposed six presses in 1900, but he stated later in his 1923 *Ergänzungsband* that his chart did not mean such a strict relationship between the six units and press. Still, there are statements made with great confidence such as "The 2-volume bible with a total of 1,282 pages was created with the help of a staff of 20", but they tend to fail to show any evidence or authority. See for example, The Gutenberg Museum. "Die Gutenberg Bibel".  
<<http://www.gutenberg.de/english/bibel.htm>> (accessed 2005-12-26).
- 97 For a brief summary of arguments on the matter, see Needham, "Paper Supply," 310-314.
- 98 See Paul Needham, "The Text of the Gutenberg Bible," in *Trasmissione dei testi a stampa nel periodo moderno*, II, *Seminario internazionale, Roma-Viterbo, 27-29 giugno 1985*, ed. by Giovanni Crapulli (Rome: Edizioni dell'Ateneo, 1985), 43-84 (especially Appendix B, 66-84).

Table I.1A chronological record of Johann Gutenberg

1386	Marriage of Gutenberg's parents.
1394-1406	Johann Gensfleisch, later known as Gutenberg, is born in Mainz, Germany.
1411-	Gutenberg and his family leave Mainz for Eltville?
1419	Death of Gutenberg's father, Friele Gensfleisch zur Laden.
1427-8	Gutenberg is first named as 'Hengin zu Gutenberg' in a Mainz document.
1428	Gutenberg leaves Mainz for an unknown destination.
1433	Gutenberg's mother dies.
1434	Gutenberg moved from Mainz to Strasbourg.
1436	The goldsmith Hans Dünne receives from Gutenberg over 100 gulden 'solely for that which pertains to the use of a press'.
1436	In Strasbourg, an action for breach of promise is brought against 'Hansse Gensfleisch of Mainz, called Gutenberg' by Ellewibel zur Yserin Tür and his daughter Ennelin.
1437	Gutenberg teaches a Strasbourg citizen, Andreas Dritzehn, 'stone polishing'.
1438	Andreas Dritzehn, Andreas Heilmann, Hans Riffe and Johann Gutenberg form a partnership to produce devotional mirrors.
26 Dec 1438	Andreas Dritzehn dies of the Black Death.
12 Dec 1439	Judgement given in the Strasbourg action brought against Gutenberg by Jörg and Claus Dritzehn.
1443	Death of Gutenberg's sister, Else.
12 Mar 1444	Final reference to Gutenberg in Strasbourg.
1444/1445	Gutenberg is back to Mainz.
1445?	One of Gutenberg's earliest pieces of printing, the <i>Fragment vom Weltgericht</i> , is printed.
17 Oct 1448	Gutenberg takes out a loan of 150 gulden in Mainz with the help of his relative Arnold Gelthus.
1448	The so-called original Mainz printing shop is established in Gutenberghof(?), and here the <i>Donatuses</i> and jobbing work were the main products.
1449?	Beginning of collaboration with Johann Fust, from whom Gutenberg received at first a loan of 800 gulden, and later a business investment, again 800 gulden.
1450	Establishment of the Gutenberg-Fust joint printing office, the 'Work of the Books', in Humbrechthof(?).
1452?-1455	Printing of B42 in 2 volumes.
Oct 1454	Enea Silvio Piccolomini reports that he was able to see some sections



	of B42 in Frankfurt.
1454-1455	Printing of the <i>31-line Indulgence</i> .
1454?	Printing of the <i>Donatus</i> .
End of 1454	Printing of the <i>Türkenkalender</i> for the year 1455.
6 Nov 1455	A notary Helmasperger records the lawsuit Fust vs Gutenberg in a legal instrument.
Aug 1456	Heinrich Cremer notes in the Paris copy of B42, that at this time he has just completed its rubrication, illumination, and binding.
1456	Gutenberg's older brother Friele dies in Eltville.
1456	The <i>Türkenbulle</i> of Calixtus III is printed both in Latin and German.
End of 1456	Printing of the <i>Aderlasskalender</i> for the year 1457.
14 Aug 1457	The <i>Mainz Psalter</i> is issued by Fust-and-Schöffer printing house.
1458?	Gutenberg sells "D K type" to Albrecht Pfister in Bamberg?
1458-1460	Printing of the <i>Catholicon</i> at the Gutenberghof(?)
1460	Printing of <i>De articulis fidei et ecclesiae sacramentis</i> (34- and 36-line issues) and <i>Dialogus rationis et conscientiae de frequenti usu Communionis</i> .
Not after 1461	Printing of the <i>36-line Bible</i> by Pfister in Bamberg.
1461	The imperial court at Rottweil brings legal pressure to bear against Gutenberg for non-payment, since 1458, of annual interest due on a Strasbourg loan.
28 Oct 1462	Fall of Mainz.
1464	Printing of Indulgence for the Order of the Holy Trinity (Frater Radulphus) in Mainz and Eltville.
17 Jan 1465	Gutenberg is appointed a court pensioner.
1466	Fust dies in Paris.
3 Feb 1468	Gutenberg dies.
26 Feb 1468	Dr. Humery acknowledges the return of printing equipment from Gutenberg's estate.
24 May 1468	The earliest tribute to Gutenberg by Schöffer
Early 1503	Schöffer dies.

Table 1.2 Digital Images of the Gutenberg Bible

Needham No. <sup>i</sup>	Library	Digitized by	Year	Access
P39	Keio University Library (vol.1)	HUMI (Keio University)	1997	<a href="http://www.humi.keio.ac.jp/treasures/incunabula/B42/index.html">http://www.humi.keio.ac.jp/treasures/incunabula/B42/index.html</a>
P33	Cambridge University Library	HUMI (Keio University)	1998	on campus (Keio U & CUL)
P16	Gutenberg Museum (Kraus)	HUMI (Keio University)	1999	on campus (Keio U & Gutenberg Museum)
P46	Gutenberg Museum (Laubuch: vol.2 only)	HUMI (Keio University)	1999	on campus (Keio U & Gutenberg Museum)
V6	Göttingen University Library	Göttingen University Library	2000	<a href="http://www.gutenbergdigital.de/">http://www.gutenbergdigital.de/</a> & CD-ROM <sup>ii</sup>
P27	British Library (King's)	HUMI (Keio University)	2000	<a href="http://prodigi.bl.uk/gutenberg/default.asp">http://prodigi.bl.uk/gutenberg/default.asp</a>
V10	British Library (Grenville)	HUMI (Keio University)	2000	<a href="http://prodigi.bl.uk/gutenberg/default.asp">http://prodigi.bl.uk/gutenberg/default.asp</a>
V11	Vatican Library (Barberini)	Toppan Printing Co. Ltd.	2000	on campus (Vatican & Toppan Printing Museum in Tokyo)
P29	Austrian National Library	Austrian National Library	2000	CD-ROM <sup>iii</sup>
V8	Library of Congress	Octavo	2002	CD-ROM <sup>iv</sup>
P25	High Priests' Seminary Library in Pelplin	Seminary Library	2001	<a href="http://www.pbi.edu.pl/">http://www.pbi.edu.pl/</a> & CD-ROM <sup>v</sup>
P30	Texas University	HUMI (Keio University)	2002	--
P37	Scotland National Library	Harry Ransom Center (Texas University)	2002	<a href="http://www.hrc.utexas.edu/exhibitions/permanent/gutenberg/">http://www.hrc.utexas.edu/exhibitions/permanent/gutenberg/</a> & CD-ROM of higher-resolution <sup>vi</sup>
P13	Bavarian State Library	HUMI (Keio University)	2005	(Image processing under way)
			2005	(Image processing under way)

<sup>i</sup> Paul Needham, "The Paper Supply of the Gutenberg Bible," *PBSA* 79, no.3 (1985): 355-358. The copies preceded by "P" are printed on paper, and the copies preceded by "V" are printed on vellum.

<sup>ii</sup> Elmar Mittler and Stephan Füssel, ed., *Gutenberg Digital: Göttingen Gutenberg-Bibel, Musterbuch und Helmaspersersches Notariatsinstrument* (München: K.G.Saur Verlag, 2000), 2 CD.

<sup>iii</sup> *The 42-line Gutenberg Bible of the Austrian National Library*, 1 CD (Vienna: Verlag Brüder Hollinek, 2000).

<sup>iv</sup> *Biblia Latina, Mainz, ca. 1455: Gutenberg Bible* (Rare Book and Special Collections Division, Library of Congress) (Oakland, CA.: Octavo, 2003), 2 CD.

<sup>v</sup> *Biblia Gutenbergica*, 1CD (Wydawnictwo Diecezji Pelplińskiej "Bernardinum").

<sup>vi</sup> *The Gutenberg Bible at the Harry Ransom Center* (Texas, The University of Texas at Austin, 2004), 1CD.

Table I.3 The text units in the B42

Unit	Volume	Quire	Folio	Books
A1	1	1-10	1-101	Pentateuch (Genesis- Deuteronomy)
A2	1	11-13	102-128	Joshua, Judges, Ruth
B1	1	14-24	129-238	1-4 Kings, 1-2 Chronicles, Prayer of Manasseh, 1-2 Ezra
B2	1	25-26	239-260	3-4 Ezra (fols. 246v and 260v are blanks)
B3	1	27-33	261-324	Tobit, Judith, Esther, Job, Psalms
C1	2	1-13	1-130	Wisdom, Major Prophets
C2	2	14-16	131-161	Daniel, Minor Prophets
D1	2	17-26	162-261	1-2 Maccabees, Gospels, Romans, 1 Corinthians (fol. 189v is blank)
D2	2	27	262-273	2 Corinthians, Galatians, Ephesians, Philippians, Colossians
D3	2	28	274-284	1-2 Thessalonians, 1-2 Timothy, Titus, Philemon, Hebrews
D4	2	29-31	285-309	Acts, Catholic Epistles
D5	2	32	310-317	Apocalypse (+leaves 318-319 are blanks)
-	-	π	[1-4]	Rubrication guides

Source: Paul Needham, "The Paper Supply of the Gutenberg Bible," *PBSA* 79, no.3 (1985): 319-320

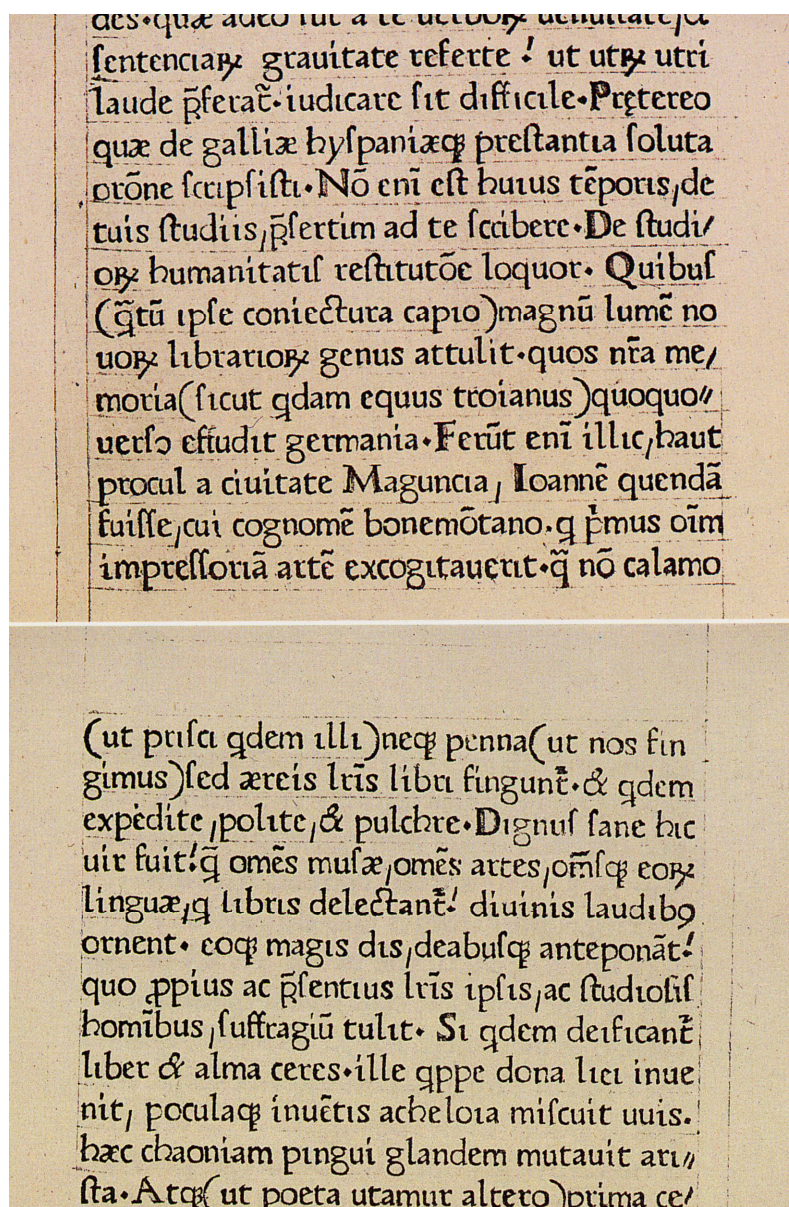


Figure I.1. The first printed reference to Gutenberg's full name  
in the 1471 *Orthographia* printed in Paris.

Reprinted from Martin Davies, *The Gutenberg Bible* (London: The  
British Library, 1996), 4.





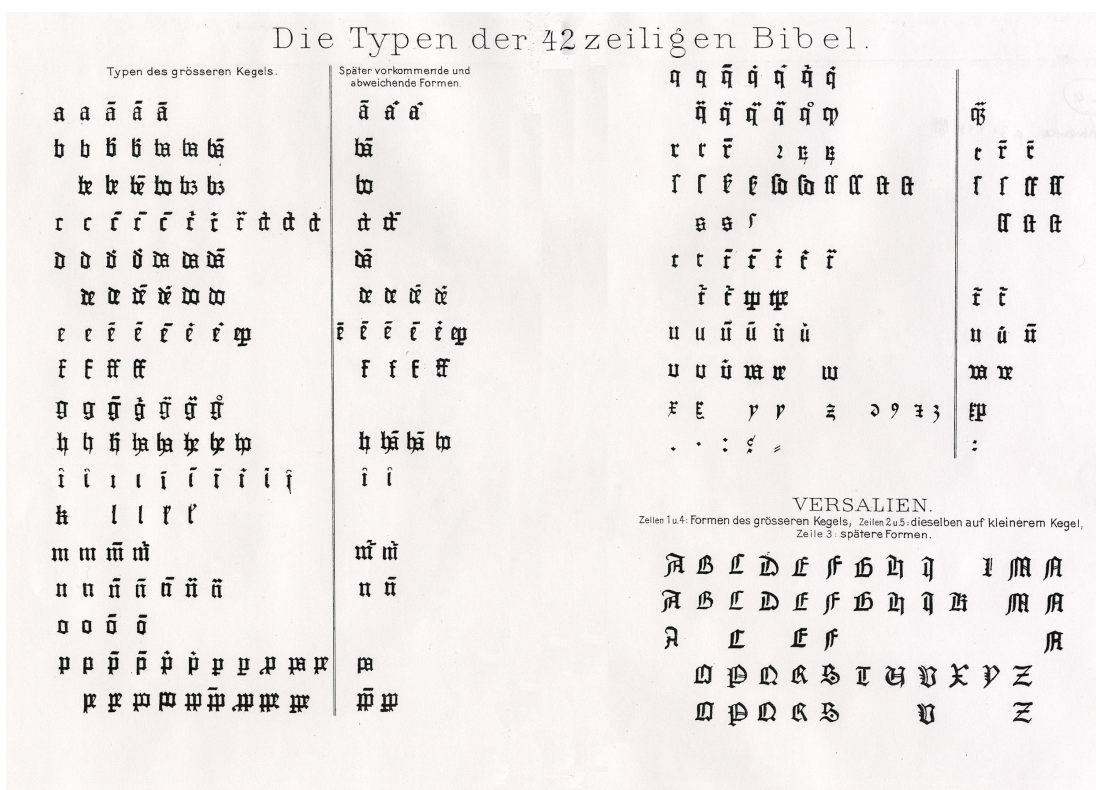


Figure I.4.a. The types in the B42.

Left to Right: letters “a” to “p” (primary forms and secondary forms), letters “q” to “z” (primary forms) and punctuation marks, letters “q” to “z” (secondary forms), and capital letters “A” to “Z.”

Reprinted from Paul Schwenke, *Untersuchungen zur Geschichte des ersten Buchdrucks* (Berlin: Behrend, 1900).



Figure I.4.b. Primary-form “a” and “n” (Keio University Library, I 23v)



Figure I.4.c. Primary-form “c” and abutting-form “a” (Keio University Library, I 23v)



leu: et omne aurū ⁊ argentū quod in-  
 uentū fuerit in regione babilonie. do-  
 mino in iherusalē cū illo quod est do-  
 natū pro ipsa gente in templū dñi eo-  
 rum quod est in iherusalē: ut colliga-  
 tur hoc aurū et argentū ad thauros  
 et arietes. et agnos et hedos. et q̄ hīs  
 sunt cōgruentia: ut offerant hostias  
 dño sup altare dñi iporū quod est in  
 iherusalē. Et omnia quecūq; uolueris  
 cū fratribz tuis facere auro ⁊ argento.  
 perfice pro uolūtate tua secundū prece-  
 ptum dñi dei tui: et sacrosanda uasa  
 que data sunt tibi ad opera domus  
 dñi dei tui que est in iherusalē. et cetera  
 quecūq; tibi subuenerit ad opera tēpli  
 dei tui dabis de regali ga: ophilatio:

one. Et dixit eboras scriba. Benedictus  
 domin⁹ patrum nostrorum. qui dedit  
 hanc uolūtatem. in cor regis clarifica-  
 re domū suā que est in iherusalē: et me  
 honorificauit in cōspetu regis. ⁊ con-  
 siliarioꝝ. ⁊ amicoꝝ eius. ⁊ purpurato-  
 rum eius: et ego cōstans animo fact⁹  
 sum secundū opitulationē dñi dei mei.  
 Et congregaui eꝝ israel uiros: ut simul  
 ascenderēt mecū. Et hī sunt p̄positi se-  
 cundū suas patrias et principat⁹ po-  
 rtionales corū qui mecū ascenderūt de  
 babilonia: in regno artaxerxis. Et fi-  
 lijs phares: geslom⁹. Et filijs siema-  
 rith: amenus. filioꝝ dauid: accus fili⁹  
 seccilie. Et filijs phares. et zacharias:  
 et cū eo reuēsi sūt iri centūquingenta.

Figure I.5. Rule regarding punctuation marks

(The B42 at the Keio University Library, vol. 1, 244r, parts).

DIE GUTENBERGBIBEL. 29

SYNCHRONISTISCHE ÜBERSICHT ÜBER DIE VERWENDUNG DER PAPIERSORTEN

A	II <sup>a</sup> 11-20 aaaa	I <sup>a</sup> 21-30 aaaa	II <sup>a</sup> 31-40 aaaa	I <sup>a</sup> 41-50 aaaa	II <sup>a</sup> 51-60 aaaa	I <sup>a</sup> 61-70 aaaa	II <sup>a</sup> 71-80 aaaa	I <sup>a</sup> 81-90 aaaa	II <sup>a</sup> 91-100 aaaa	I <sup>a</sup> 101-110 aaaa	II <sup>a</sup> 111-120 aaaa	I <sup>a</sup> 121-130 aaaa	II <sup>a</sup> 131-140 aaaa	I <sup>a</sup> 141-150 aaaa	II <sup>a</sup> 151-160 aaaa	I <sup>a</sup> 161-170 aaaa	II <sup>a</sup> 171-180 aaaa	I <sup>a</sup> 181-190 aaaa	II <sup>a</sup> 191-200 aaaa	I <sup>a</sup> 201-210 aaaa	II <sup>a</sup> 211-220 aaaa	I <sup>a</sup> 221-230 aaaa	II <sup>a</sup> 231-240 aaaa	I <sup>a</sup> 241-250 aaaa	II <sup>a</sup> 251-260 aaaa	I <sup>a</sup> 261-270 aaaa	II <sup>a</sup> 271-280 aaaa	I <sup>a</sup> 281-290 aaaa	II <sup>a</sup> 291-300 aaaa	I <sup>a</sup> 301-310 aaaa	II <sup>a</sup> 311-320 aaaa	I <sup>a</sup> 321-330 aaaa	II <sup>a</sup> 331-340 aaaa	I <sup>a</sup> 341-350 aaaa	II <sup>a</sup> 351-360 aaaa	I <sup>a</sup> 361-370 aaaa	II <sup>a</sup> 371-380 aaaa	I <sup>a</sup> 381-390 aaaa	II <sup>a</sup> 391-400 aaaa	I <sup>a</sup> 401-410 aaaa	II <sup>a</sup> 411-420 aaaa	I <sup>a</sup> 421-430 aaaa	II <sup>a</sup> 431-440 aaaa	I <sup>a</sup> 441-450 aaaa	II <sup>a</sup> 451-460 aaaa	I <sup>a</sup> 461-470 aaaa	II <sup>a</sup> 471-480 aaaa	I <sup>a</sup> 481-490 aaaa	II <sup>a</sup> 491-500 aaaa	I <sup>a</sup> 501-510 aaaa	II <sup>a</sup> 511-520 aaaa	I <sup>a</sup> 521-530 aaaa	II <sup>a</sup> 531-540 aaaa	I <sup>a</sup> 541-550 aaaa	II <sup>a</sup> 551-560 aaaa	I <sup>a</sup> 561-570 aaaa	II <sup>a</sup> 571-580 aaaa	I <sup>a</sup> 581-590 aaaa	II <sup>a</sup> 591-600 aaaa	I <sup>a</sup> 601-610 aaaa	II <sup>a</sup> 611-620 aaaa	I <sup>a</sup> 621-630 aaaa	II <sup>a</sup> 631-640 aaaa	I <sup>a</sup> 641-650 aaaa	II <sup>a</sup> 651-660 aaaa	I <sup>a</sup> 661-670 aaaa	II <sup>a</sup> 671-680 aaaa	I <sup>a</sup> 681-690 aaaa	II <sup>a</sup> 691-700 aaaa	I <sup>a</sup> 701-710 aaaa	II <sup>a</sup> 711-720 aaaa	I <sup>a</sup> 721-730 aaaa	II <sup>a</sup> 731-740 aaaa	I <sup>a</sup> 741-750 aaaa	II <sup>a</sup> 751-760 aaaa	I <sup>a</sup> 761-770 aaaa	II <sup>a</sup> 771-780 aaaa	I <sup>a</sup> 781-790 aaaa	II <sup>a</sup> 791-800 aaaa	I <sup>a</sup> 801-810 aaaa	II <sup>a</sup> 811-820 aaaa	I <sup>a</sup> 821-830 aaaa	II <sup>a</sup> 831-840 aaaa	I <sup>a</sup> 841-850 aaaa	II <sup>a</sup> 851-860 aaaa	I <sup>a</sup> 861-870 aaaa	II <sup>a</sup> 871-880 aaaa	I <sup>a</sup> 881-890 aaaa	II <sup>a</sup> 891-900 aaaa	I <sup>a</sup> 901-910 aaaa	II <sup>a</sup> 911-920 aaaa	I <sup>a</sup> 921-930 aaaa	II <sup>a</sup> 931-940 aaaa	I <sup>a</sup> 941-950 aaaa	II <sup>a</sup> 951-960 aaaa	I <sup>a</sup> 961-970 aaaa	II <sup>a</sup> 971-980 aaaa	I <sup>a</sup> 981-990 aaaa	II <sup>a</sup> 991-1000 aaaa	I <sup>a</sup> 1001-1010 aaaa	II <sup>a</sup> 1011-1020 aaaa	I <sup>a</sup> 1021-1030 aaaa	II <sup>a</sup> 1031-1040 aaaa	I <sup>a</sup> 1041-1050 aaaa	II <sup>a</sup> 1051-1060 aaaa	I <sup>a</sup> 1061-1070 aaaa	II <sup>a</sup> 1071-1080 aaaa	I <sup>a</sup> 1081-1090 aaaa	II <sup>a</sup> 1091-1100 aaaa	I <sup>a</sup> 1101-1110 aaaa	II <sup>a</sup> 1111-1120 aaaa	I <sup>a</sup> 1121-1130 aaaa	II <sup>a</sup> 1131-1140 aaaa	I <sup>a</sup> 1141-1150 aaaa	II <sup>a</sup> 1151-1160 aaaa	I <sup>a</sup> 1161-1170 aaaa	II <sup>a</sup> 1171-1180 aaaa	I <sup>a</sup> 1181-1190 aaaa	II <sup>a</sup> 1191-1200 aaaa	I <sup>a</sup> 1201-1210 aaaa	II <sup>a</sup> 1211-1220 aaaa	I <sup>a</sup> 1221-1230 aaaa	II <sup>a</sup> 1231-1240 aaaa	I <sup>a</sup> 1241-1250 aaaa	II <sup>a</sup> 1251-1260 aaaa	I <sup>a</sup> 1261-1270 aaaa	II <sup>a</sup> 1271-1280 aaaa	I <sup>a</sup> 1281-1290 aaaa	II <sup>a</sup> 1291-1300 aaaa	I <sup>a</sup> 1301-1310 aaaa	II <sup>a</sup> 1311-1320 aaaa	I <sup>a</sup> 1321-1330 aaaa	II <sup>a</sup> 1331-1340 aaaa	I <sup>a</sup> 1341-1350 aaaa	II <sup>a</sup> 1351-1360 aaaa	I <sup>a</sup> 1361-1370 aaaa	II <sup>a</sup> 1371-1380 aaaa	I <sup>a</sup> 1381-1390 aaaa	II <sup>a</sup> 1391-1400 aaaa	I <sup>a</sup> 1401-1410 aaaa	II <sup>a</sup> 1411-1420 aaaa	I <sup>a</sup> 1421-1430 aaaa	II <sup>a</sup> 1431-1440 aaaa	I <sup>a</sup> 1441-1450 aaaa	II <sup>a</sup> 1451-1460 aaaa	I <sup>a</sup> 1461-1470 aaaa	II <sup>a</sup> 1471-1480 aaaa	I <sup>a</sup> 1481-1490 aaaa	II <sup>a</sup> 1491-1500 aaaa	I <sup>a</sup> 1501-1510 aaaa	II <sup>a</sup> 1511-1520 aaaa	I <sup>a</sup> 1521-1530 aaaa	II <sup>a</sup> 1531-1540 aaaa	I <sup>a</sup> 1541-1550 aaaa	II <sup>a</sup> 1551-1560 aaaa	I <sup>a</sup> 1561-1570 aaaa	II <sup>a</sup> 1571-1580 aaaa	I <sup>a</sup> 1581-1590 aaaa	II <sup>a</sup> 1591-1600 aaaa	I <sup>a</sup> 1601-1610 aaaa	II <sup>a</sup> 1611-1620 aaaa	I <sup>a</sup> 1621-1630 aaaa	II <sup>a</sup> 1631-1640 aaaa	I <sup>a</sup> 1641-1650 aaaa	II <sup>a</sup> 1651-1660 aaaa	I <sup>a</sup> 1661-1670 aaaa	II <sup>a</sup> 1671-1680 aaaa	I <sup>a</sup> 1681-1690 aaaa	II <sup>a</sup> 1691-1700 aaaa	I <sup>a</sup> 1701-1710 aaaa	II <sup>a</sup> 1711-1720 aaaa	I <sup>a</sup> 1721-1730 aaaa	II <sup>a</sup> 1731-1740 aaaa	I <sup>a</sup> 1741-1750 aaaa	II <sup>a</sup> 1751-1760 aaaa	I <sup>a</sup> 1761-1770 aaaa	II <sup>a</sup> 1771-1780 aaaa	I <sup>a</sup> 1781-1790 aaaa	II <sup>a</sup> 1791-1800 aaaa	I <sup>a</sup> 1801-1810 aaaa	II <sup>a</sup> 1811-1820 aaaa	I <sup>a</sup> 1821-1830 aaaa	II <sup>a</sup> 1831-1840 aaaa	I <sup>a</sup> 1841-1850 aaaa	II <sup>a</sup> 1851-1860 aaaa	I <sup>a</sup> 1861-1870 aaaa	II <sup>a</sup> 1871-1880 aaaa	I <sup>a</sup> 1881-1890 aaaa	II <sup>a</sup> 1891-1900 aaaa	I <sup>a</sup> 1901-1910 aaaa	II <sup>a</sup> 1911-1920 aaaa	I <sup>a</sup> 1921-1930 aaaa	II <sup>a</sup> 1931-1940 aaaa	I <sup>a</sup> 1941-1950 aaaa	II <sup>a</sup> 1951-1960 aaaa	I <sup>a</sup> 1961-1970 aaaa	II <sup>a</sup> 1971-1980 aaaa	I <sup>a</sup> 1981-1990 aaaa	II <sup>a</sup> 1991-2000 aaaa	I <sup>a</sup> 2001-2010 aaaa	II <sup>a</sup> 2011-2020 aaaa	I <sup>a</sup> 2021-2030 aaaa	II <sup>a</sup> 2031-2040 aaaa	I <sup>a</sup> 2041-2050 aaaa	II <sup>a</sup> 2051-2060 aaaa	I <sup>a</sup> 2061-2070 aaaa	II <sup>a</sup> 2071-2080 aaaa	I <sup>a</sup> 2081-2090 aaaa	II <sup>a</sup> 2091-2100 aaaa	I <sup>a</sup> 2101-2110 aaaa	II <sup>a</sup> 2111-2120 aaaa	I <sup>a</sup> 2121-2130 aaaa	II <sup>a</sup> 2131-2140 aaaa	I <sup>a</sup> 2141-2150 aaaa	II <sup>a</sup> 2151-2160 aaaa	I <sup>a</sup> 2161-2170 aaaa	II <sup>a</sup> 2171-2180 aaaa	I <sup>a</sup> 2181-2190 aaaa	II <sup>a</sup> 2191-2200 aaaa	I <sup>a</sup> 2201-2210 aaaa	II <sup>a</sup> 2211-2220 aaaa	I <sup>a</sup> 2221-2230 aaaa	II <sup>a</sup> 2231-2240 aaaa	I <sup>a</sup> 2241-2250 aaaa	II <sup>a</sup> 2251-2260 aaaa	I <sup>a</sup> 2261-2270 aaaa	II <sup>a</sup> 2271-2280 aaaa	I <sup>a</sup> 2281-2290 aaaa	II <sup>a</sup> 2291-2300 aaaa	I <sup>a</sup> 2301-2310 aaaa	II <sup>a</sup> 2311-2320 aaaa	I <sup>a</sup> 2321-2330 aaaa	II <sup>a</sup> 2331-2340 aaaa	I <sup>a</sup> 2341-2350 aaaa	II <sup>a</sup> 2351-2360 aaaa	I <sup>a</sup> 2361-2370 aaaa	II <sup>a</sup> 2371-2380 aaaa	I <sup>a</sup> 2381-2390 aaaa	II <sup>a</sup> 2391-2400 aaaa	I <sup>a</sup> 2401-2410 aaaa	II <sup>a</sup> 2411-2420 aaaa	I <sup>a</sup> 2421-2430 aaaa	II <sup>a</sup> 2431-2440 aaaa	I <sup>a</sup> 2441-2450 aaaa	II <sup>a</sup> 2451-2460 aaaa	I <sup>a</sup> 2461-2470 aaaa	II <sup>a</sup> 2471-2480 aaaa	I <sup>a</sup> 2481-2490 aaaa	II <sup>a</sup> 2491-2500 aaaa	I <sup>a</sup> 2501-2510 aaaa	II <sup>a</sup> 2511-2520 aaaa	I <sup>a</sup> 2521-2530 aaaa	II <sup>a</sup> 2531-2540 aaaa	I <sup>a</sup> 2541-2550 aaaa	II <sup>a</sup> 2551-2560 aaaa	I <sup>a</sup> 2561-2570 aaaa	II <sup>a</sup> 2571-2580 aaaa	I <sup>a</sup> 2581-2590 aaaa	II <sup>a</sup> 2591-2600 aaaa	I <sup>a</sup> 2601-2610 aaaa	II <sup>a</sup> 2611-2620 aaaa	I <sup>a</sup> 2621-2630 aaaa	II <sup>a</sup> 2631-2640 aaaa	I <sup>a</sup> 2641-2650 aaaa	II <sup>a</sup> 2651-2660 aaaa	I <sup>a</sup> 2661-2670 aaaa	II <sup>a</sup> 2671-2680 aaaa	I <sup>a</sup> 2681-2690 aaaa	II <sup>a</sup> 2691-2700 aaaa	I <sup>a</sup> 2701-2710 aaaa	II <sup>a</sup> 2711-2720 aaaa	I <sup>a</sup> 2721-2730 aaaa	II <sup>a</sup> 2731-2740 aaaa	I <sup>a</sup> 2741-2750 aaaa	II <sup>a</sup> 2751-2760 aaaa	I <sup>a</sup> 2761-2770 aaaa	II <sup>a</sup> 2771-2780 aaaa	I <sup>a</sup> 2781-2790 aaaa	II <sup>a</sup> 2791-2800 aaaa	I <sup>a</sup> 2801-2810 aaaa	II <sup>a</sup> 2811-2820 aaaa	I <sup>a</sup> 2821-2830 aaaa	II <sup>a</sup> 2831-2840 aaaa	I <sup>a</sup> 2841-2850 aaaa	II <sup>a</sup> 2851-2860 aaaa	I <sup>a</sup> 2861-2870 aaaa	II <sup>a</sup> 2871-2880 aaaa	I <sup>a</sup> 2881-2890 aaaa	II <sup>a</sup> 2891-2900 aaaa	I <sup>a</sup> 2901-2910 aaaa	II <sup>a</sup> 2911-2920 aaaa	I <sup>a</sup> 2921-2930 aaaa	II <sup>a</sup> 2931-2940 aaaa	I <sup>a</sup> 2941-2950 aaaa	II <sup>a</sup> 2951-2960 aaaa	I <sup>a</sup> 2961-2970 aaaa	II <sup>a</sup> 2971-2980 aaaa	I <sup>a</sup> 2981-2990 aaaa	II <sup>a</sup> 2991-3000 aaaa	I <sup>a</sup> 3001-3010 aaaa	II <sup>a</sup> 3011-3020 aaaa	I <sup>a</sup> 3021-3030 aaaa	II <sup>a</sup> 3031-3040 aaaa	I <sup>a</sup> 3041-3050 aaaa	II <sup>a</sup> 3051-3060 aaaa	I <sup>a</sup> 3061-3070 aaaa	II <sup>a</sup> 3071-3080 aaaa	I <sup>a</sup> 3081-3090 aaaa	II <sup>a</sup> 3091-3100 aaaa	I <sup>a</sup> 3101-3110 aaaa	II <sup>a</sup> 3111-3120 aaaa	I <sup>a</sup> 3121-3130 aaaa	II <sup>a</sup> 3131-3140 aaaa	I <sup>a</sup> 3141-3150 aaaa	II <sup>a</sup> 3151-3160 aaaa	I <sup>a</sup> 3161-3170 aaaa	II <sup>a</sup> 3171-3180 aaaa	I <sup>a</sup> 3181-3190 aaaa	II <sup>a</sup> 3191-3200 aaaa	I <sup>a</sup> 3201-3210 aaaa	II <sup>a</sup> 3211-3220 aaaa	I <sup>a</sup> 3221-3230 aaaa	II <sup>a</sup> 3231-3240 aaaa	I <sup>a</sup> 3241-3250 aaaa	II <sup>a</sup> 3251-3260 aaaa	I <sup>a</sup> 3261-3270 aaaa	II <sup>a</sup> 3271-3280 aaaa	I <sup>a</sup> 3281-3290 aaaa	II <sup>a</sup> 3291-3300 aaaa	I <sup>a</sup> 3301-3310 aaaa	II <sup>a</sup> 3311-3320 aaaa	I <sup>a</sup> 3321-3330 aaaa	II <sup>a</sup> 3331-3340 aaaa	I <sup>a</sup> 3341-3350 aaaa	II <sup>a</sup> 3351-3360 aaaa	I <sup>a</sup> 3361-3370 aaaa	II <sup>a</sup> 3371-3380 aaaa	I <sup>a</sup> 3381-3390 aaaa	II <sup>a</sup> 3391-3400 aaaa	I <sup>a</sup> 3401-3410 aaaa	II <sup>a</sup> 3411-3420 aaaa	I <sup>a</sup> 3421-3430 aaaa	II <sup>a</sup> 3431-3440 aaaa	I <sup>a</sup> 3441-3450 aaaa	II <sup>a</sup> 3451-3460 aaaa	I <sup>a</sup> 3461-3470 aaaa	II <sup>a</sup> 3471-3480 aaaa	I <sup>a</sup> 3481-3490 aaaa	II <sup>a</sup> 3491-3500 aaaa	I <sup>a</sup> 3501-3510 aaaa	II <sup>a</sup> 3511-3520 aaaa	I <sup>a</sup> 3521-3530 aaaa	II <sup>a</sup> 3531-3540 aaaa	I <sup>a</sup> 3541-3550 aaaa	II <sup>a</sup> 3551-3560 aaaa	I <sup>a</sup> 3561-3570 aaaa	II <sup>a</sup> 3571-3580 aaaa	I <sup>a</sup> 3581-3590 aaaa	II <sup>a</sup> 3591-3600 aaaa	I <sup>a</sup> 3601-3610 aaaa	II <sup>a</sup> 3611-3620 aaaa	I <sup>a</sup> 3621-3630 aaaa	II <sup>a</sup> 3631-3640 aaaa	I <sup>a</sup> 3641-3650 aaaa	II <sup>a</sup> 3651-3660 aaaa	I <sup>a</sup> 3661-3670 aaaa	II <sup>a</sup> 3671-3680 aaaa	I <sup>a</sup> 3681-3690 aaaa	II <sup>a</sup> 3691-3700 aaaa	I <sup>a</sup> 3701-3710 aaaa	II <sup>a</sup> 3711-3720 aaaa	I <sup>a</sup> 3721-3730 aaaa	II <sup>a</sup> 3731-3740 aaaa	I <sup>a</sup> 3741-3750 aaaa	II <sup>a</sup> 3751-3760 aaaa	I <sup>a</sup> 3761-3770 aaaa	II <sup>a</sup> 3771-3780 aaaa	I <sup>a</sup> 3781-3790 aaaa	II <sup>a</sup> 3791-3800 aaaa	I <sup>a</sup> 3801-3810 aaaa	II <sup>a</sup> 3811-3820 aaaa	I <sup>a</sup> 3821-3830 aaaa	II <sup>a</sup> 3831-3840 aaaa	I <sup>a</sup> 3841-3850 aaaa	II <sup>a</sup> 3851-3860 aaaa	I <sup>a</sup> 3861-3870 aaaa	II <sup>a</sup> 3871-3880 aaaa	I <sup>a</sup> 3881-3890 aaaa	II <sup>a</sup> 3891-3900 aaaa	I <sup>a</sup> 3901-3910 aaaa	II <sup>a</sup> 3911-3920 aaaa	I <sup>a</sup> 3921-3930 aaaa	II <sup>a</sup> 3931-3940 aaaa	I <sup>a</sup> 3941-3950 aaaa	II <sup>a</sup> 3951-3960 aaaa	I <sup>a</sup> 3961-3970 aaaa	II <sup>a</sup> 3971-3980 aaaa	I <sup>a</sup> 3981-3990 aaaa	II <sup>a</sup> 3991-4000 aaaa	I <sup>a</sup> 4001-4010 aaaa	II <sup>a</sup> 4011-4020 aaaa	I <sup>a</sup> 4021-4030 aaaa	II <sup>a</sup> 4031-4040 aaaa	I <sup>a</sup> 4041-4050 aaaa	II <sup>a</sup> 4051-4060 aaaa	I <sup>a</sup> 4061-4070 aaaa	II <sup>a</sup> 4071-4080 aaaa	I <sup>a</sup> 4081-4090 aaaa	II <sup>a</sup> 4091-4100 aaaa	I <sup>a</sup> 4101-4110 aaaa	II <sup>a</sup> 4111-4120 aaaa	I <sup>a</sup> 4121-4130 aaaa	II <sup>a</sup> 4131-4140 aaaa	I <sup>a</sup> 4141-4150 aaaa	II <sup>a</sup> 4151-4160 aaaa	I <sup>a</sup> 4161-4170 aaaa	II <sup>a</sup> 4171-4180 aaaa	I <sup>a</sup> 4181-4190 aaaa	II <sup>a</sup> 4191-4200 aaaa	I <sup>a</sup> 4201-4210 aaaa	II <sup>a</sup> 4211-4220 aaaa	I <sup>a</sup> 4221-4230 aaaa	II <sup>a</sup> 4231-4240 aaaa	I <sup>a</sup> 4241-4250 aaaa	II <sup>a</sup> 4251-4260 aaaa	I <sup>a</sup> 4261-4270 aaaa	II <sup>a</sup> 4271-4280 aaaa	I <sup>a</sup> 4281-4290 aaaa	II <sup>a</sup> 4291-4300 aaaa	I <sup>a</sup> 4301-4310 aaaa	II <sup>a</sup> 4311-4320 aaaa	I <sup>a</sup> 4321-4330 aaaa	II <sup>a</sup> 4331-4340 aaaa	I <sup>a</sup> 4341-4350 aaaa	II <sup>a</sup> 4351-4360 aaaa	I <sup>a</sup> 4361-4370 aaaa	II <sup>a</sup> 4371-4380 aaaa	I <sup>a</sup> 4381-4390 aaaa	II <sup>a</sup> 4391-4400 aaaa	I <sup>a</sup> 4401-4410 aaaa	II <sup>a</sup> 4411-4420 aaaa	I <sup>a</sup> 4421-4430 aaaa	II <sup>a</sup> 4431-4440 aaaa	I <sup>a</sup> 4441-4450 aaaa	II <sup>a</sup> 4451-4460 aaaa	I <sup>a</sup> 4461-4470 aaaa	II <sup>a</sup> 4471-4480 aaaa	I <sup>a</sup> 4481-4490 aaaa	II <sup>a</sup> 4491-4500 aaaa	I <sup>a</sup> 4501-4510 aaaa	II <sup>a</sup> 4511-4520 aaaa	I <sup>a</sup> 4521-4530 aaaa	II <sup>a</sup> 4531-4540 aaaa	I <sup>a</sup> 4541-4550 aaaa	II <sup>a</sup> 4551-4560 aaaa	I <sup>a</sup> 4561-4570 aaaa	II <sup>a</sup> 4571-4580 aaaa	I <sup>a</sup> 4581-4590 aaaa	II <sup>a</sup> 4591-4600 aaaa	I <sup>a</sup> 4601-4610 aaaa	II <sup>a</sup> 4611-4620 aaaa	I <sup>a</sup> 4621-4630 aaaa	II <sup>a</sup> 4631-4640 aaaa	I <sup>a</sup> 4641-4650 aaaa	II <sup>a</sup> 4651-4660 aaaa	I <sup>a</sup> 4661-4670 aaaa	II <sup>a</sup> 4671-4680 aaaa	I <sup>a</sup> 4681-4690 aaaa	II <sup>a</sup> 4691-4700 aaaa	I <sup>a</sup> 470
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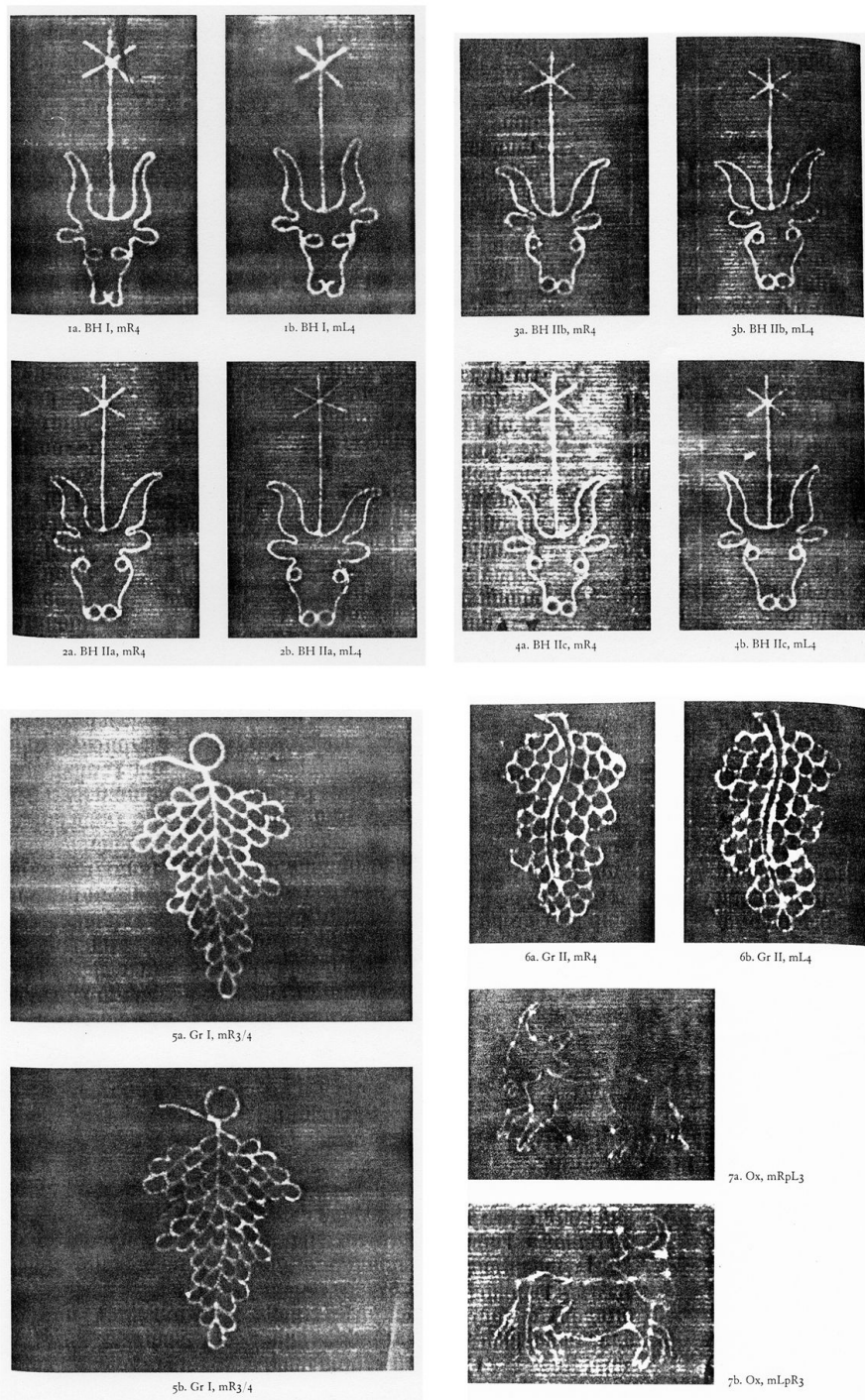


Figure I.7. Watermarks in the B42.

Reprinted from Paul Needham, "The Paper Supply of the Gutenberg Bible," *The Papers of the Bibliographical Society of America* 79, no.3 (1985): 303-374.

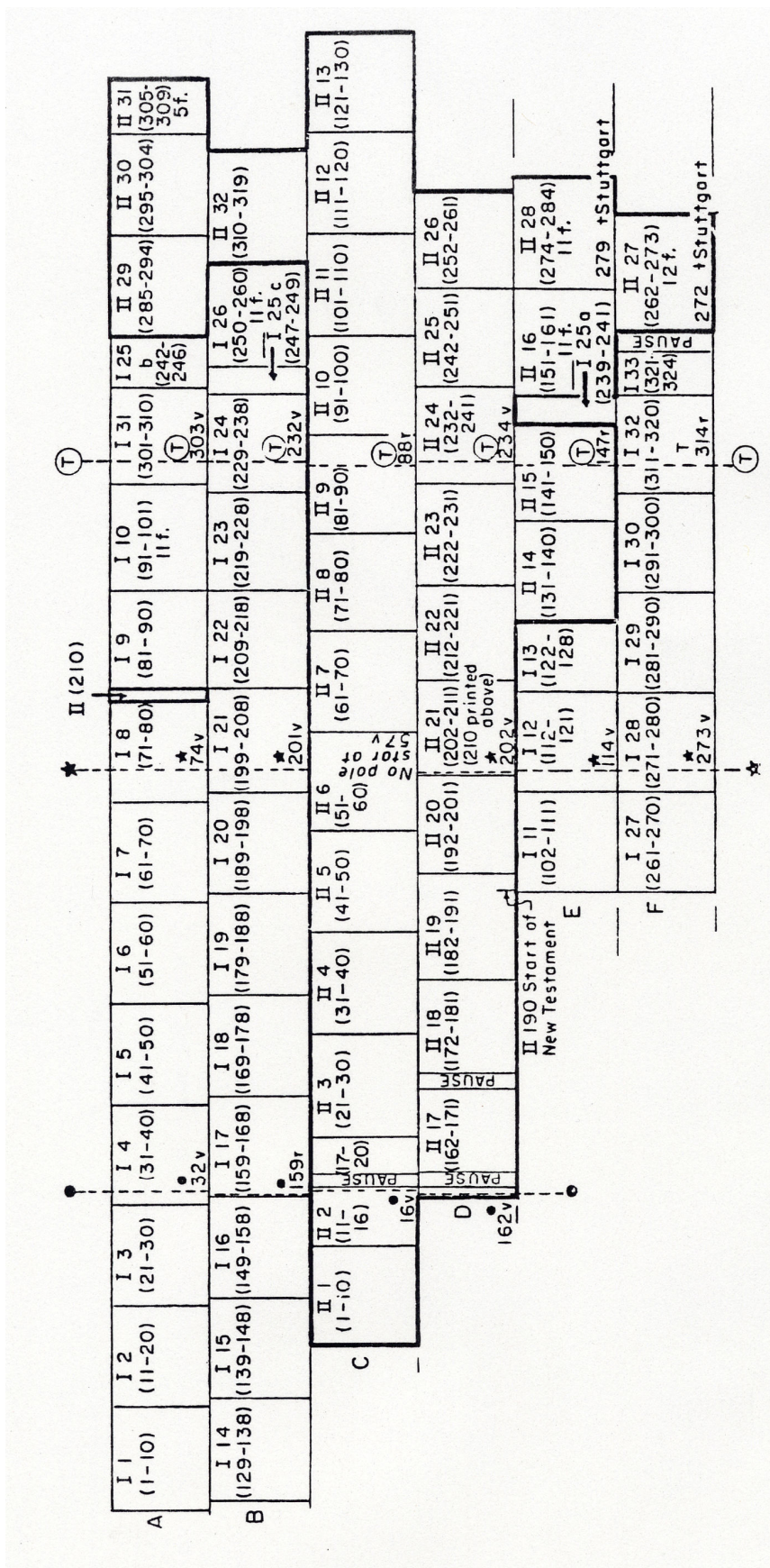


Figure 1.8. Chronological chart of vol. 1 and vol. 2, based on ink evidence.

Reprinted from Richard N. Schwab et al. "The Proton Milliprobe Ink Analysis of the Harvard B42, Volume II," *The Papers of the Bibliographical Society of America* 81, no.4 (1987): 406.



*Temporary Matrices and Elemental Punches in Gutenberg's DK type*

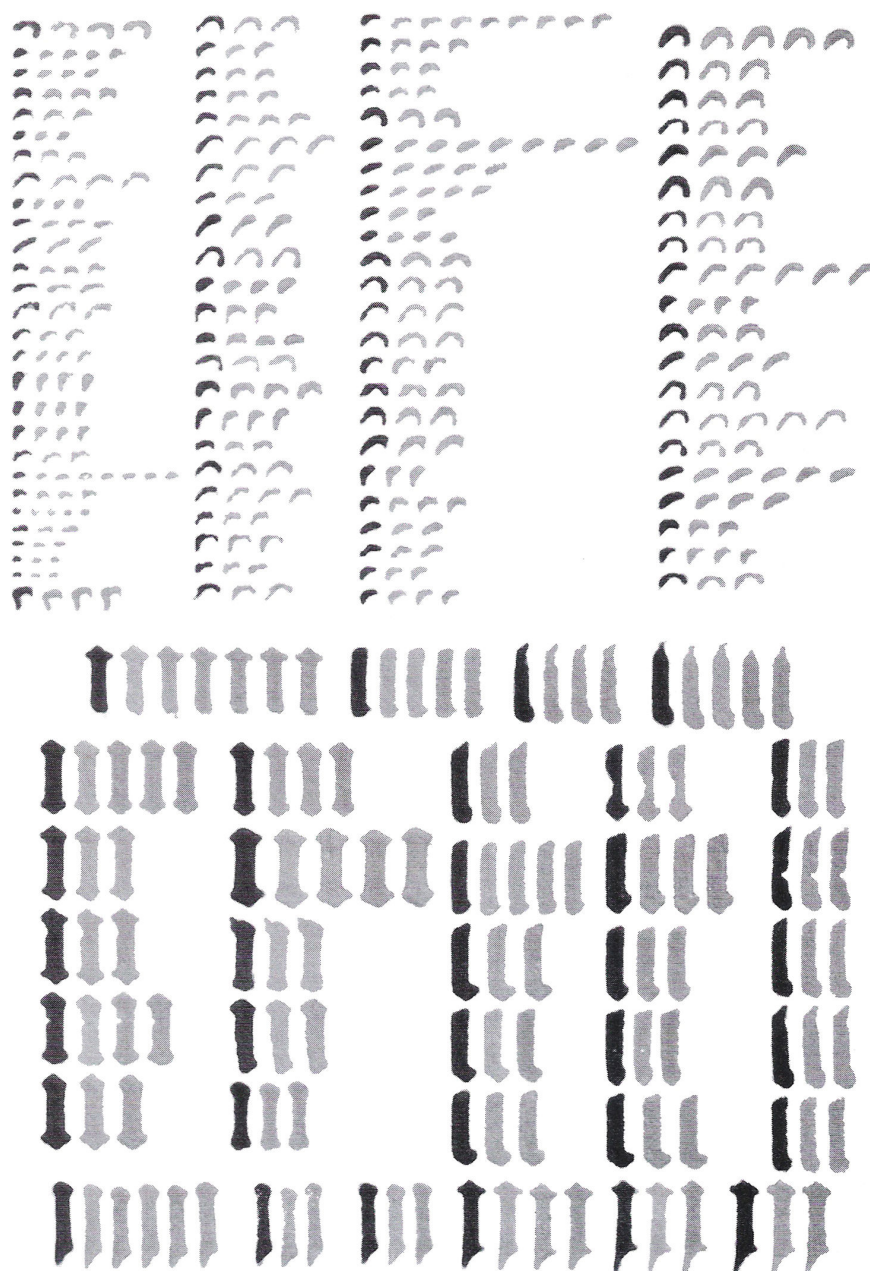


Fig. 5. A selection of *i* accent (*top*) and body (*lower*) clusters from independent clusterings of accents and bodies. Black images are cluster centroids, and the grey images to their right are the individual cluster members (lightened ink images from the document).

Figure I.9. A selection of “i” clusters produced by the Princeton team.

Reprinted from Agüera y Arcas, Blaise. “Temporary Matrices and Elemental Punches in Gutenberg’s DK Type,” in *Incunabula and Their Readers: Printing, Selling and Using Books in the Fifteenth Century*. Jensen, Kristian, ed. London, British Library, 2003, 9.

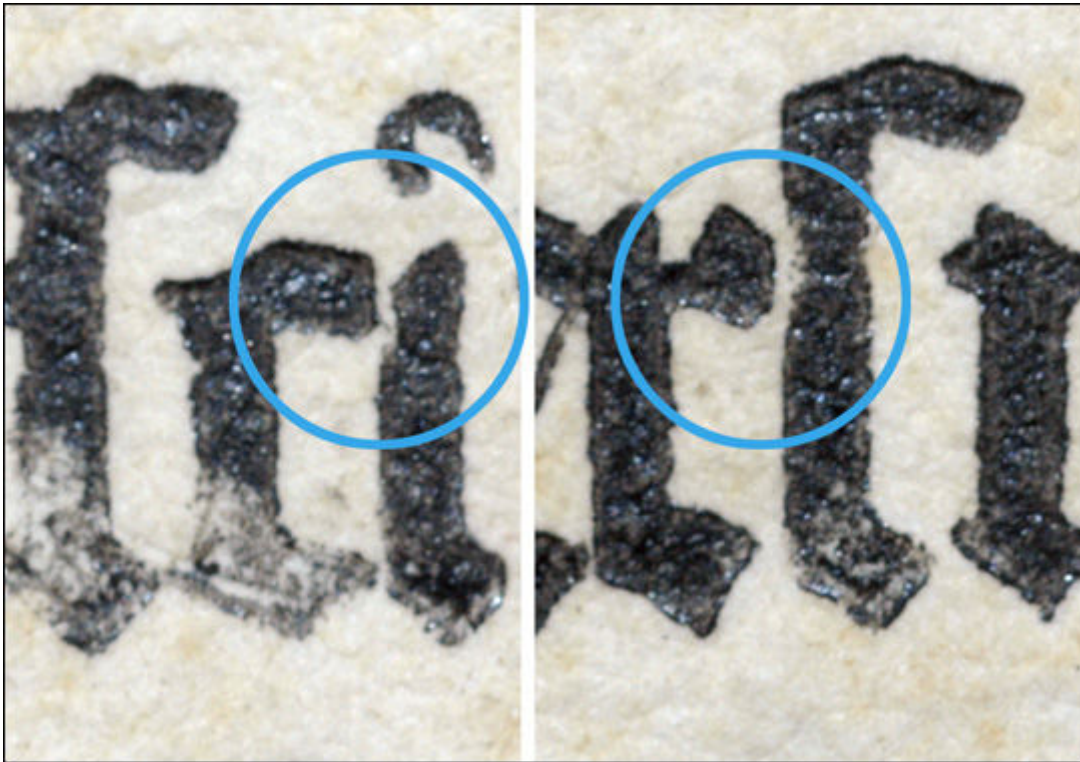


Figure I.10. “Overlapping letters” in the B42.

Reprinted from Rossella Lorenzi, “Gutenberg Printing Method Questioned,” Discovery Channel, 2004,  
[http://dsc.discovery.com/news/briefs/20041108/bible\\_zoom0.html](http://dsc.discovery.com/news/briefs/20041108/bible_zoom0.html)  
accessed 2005-10-18.

## II. The B42 and the Manuscript Tradition

### A. Introduction<sup>1</sup>

#### 1. Incunabula and Manuscripts

No study of the early printed book would be complete without a discussion of its relationship with the manuscript, since the earliest incunabula were strongly influenced by the manuscript tradition, since the manuscript was the only available model of book at the time. Despite such an innovative method of text reproduction as printing, early printers generally followed not only the already established channels of distributing manuscripts, but also adopted the physical features of manuscripts: their format, material, physical construction, typeface, and general page layout. As a result, the earliest incunabula look strikingly similar to contemporary manuscripts.

The B42 is a good example. Although it is the first printed book in Europe with movable metal type, a typical page from B42 shows many physical characteristics in common with those of a contemporary manuscript Bible of similar size, such as the so-called Giant Bible of Mainz mentioned before. This manuscript Bible was written with a “Calamus fidelis [faithful Pen]” in Mainz between 4 April, 1452 and 9 July 1453: “not only at the same time but at the same place as the Gutenberg Bible itself.”<sup>2</sup> Figure II-1 shows side by side the beginning page of the Keio University Library copy of the B42, which is presumed to have been rubricated, illuminated and bound in Mainz shortly after printing was completed, and that of the Giant Bible of Mainz. Even a cursory look makes their similar appearance clear. The text of both is written in *textura*, in double columns in black ink, with the incipit and the explicit in red to announce the opening and the closing of the text, with no foliation or pagination, and surrounded by the wide margins; a large ornamental initial prefixes each Book, a smaller initial colored red or blue precedes each chapter, every capital letter is marked with a red stroke. Indeed, at first glance B42 looks so like a manuscript that one was mistakenly regarded as a manuscript.<sup>3</sup>

Therefore, it is often said that the B42 imitated the appearance of the manuscripts as closely as possible.<sup>4</sup> A different production method, however, lead to differences in the physical appearance. For example, the B42 naturally lacks the ruling to

write horizontally straight. A closer look reveals that the B42 has more smoothly justified line endings. The studies of the earlier scholars have revealed that there were minute composition rules in the B42, as reviewed in the previous chapter, to use abutting types after letters which have projections to their right (c, e, f, g, r, t, and x); to print a full stop, a double hyphen and a final “s” outside of the column, and so on. These rules were strictly followed, with only a few exceptions. The first collation by the author revealed that a few stop-press variants in the B42 were made to obey the composition rule about the use of different shapes of the same letter. These strict rules suggest that a very careful attention was paid to the look of the printed page of the B42. It is necessary to compare the B42 with manuscripts, in order to determine to what extent these rules derived from the manuscript tradition, to what extent B42 followed or tried to follow the manuscript tradition, what new features it introduced, and for what purpose the new features served; and what new features would eventually lead to a new tradition of the printed books.

The manuscript Bibles of the fifteenth century have not been given enough attention they deserve, except for a small group of the very deluxe ones of the mid-fifteenth century.<sup>5</sup> For the fourteenth and first half of the fifteenth century, there is no very clear picture of the production of the Bible manuscripts.<sup>6</sup> What can be said with confidence is that the production of manuscript Bibles in the thirteenth century was very active, and in the fourteenth and fifteenth century considerably inactive, judging from the number of surviving copies; and that by the middle of the fifteenth century, large manuscript Bibles “were returning to fashion, especially in northern Europe.”<sup>7</sup> It may be because fewer Bibles were produced in the fourteenth and the first half of the fifteenth centuries, as enough copies had been produced to meet demand in previous centuries.<sup>8</sup> The inactive production stands in contrast with the manuscript production as a whole; in the fifteenth century book market started to flourish with the emergence of a new class of readers.

Once the B42 was published, however, it sold at a brisk rate. According to Piccolomini, all the copies were sold out in advance.<sup>9</sup> Furthermore, within the first twenty years of printing, twenty editions of the Vulgate Bible were printed; by the end of the incunabula period, in total ninety-six editions were printed and sold.<sup>10</sup> This figure suggests that the B42 stimulated a new demand for the printed Bibles. Considering that the text of the B42 generally represents a “Paris Bible,” established in the thirteenth

century – although it differs from it in the selection of prefaces and the inclusion of 4 Ezra, and it is not clear what a Paris Bible was like in the fifteenth century –, the success of the B42 is presumed to have lied in its physical characteristics rather than in textual superiority. In other words, it is postulated that the B42 succeeded in achieving a new feature, which cannot be found in manuscripts.

The purpose of this chapter is to make a comparison between the physical characteristics of B42 and those of select manuscript Latin Vulgate Bibles of the fifteenth century found in several library collections in London to verify this hypothesis.

## 2. Paris Bible

Before going further, it will be useful here to define what a “Paris Bible” is. The term Paris Bible should be used with caution because it does not necessarily refer to a particular format such as the tiny, easily portable Bible, or to the place of actual production. The Paris Bible was a type of the Vulgate Bible, established in the thirteenth century. Laura Light has pointed out that the Paris Bible “far from being the result of an extensive revision of the Vulgate, was the result of only minor modifications of a Bible already in existence which was created” around the beginning of the thirteenth century; she has emphasized the necessity for further study on other contemporary Bible types.<sup>11</sup>

With this caveat, it is a useful term to describe a certain type of a manuscript. A “Paris Bible” contains the complete Bible in a single volume, arranged in the newly standardized order which was close to that of the modern Bible (but very different from Jerome’s original order), accompanied by a set of sixty-four specific prologues, ending with a supplementary dictionary of Hebrew names (*interpretationes nominum hebraicorum*) starting with ‘Aaz apprehendens’ compiled by Stephen Langton (d. 1228).<sup>12</sup> The standard arrangement of biblical books was:

[Old Testament] Genesis, Exodus, Leviticus, Numbers, Deuteronomy, Joshua, Judges, Ruth, 1-4 Kings (1-2 Samuels and 1-2 Kings in a modern edition), 1-2 Chronicles, Prayer of Manasseh, 1 Ezra, 2 Ezra (Nehemiah in a modern edition), 3 Ezra (2 Ezra in a modern edition), Tobit, Judith, Esther, Job, Psalms, Proverbs, Ecclesiastes, Song of Songs, Wisdom of Solomon, Ecclesiasticus (without the Prayer of Solomon at the end), Isaiah, Jeremiah, Lamentations, Baruch (with Jeremiah's Epistle at the end), Ezekiel, Daniel, Minor Prophets (Hosea, Joel, Amos, Obadiah, Jonah, Micah, Nahum,

Habakkuk, Zephaniah, Haggai, Zechariah, and Malachi), and 1-2 Maccabees (Underlined are those books rejected by Jerome)

[New Testament] Gospels (Matthew, Mark, Luke, and John), Pauline Epistles (Romans, 1-2 Corinthians, Galatians, Ephesians, Philippians, Colossians, 1-2 Thessalonians, 1-2 Timothy, Titus, Philemon, and Hebrews), Acts, Catholic Epistles (James, 1-2 Peter, 1-3 John, and Jude), Apocalypse (Revelation in a modern edition)

The set of common sixty-four prologues was (numbered by Stegmüller):<sup>13</sup>

[Old Testament] General Prologue (284), Pentateuch (285), Joshua (311), 1 Kings (323), 1 Chronicles (328), 2 Chronicles (327), 1 Ezra (330), Tobit (332), Judith (335), Esther (341+343), Job (344), Job (357), Proverbs (457), Ecclesiastes (462), Wisdom (468), Isaiah (482), Jeremiah (487), Baruch (491), Ezekiel (492), Daniel (494), Minor prophets (500), Hosea (507), Joel (511), Joel (510), Amos (515), Amos (512), Amos (513), Obadiah (519+517), Jonah (524), Jonah (521), Micah (526), Nahum (528), Habakkuk (531), Zephaniah (534), Haggai (538), Zechariah (539), Malachi (543), 1 Maccabees (547), 1 Maccabees (553), 1 Maccabees (551)

[New Testament] Matthew (590), Matthew (589), Mark (607), Luke (620), John (624), Romans (677), 1 Corinthians (685), 2 Corinthians (699), Galatians (707), Ephesians (715), Philippians (728), Colossians (736), 1 Thessalonians (747), 2 Thessalonians (752), 1 Timothy (765), 2 Timothy (772), Titus (780), Philemon (783), Hebrews (793), Acts (640), Catholic Epistles (809), Apocalypse (839)

The Paris Bible met the demands of the time, and immensely influenced the production of Bibles throughout Europe; it changed the standard format for the Vulgate in a relatively short time. The presence of a commercial book trade in Paris, which was studied in detail by Richard H. Rouse, enabled this rapid diffusion of these innovative features.<sup>14</sup>

## B. Physical description of the B42

Below is a brief description of the physical characteristics of the B42. Textual criticism is beyond the scope of the present study; however, the selection and arrangement of prefaces and books have also been examined because they are connected with the physical



structure of the book. For identification of prefaces, *Repertorium Biblicum Medii Aevi*, compiled by Friedrich Stegmüller was consulted.<sup>15</sup> For copy specific information, the BL King's Library copy (London, BL, C.9.d.3, 4 = IC. 55) has been used, because it is a perfect paper copy, and the resolution of the images on WWW are high enough for the minute examination.<sup>16</sup>

[Contents]

Vol.1: Genesis–Ruth, 1-4 Kings, 1-2 Chronicles, Prayer of Manasseh, 1 Ezra, Nehemiah, 3 Ezra, 4 Ezra, Tobit, Judith, Esther, Job, Psalms [folios 246v and 260v are blank].

Vol.2: Proverbs, Ecclesiastes, Song of Songs, Wisdom of Solomon, Ecclesiasticus (with the Prayer of Syrach at the end as the final chapter), the Prayer of Solomon, Isaiah, Jeremiah, Lamentations, Baruch (with Jeremiah's epistle at the end as chapter 6), Ezekiel, Daniel, Minor Prophets, 1-2 Maccabees, Gospels, Pauline Epistles, Acts, Catholic Epistles, Apocalypse [f. 189v and leaves 318-319 are blank].

The prologues are 41 of the common set of 64, and 14 others shown here by \*: Stegmüller nos. 284, 285, 311, 323, 328, 330, 332, 335, 341+343, 344, 357, 430\*, 457, 462, 26\*, 482, 487, 491, 492, 494, 500, 551, 595\*, 590, 607, 620, 624, 670\*, 674\*, 677, 685, 699, 707, 715, 728, 736, 747, 752, 765, 772, 780, 783, 793, 633\* + 640, 809, 806\*, 812\*, 818\*, 822\*, 823\*, 824\*, 825\*, 834\*.

[Collation]

Vol. 1: 1-9<sup>10</sup> 10<sup>10+1</sup> (8+1); 11-12<sup>10</sup> 13<sup>6+1</sup> (4+1); 14-24<sup>10</sup>; 25<sup>10+1</sup> (7+1) 26<sup>10+1</sup> (9+1); 27-32<sup>10</sup> 33<sup>4</sup>. 324 leaves;

vol. 2: 1-13<sup>10</sup>; 14-15<sup>10</sup> 16<sup>10+1</sup> (10+1); 17-26<sup>10</sup>; 27<sup>12</sup>; 28<sup>10+1</sup> (7+1); 29-30<sup>10</sup> 31<sup>4</sup> (3+1); 32<sup>10</sup>. 319 leaves (318-319 are blanks) + π<sup>4</sup> (rubrication guides).

The text is printed only in black ink in double columns of 42 lines per page. However, if leaves belong to the first setting, folios I 1r to 5r and 129r to 132r have 40 lines per page, and 41 lines on f. I 5v. Folios 310r-v are 41-line pages in all the copies. A page from the Keio University Library copy, which was never rebound, measures 403 x 292 mm, with a printed area of 290 x 195 mm on 40-lines pages, 285 x 195 mm on f. I 5r

and 282 x 195 mm on folios I 310r and 310v, and 290 x 195 mm on 42-line pages. The column height of 40- and 42-line pages was equalized either by filing the original types or by casting new smaller types. In the first setting, the incipits and explicits are printed in red ink on I 1r, 4r, 5r, 129r and 129v. After printing these five pages, two-color printing was abandoned, probably because it had increased the difficulties of printing; in the other pages, spaces were reserved for rubrication. Only the incipit of the Jeremiah's epistle at the end of Baruch is printed in black ink as the usual text; this mistake may have been derived from the exemplar.

The number of pinholes is 10 in the first two printed quires (I 1 and 14) of the first setting. In the rest of the first setting and all the second setting pages, the number is 6. The pinholes, which come through always from a recto to a verso, are small, and are not symmetrical.<sup>17</sup>

The typeface is *textura* of a high grade (*textualis quadrata*). The B42 fount consists of about 270 sorts – 6 punctuation marks, about 55 basic sorts, 60 ligatures, 120 abbreviations, and abutting types (or 'secondary forms' as Schwenke called it) – so that the printed pages could look familiar to contemporaries accustomed to reading manuscripts (see figure I.4 in the previous chapter). The abutting letters were used to equalize the gaps between perpendicular strokes as much as possible. Their left or right side is flat without the diamond shaped spur, so they can be placed close to the preceding type with projections to their right: c, e, f, g, r, t, and x.<sup>18</sup>

The main mark of punctuation is the period (.) followed by a capital letter. Without exception, the colon (:), and raised mid-point (·) are followed by a small letter, and the question mark (?) by a capital letter. A syllable is often separated into two different lines, but never into the next column or on the next page. F. I 310r (quire 31/10r) – this and next pages are printed in 41 lines – is the only exception and the last word of the left column (a41) is broken and completed in the first line of the next column (b1), which ends with a complete word. Needham showed that this had resulted from a miscalculation of page fitting; b1 was originally composed as a42, but changed into b1 to shorten the page, so that this quire would smoothly proceed on to the next quire, which had been already composed.<sup>19</sup> Another rule concerns the position of a punctuation mark at the end of a line. The period, double hyphen, and final "s" (shaped like 5 and standing above the line) protrude outside the column when they come at the end of a line, while the

colon does not protrude. For the raised point, there was at first no rule; however, in the later parts it is always flush. With only a few exceptions, these setting rules are strictly followed.

Since B42 generally belongs to the Paris Vulgate in a broad sense, the presence of 4 Ezra is very unusual. Interestingly, 3 Ezra and 4 Ezra belong to the text unit B2 (quire I: 25-26; folios 239r-260v, 260v is blank), but they were not composed in the usual order. Needham argued that 4 Ezra was not part of the principal exemplar, but rather was added to it, based on an anomaly in the structure of the quire.<sup>20</sup> 3 Ezra ends on f. I 246r (quire I 25/7+1r), whose verso is blank, and 4 Ezra begins on f. I 247r (25/8r). Printing of this quire begins on 25/4r and 8r, then proceeded to 25/4v and 8v, and so on. That means two different compositors set 3 Ezra and 4 Ezra concurrently, and the compositor of 4 Ezra must have had a different manuscript.

The general rules of reserved spaces for rubrication and decoration to be executed by hand are as follows:

- (1) Initials of books and the General Prologue: 6-lines with some exceptions.<sup>21</sup> Three books begin on a new page after a blank verso: 4 Ezra on I: 25/8r (I: 247r), Tobit on I: 27/1r (I: 261r), and the Prologue to the New Testament on II: 19/9r (II: 190r). The first two seem to be accidental due to concurrent composition, rather than careful planning.
- (2) Initials of prologues: 4 lines, except for those of Joshua (6 lines), 1 Kings (5 lines), 1 Chronicles (6 lines), Isaiah (6 lines), the Gospels (5 lines), and 1 Thessalonians (3 lines).
- (3) Initials for small texts, such as Prayer of Manasseh, have three-line spaces.
- (4) A space for initial **I** at the beginning of books is never left, since it was intended to be placed in the margin, while that for initial **I** within chapters is sometimes created within the column of printing.
- (5) Initials of chapters: 2 lines. In the BL paper copy, they are supplied simply in red ink, sometimes with a white pattern. There is no printed guide letter.
- (6) Four- and three-line spaces are created for traditional 14 subdivisions of the Psalms.
- (7) A small space for a chapter number is created usually at the end of the last line of the previous chapter. In the BL paper copy, chapter numbers are supplied in Roman numerals in red.
- (8) For the incipits and explicits, no guide was printed within the page. Instead, a 4-leaf

rubrication guide was separately printed, and their required spaces correspond exactly with the reserved spaces in the printed pages (see figure II.2).<sup>22</sup> Only two extant copies still contain the rubrication guide: copies in the Bavarian State Library in Munich, and the National Library of Austria in Vienna. On f. II 9r, a space for an additional rubric is left: in the printed rubrication table, it reads “Hec quoque parabole salomonis: quas transtulerunt viri ezechie Regis iuda.”

Rubricators of some copies (for example, the BL paper copy) faithfully followed the printed instruction, and others did not.

- (9) In most copies, capital letters are usually marked with a red stroke by hand. In the BL paper copy, they are marked in red and yellow. Capital letters of each sentence in the Psalms are not printed.
- (10) Running titles to each book are not printed. In most copies, they are inserted across the top of each opening by hand.

## C. Manuscript Bibles

### 1. Copies to be Examined

The present chapter has examined Bible manuscripts that fulfill the following criteria: (1) a manuscript belongs to the Latin Vulgate tradition; (2) was written in the fifteenth century; (3) is found in one of the collections of libraries in London; (4) does not have commentaries like the B42; (5) and is not very fragmentary. They were selected from the catalogues of the BL and N.R. Ker’s *Medieval Manuscripts in British Libraries*, volume 1.<sup>23</sup> Below is a list of the manuscripts to be described in this chapter.

- (1) University of London Library, MS 292. *Biblia*
- (2) University College London Library, Lat. 22. *Novum Testamentum*
- (3) BL, Royal MS I C. V, VI. *Bible*
- (4) BL, Harley MS 2789. *Bibliorum Volumen Secundum*
- (5) BL, Harley MS 2836, 2837. *Biblia*
- (6) BL, Harley MS 2839, 2840. *Biblia*
- (7) BL, Additional MS 15254-15258. *Biblia Sacra*
- (8) BL, Additional MS 15259. *Biblia Sacra*
- (9) Congregational Library, I. b. 1. *Biblia, pars I*

(10) Congregational Library, I. b. 2. *Biblia, pars II*

(11) Victoria and Albert Museum, National Art Library, Reid 23. *Old Testament, pars*

Manuscript nos. (9) and (10) are in the possession of the Congregational Library, and (9) is the first part and (10) is the second part, but they are not companion volumes. Eight other Bible manuscripts have met the selection criteria, but the examination reveals that they are partial (consists of the Gospels or the Psalms only) and in the very different format from B42, thus they are not described.

The examination focuses on the look of the book, that is, the size, format, collation, general page layout, catchwords, marginalia, place of production, script/typeface, including the use of punctuation and the use of different shapes of the same letter, rules of decoration, and the method of showing structure of the text (such as colors and initials). Textual criticism is beyond the scope of the present study; however, the selection and arrangement of prefaces and books have also been examined because they are connected with the physical structure of the book. Marginal annotations, additions and corrections are also examined to determine whether the manuscript was actually read and used by readers and how.

## 2. Results

Table II.1 briefly shows the result of examination of the manuscripts and the B42 (at far right), focusing on major physical characteristics. A full description is given in the Appendix 1, following N.R. Ker's method of description.<sup>24</sup> The "no" row shows manuscript numbers mentioned above. The "Volume" row shows the number of extant volumes; "OT/NT" stands for "the Old Testament/the New Testament." The "material" row shows on what material each manuscript is written. The "Folios" row shows how many folios in principle consist one quire. The rows "Page size" and "Written area" show actual measurement in mm, and the number of columns and lines per column of written text are shown in the "Column / line" row; for example, "2/43-47" means the text is written in double columns, and lines per column range from 43 to 47. The "Place" row shows place of production, and if an early owner is identified, it is shown in the "Provenance" row. The "Script" row shows a name of each script. The identification of scripts used is based on the nomenclature proposed by Michelle Brown.<sup>25</sup> The "Scribes"

row shows the number of scribes. The “Punctuation” row shows how many kinds of punctuation are used in each manuscript. The “Justification” row shows a device for justification such as line fillers. The rows “Syllable separation” and “Separation sign” show where a syllable is separated and how the separation is indicated. Each of “Initial” row shows how many lines an initial occupy. The “Initial I” row shows whether an initial “I” is painted within the column of writing (“in”) or in the margin (“margin”; that is, protrudes outside the column). The “Colors” row shows the number of colors used in initial decorations, and “#” indicates the use of gold – for example, eight colors including gold are used in manuscript no. 3. The rows “Guide letter” and “Red stroke” show whether each manuscript has a guide letter for initials and incipits, and whether capital letters of each sentence are marked with a red stroke. “o / -” stands for “it has / it does not have.” In the “Preface set of the Paris Bible” rows, the number of the prefaces which agree to the 64 common set of the Paris Bible is shown; for example, “40/64 + 5” means it has 40 of the common set of 64, and 5 others. The “Books” row shows whether the selection and arrangement of the books of the Bible is different from those of the Paris Bible; “o” stands for it perfectly agrees to the Paris Bible. The “Hebrew names” row shows whether it has *Interpretationes Nominum Hebraicorum*, which is one of the characteristics of the Paris Bible; “o” stands for it has; “-” for it does not have; and “?” means it cannot be determined due to the lack of a portion of the Bible; and “?(-)” indicates that a manuscript is assumed to lack the dictionary from the beginning.

The place of production is centered on the German speaking regions (seven manuscripts). Four manuscripts are attributed to the Netherlands: nos. 1, 2, 3, and 11; two copies to Germany: nos. 9 and 10; one to Flanders: no. 7. One manuscript, no. 4, which is written in humanistic hand, is attributed to Italy, and is also unique in that it is long lines instead of double columns. No. 8, which is written in secretary hand, is attributed to France and is a unique example of a single-volume complete Bible. These two manuscripts, nos. 4 and 8, are only briefly described, since they are unlikely to represent the kind of manuscript which might have served as models for B42, although they have their own interesting features. The place is not specified for nos. 5 and 6.

The seven manuscripts that come from the German speaking regions have been examined in detail and compared with the B42, focusing especially on three manuscripts of a large size written in textura (nos. 3, 7, and 11), since they are assumed to represent

the kind of manuscripts which might have served as models for B42. Two other large manuscripts written in *textura* (nos. 5 and 6) are also carefully examined, although the origin is not specified, because their physical features are similar to them.

The manuscripts are written in five different scripts. Thus five manuscripts, nos. 3, 5, 6, 7, and 11, are in *textura*; three manuscripts, nos. 1, 2, and 9, are in *hybrida*; one manuscript, no. 10, is in *cursiva*; no. 8 is in *secretary*; and no. 4 is written in humanist minuscule. Interestingly, out of the five manuscripts written in *textura*, four are of a very large size, ranging from 380 mm to 505 mm in height (nos. 3, 5, 6, and 7; no. 11 is a little smaller, but still measuring 305 mm). Except for no. 5, they are splendidly illuminated in various colors including gold. Seven of them, nos. 1, 2, 3, 5, 7, 9, and 11, show the evidence of use by readers. Five of them, manuscripts 2, 3, 5, 7, and 11, have monastic provenances.

All of the nine manuscripts are written in double columns in black ink; incipits and explicits in red ink; running titles, chapter initials and chapter numbers in red (and often in blue). Except for nos. 4, 6 and 8, capital letters of each sentence have red stroke; in no. 6, capital letters are ornamental. Nos. 2, 3, 4, 5, 8, 10 and 11 are written by a single scribe; nos. 1 and 7 by two scribes; no. 6 by three scribes; and no. 9 by four scribes. When the same letter appears twice in a row (for example, “rr,” “ff,” and “ss”), they are differently treated in all the manuscripts except for nos. 1 and 8; the second letters are often longer than the first. However, even in a single manuscript, the treatment of the letter shapes is not standardized among the scribes. In no. 6, the second “r” in “rr” is sometimes broader, sometimes narrower, and sometimes of the same width.

All the manuscripts mark each beginning of the textual unit with initials. The actual size of initials and the level of splendor show a wide variety among the manuscripts, but the hierarchy of decoration is commonly observed; larger initials or miniatures for the beginning of books, smaller for prologues, much smaller for chapters. Regardless of the size and the level of splendor, chapter initials are commonly painted in two lines. On the other hand, even in one manuscript, the size of the initials is not very strictly standardized.

As for a space for initial “I,” seven manuscripts show two different treatments: nos. 1, 2, 3, 6, 9 and 11. Whether it is painted within the column or in the margin seems to be decided by its position on a page, or by the hierarchy. For example, in no. 1, “I” is

painted within the column of writing, except when it appears in the left column; in no. 2, chapter initial “I” is painted in the margin, while book initial “I” is often in the column of writing. In every manuscript, the aberration from the norm is commonly observed. It is not standardized even within the same manuscript; in no. 9, the first scribe paints chapter initial “I” within the column of writing, but the second scribe paints it in the margin.

In nos. 5, 8, and 11, a new book starts on a new column or on a new page, leaving blank space at the end of the previous book. In no. 3, some of the books start on a new page; in no. 1, only a few books start on a new page. In the rest of the manuscripts, each new book starts on a new line on the same page.

Guide letters are commonly found in the reserved spaces for incipits and initials to guide a rubricator/illuminator. Catchwords are found in seven manuscripts; nos. 3 and 10 do not show catchwords, but they may have been trimmed at the time of rebinding. In every manuscript, catchwords are written on the last verso of quires to indicate the first few words of the next page, but the position differs among manuscripts; in no. 2, it differs even in a single manuscript.

The marks of punctuation used in the manuscripts examined are those in the general repertory of the later Middle Ages, admittedly, the rule for their use had not been completely standardized in the manuscript period.<sup>26</sup> The common marks are the period, *punctus elevatus*, *punctus flexus*, and question mark. Most of the manuscripts use four or more marks of punctuation. In most cases, the period is followed by a small or capital letter (nos. 2, 3, 4, 5, 8, and 11). In nos. 1 and 10, the period is always followed by a capital letter. No. 1 has two kinds of question mark, and one is followed by a capital and the other is followed by a small letter, without exception. Four manuscripts also use the raised mid-point. Another four use the colon, but two of them are not typical fifteenth century manuscript Bibles, being written in secretary and humanistic book hand, respectively (nos. 4 and 8).

Five manuscripts (nos. 2, 3, 5, 7, and 11) have monastic provenances, as annotations and colophons show. These five manuscripts and two other manuscripts (nos. 9 and 10) have corrections and marginalia added by contemporary readers, which reflected the actual use of the readers. In the other three (nos. 1, 6, and 8), virtually no trace of readers can be found. Nos. 2, 3, 5, and 7 have lection reading guides and/or pronunciation markings. No. 5 has lection reading guides written in red at the bottom of the first page of



some books and prologues; on f. 338r, it is stated that “Iste liber est fratrum carthusiensium”; on f. 266r of this manuscript, it is written “Iste liber totus legitur in refectorio...” These guides show that this copy which belonged to a Carthusian monastery was read aloud at mealtimes, as in a Benedictine monastery. In the margins of no. 3, Ammonian sections are inserted by the original scribe. In no. 4, 7, 10, numbers corresponding to the numbers in the list of capitula are written in the margins.

In nos. 1, 2, 3, 7 and 11, lines are justified by line fillers or by stretching out the last letter of the line. As shown in figure II.3, in no. 11, columns are often justified either by line fillers such as ‘n’ (see figure III.a), which are crossed out in red, and a wavy line (~), or by stretching the last letter of the line (see figure III.b). In some cases, the previous or next word is repeated and crossed out, maybe for justification. These methods are, however, not standardized even in one manuscript; if more than one scribe worked, their manners of justification are different from each other. For example, in no. 7, only the second scribe seem to use line fillers. On the other hands, all the manuscripts allow a syllable to be separated into lines, into the next column, or into the next page. Syllable separation is indicated by hyphen (/) and double hyphen (//) in most manuscripts.

Among the manuscripts examined, no manuscript is in exactly the same order as the Paris Bible, but the arrangement of books is quite similar to it more often than not, regardless the size, format, script, or the place of production. On the other hand, the selection of prefaces considerably varies from that of the Paris Bible; many of the standard prefaces are not included, while others are added. Only two of them, nos. 1 and 8 have *Interpretationes Nominum Hebraicorum*, which is one of the characteristics of the Paris Bible.

#### D. Manuscript Tradition

The examination of the physical characteristics of B42 and the manuscripts of the fifteenth century, which were made in the German-speaking countries and representing the kind of manuscript that might have served as the model for B42, clearly shows that B42 basically modelled its general page layout on that of the contemporary manuscripts. The text is set in double columns in black ink on non-paginated/foliated pages, surrounded by wide margins. At the earliest stage, an attempt was made to follow the traditional use of red ink in the incipit and explicit; even after it was abandoned, the space

was left blank, instead of being printed in black ink; the printer's strong concern is demonstrated by the fact that the instruction for rubrication was separately composed and printed. On the other hand, B42 shows no attempt at running titles for each book, even on the two-colour pages. Nor is the chapter number printed: the space just big enough for Roman numerals is simply left blank. Capital letters are unmarked. B42 does not have a printed decoration, initial, or guide letter, probably because of technical limitations, while all the manuscripts mark each beginning of the textual unit with initials; larger initials/miniatures for the beginning of books, smaller for prologues, much smaller (generally in two lines) for chapters, although the actual size of initials is not very strictly standardised even in one copy. It is clear that B42 tried to follow the hierarchy of decoration by leaving a blank space for them.

B42's blank space for an initial at the beginning of a book is far more consistently created than the manuscripts examined in this study. Although it is still not free from mistakes, the basic plan is simple and clear: six-line spaces for books and four-line spaces for prologues. Space for initial "I" is basically not created within the printed column, regardless whether it appears in the left column or right column, or whether it is a book initial or a chapter initial. Compared to the complexity found in the manuscripts, the rule in the B42 becomes standardized to a great extent.

Since the set type can be re-adjusted before being printed, it is no surprise that the columns of B42 are much more smoothly justified than in the manuscripts. This was not, however, a minor or automatic improvement; rather, it was because of the printer's deep concern about justification. Five manuscripts, nos. 1, 2, 3, 7, and 11 also paid such careful attention to smooth line-endings that lines were justified by line fillers or by stretching out the final letters. Unlike these manuscripts, B42 never used a line filler, but as many as 120 sorts of abbreviations made justification possible. The rule concerning the position of a punctuation mark at the end of a line was also a new step towards better justification: the period, double hyphen, 5-shaped final "s" are set outside of the column, whereas the colon and raised mid-point are set within the column. This rule reflects a conscious effort of the printer for standardization. In addition, the present collation revealed that the press was stopped in the midst of printing to make a re-justification (see below, chapter IV).

Another outstanding principle found in B42 is that a column always ends with a

complete word so that words are never separated into the next column or the next page, while a syllable is often separated into lines and the separation is indicated clearly by a double hyphen, as in the manuscripts. This concern for word separation is never found even in the most richly illuminated manuscripts of a very large size, nos. 3, 6, and 8. Regarding the word separation, the previous collation by the author revealed an interesting example of the printer's concern over the matter. On f. I 281r, the word "comedam" had been broken in "co" and "medam" in the original state, which falsely implies there is a verb root like "medo"; to avoid misreading, it was changed into "com" and "edam" (= eat).<sup>27</sup>

B42's setting rule of the use of abutting letters also generally follows that of the manuscripts written in *textura*.<sup>28</sup> Although some manuscripts have the rule of use a longer or shorter letter in double letter such as "ff" and long "ss," B42 does not show such a rule. The printer is assumed to have decided to follow a simpler style, considering time and effort needed to make a new sort of type. On the other hand, the shorter abutting "r" appears in B42, for which no manuscript model has been found, although the printer must have had a good reason to produce a particular shape of the type. The use of this shorter abutting "r" in B42 has never been studied in detail, and a comprehensive analysis is necessary to pursue this matter further, as well as a search for its model.

Compared to the manuscript examined, in the B42, fewer punctuation marks are used according to a stricter rule. Only four marks are used in B42, and all were already in a general repertory of manuscripts. Without exception, the period and the question mark are followed by a capital letter, and the colon and the raised mid-point by a small letter, while in most manuscripts the period is followed both by a capital and small letter. The simplification and the standardization might have been introduced to make it easier for several compositors to work together.

The studies of the earlier scholars revealed that the process of the printing of the B42 was complex. It was divided into sections, and concurrently composed and printed, presumably by several teams of press-crew (see chapter I). However, the division of work bring no difference in the layout or the application of the minute composition rule. On the contrary, in the manuscripts, each scribe applies different rules even in a single manuscript.

The typeface of the B42 is *textura*, and the combination of the physical page size

and the typeface looks natural, if the B42 was made for the monastic market. Out of five manuscripts written in *textura*, four of them (nos. 3, 5, 6, and 7) are of a very large size similar to B42, and four (nos. 3, 5, 7, and 11) have monastic provenances. The monastic users were accustomed to reading aloud from a large Bible written in *textura*. However, only manuscript no. 7 is written in exactly the same category of script: *textualis quadrata*. Interestingly, however, this particular feature of the B42 does not seem to have much influence on later printers, because among the many incunabula Vulgate Bibles, only one other edition was printed in the same typeface – the 36-Bible, a kind of B42’s “daughter.” The answer to the question of why this typeface was selected requires further research.

It is worthwhile to compare the spaces in B42 with those of manuscripts of similar size, nos. 3, 5, 6, and 7. Those in B42 are much smaller than manuscript nos. 3 and 6, and a little smaller than nos. 5 and 7. The first two are richly illuminated and show no trace of readers, whereas the latter two were used in monasteries, although monastic provenance does not necessarily mean that the manuscript is simple and modest in decoration (for example, manuscript no. 3 was written and richly illuminated by Brethren of the Common Life at Zwolle). The B42 looks much more similar to those manuscripts made and used in monasteries. In addition, it is assumed that three fourths of the copies of the B42 were printed on paper, while paper is used only in two modest manuscripts, nos. 2 and 9 (made in the Netherlands and Germany, respectively), among the manuscripts examined.

Although the precise incentive for Gutenberg for this ambitious printing enterprise is still unknown, judging from the size, format, space for initials, and typeface, it is certain that the B42 was intended as a relatively inexpensive Bible of a large size, rather than as a rival to a luxury manuscript.<sup>29</sup> This conclusion agrees to that of König. It is true that several copies of B42 (for example, the copy now in Vienna, the National Library of Austria) were lavishly illuminated for private owners, but its primary intended market is assumed to have been monasteries.<sup>30</sup> In fact, many copies bought by a private owner are assumed to have been donated to religious institutions at some point.<sup>31</sup> Copies at religious institutions were used probably for refectory reading, as manuscript pronunciation markings and annotations in extant copies indicate, although private readers also left marks and it is often impossible to tell when the markings were made. A further investigation of readers’ marks will shed further light on how copies of B42 were

used by the contemporary readers.<sup>32</sup>

The heavy abbreviation in B42 also suggests that intended readers were those who found no difficulty in reading that kind of text. The text of B42 is much more heavily abbreviated than those of large manuscripts examined in this chapter. Schneider showed that there are many examples of the incorrect expansion of abbreviations, and thus concluded that lost exemplar(s) of the B42 must have been a heavily abbreviated small-format Bible.<sup>33</sup> Therefore, the B42 is assumed to have used a small-format Bible as exemplar (or exemplars), but at the same time it modelled its physical characteristics on the large contemporary manuscripts made for and used in religious houses.

The arrangement of books is rather similar to that of the Paris Bible both in the manuscripts and B42, while that of prologues is quite different in all of them. It is worth noting that the Giant Bible of Mainz (see section A.1), wanting some leaves which probably contain 4 prologues, has 57 of the common set of 64 prologues (11 of them are variants) and 58 others.<sup>34</sup> Despite the dominance of the Paris Bible, there was no unity of the contents in the fifteenth-century manuscript Bibles. The exclusion of *Interpretationes Nominis Hebraicorum*, which was a standard component of the Paris Bible, does not seem peculiar, considering that only two manuscripts contain it (and one of them, no. 8, is different in many aspects). On the contrary, the presence of 4 Ezra is striking. According to Needham, out of the 75 manuscripts of the thirteenth to the fifteenth century of the Paris Bible group listed in Ker's *Medieval Manuscripts* volumes 1 to 3, only 3 included 4 Ezra, and that even these 3 divided the text of 4 Ezra in a different way from B42.<sup>35</sup> The arrangement of books and prologues of B42, including 4 Ezra, however, established a new tradition for the printed Vulgate Bibles. Twenty editions of the Vulgate Bible printed by various printers in the first twenty years were derived directly or intermediately from B42, and virtually all present the same arrangement as B42, and with a similar physical appearance except for the typeface.<sup>36</sup> Indeed, among more than eighty Vulgate Bibles printed in the incunabula period, only two editions do not belong to the family lines from B42.<sup>37</sup>

## E. Chapter Conclusion

Close examination of the select fifteenth-century manuscript Bibles and the B42 reveals that the B42 modelled its physical characteristics on the large contemporary manuscripts

made for and used in religious houses, although a smaller format was likely used for the exemplar(s) of the B42. It was confirmed that the B42 followed the manuscript tradition closely in terms of physical appearance. However, the B42 did not merely imitate the manuscript style. With its strict setting rules, the B42 succeeded in introducing a more standardized page layout, despite its complex concurrent printing and composition. The rules regarding a layout show two directions: the standardization of the manuscript tradition, and the refinement of the layout achieved by introduction of new rules, which was never found even in the most richly illuminated manuscripts of a very large size. It leads to a conclusion that the B42 did not “imitate” manuscripts; rather, it represents an attempt at realizing an “ideal manuscript.” Pursuing an ideal manuscript led to the B42 to approach perfection to an extent that manuscripts could never achieve. The appearance of the B42 added an initial impetus to a gradual change in printed books; in the following decades, gradually new features were introduced into the printed books, such as the regular inclusion of page numbers and the adoption of the title page.<sup>38</sup>

## Notes

1 This chapter has been developed from part of my master’s thesis submitted to the University of London: Mari Tomioka, “The First Printed Bible and the Manuscript Tradition” (master’s thesis, University of London, 2002/2003). A revised version will be published as a journal article: Mari Agata, “グーテンベルク聖書と写本の伝統,” [The Gutenberg Bible and the Manuscript Tradition] *Library and Information Science* 54 (forthcoming).

2 Dorothy Miner, *The Giant Bible of Mainz: 500th Anniversary, April Fourth, Fourteen Fifty-two, April Fourth, Nineteen Fifty-two* [Philadelphia, 1952], 7.

3 A copy of the B42 in London, the Lambeth Palace Library, is an example. This copy looks even more like a manuscript, with ruling added by hand, and was once catalogued as a manuscript; the library has retained the call number “MS 15” by which it was formerly mistakenly catalogued to avoid confusions.

4 For example, “Gutenberg’s goal was always to have his books resemble fine calligraphic manuscripts written in gothic hands.” Olmert Michael, *The Smithsonian Book of Books* (Washington D.C.: Smithsonian Institution, 1992), 117-118.; see also “[i]t is often asserted that the Gutenberg Bible was made to resemble a medieval manuscript.” De Hamel, *History of the Bible*, 205.

5 Elgin Vaasen, “Die Werkstatt der Mainzer Riesenbibel in Würzburg und ihr Umkreis,” *Archiv für Geschichte des Buchwesens* 13, no. 5-6 (1973): 1121-1428.

6 Paul Needham, “The Changing Shape of the Vulgate Bible,” in *Bible as Book: The First Printed Editions*, ed. Paul Seanger and Kimberly Van Kampen (London: British Library, 1999), 55.

7 Hamel, *History of the Bible*, 194.

8 Hamel, *History of the Bible*, 138. See also Paul Needham, “Changing Shape,” 53-54.

9 Needham, “Paper Supply,” 309.

10 According to the search result of the incunabula database, *Illustrated ISTC*; the number is a

ground total of editions both with and without a commentary, and three editions printed after the year 1501 were excluded. [Martin Davies, ed.], *The Illustrated ISTC on CD-ROM*, 2nd ed. (Reading: Primary Source Media in association with The British Library, 1998).

11 Laura Light, "French Bibles c. 1200-1230: A New Look at the Origin of the Paris Bible," in *The Early Medieval Bible: Its Production, Decoration, and Use*, ed. Richard Gameson (Cambridge: Cambridge University Press, 1994), 155-76.

12 A convenient list of these fixed prologues are found in *Medieval Manuscripts in British Libraries*, ed. N. R. Ker (Oxford: Oxford University Press, 1969-92), i: *London* (1969), 96-97.

13 Friedrich Stegmüller, ed., *Repertorium Biblicum Medii Aevi* (Madrid: 1950-80), 11 vols.

14 Richard H. Rouse, *Manuscripts and Their Makers: Commercial Book Producers in Medieval Paris, 1200-1500*, 2 vols (Turnhout, Belgium: Harvey Miller, 2000).

15 Stegmüller, *Repertorium*.

16 British Library, *Gutenberg Bible: Comparing the Texts*, <http://prodigi.bl.uk/gutenbg/search.asp> (accessed 2006-02-26).

17 For later developments of this system, see Martin Boghardt, "Pinhole Patterns in Large-Format Incunabula," *The Library*, 7th series 1 (2000): 263-289.

18 Schwenke developed Dziatzko's study and much more precisely analysed the relations of the individual letters to one another, both for of different letters placed side by side, and for the same letter as it appears in different parts of B42. See Schwenke, *Untersuchungen*, 18-45.

19 Needham, "Division of Copy," 421-6.

20 Needham, "Compositor's Hand," 348-51, and Needham, "Division of Copy," 413-20.

21 The exceptions are those of Matthew (4 lines), Exodus (5 lines, begins at the fifth line from the bottom), Judges (8 lines), 2 Ezra (5 lines), Ecclesiastes (5 lines), Isaiah (4 lines), and Jeremiah (4 lines).

22 All the pages of the rubrication guide are reproduced in full colors in a commentary to the facsimile edition of B42. *Kommentarband*, between 180 and 181.

23 Ker, *Medieval Manuscripts*. The following catalogs of the Lambeth Palace Library were also examined, but no Bible of the fifteenth century was found: M.R. James and Claude Jenkins, *A Descriptive Catalogue of the Manuscripts in the Library of Lambeth Palace* (Cambridge: Cambridge University Press, 1930-2); E.G.W. Bill, *A Catalogue of Manuscripts in Lambeth Palace Library, MSS. 1222-1860* (Oxford: Clarendon Press, 1972); E.G.W. Bill, *A Catalogue of Manuscripts in Lambeth Palace Library, MSS. 1907-2340* (Oxford: Clarendon Press, 1976); E.G.W. Bill, *A Catalogue of Manuscripts in Lambeth Palace Library, MSS. 2341-3119 (excluding MSS. 2690-2750)* (Oxford: Oxford University Press, 1983).

24 Ker, *Medieval Manuscripts*, vii-xiii.

25 Michelle P. Brown, *A Guide to Western Historical Scripts from Antiquity to 1600* (London: British Library, 1990).

26 M. B. Parkes, *Pause and Effect: An Introduction to the History of Punctuation in the West* (Aldershot: Scolar Press, 1992).

27 Agata, "Stop-press Variants," 158-9. I am grateful to Dr. Jensen and Dr. Needham for this suggestion.

28 It is worth noting that one of Gutenberg's assistants, Peter Schöffer, is said to have been trained as a scribe.

29 See König, "Illuminierung der Gutenbergbibel," in *Kommentarband*, 69-125. For the possibility as a luxurious Bible, see Lehmann-Haupt, *Master of the Playing Cards*.

30 König, "Illuminierung." For the Vienna copy, see Ilona Hubay, "Die Bekannten Exemplare der zweiundvierzigzeiligen Bibel und ihre Besitzer," in *Kommentarband*, 145 (no. 27).

31 Kristian Jensen, "Printing the Bible in the Fifteenth Century: Devotion, Philology and Commerce," in *Incunabula and Their Readers*, 131.

32 For the most detailed study so far made on the marginal notes in the B42, see Powitz, *Gutenberg-Bibel*. An extensively annotated copy in Texas has been digitized and made further research possible.

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- 33 Schneider, *Text der Gutenbergbibel*.
- 34 Svato Schutzner, *Medieval and Renaissance Manuscript Books in the Library of Congress: a Descriptive Catalog, I, Bibles, Liturgies, Books of Hours* (Washington: The Library, 1989), 41-7.
- 35 Needham, "Text of the Gutenberg Bible," 46-47.
- 36 Needham, "Text of the Gutenberg Bible," 54.
- 37 Needham, "Changing Shape," 53-70. See also Jensen, "Printing the Bible."
- 38 On transition from manuscripts to printed books, see Smith, "From Manuscript to Print," 1-10; Smith, *Title-page*.



Table II.1 The Manuscripts and the B42

No	1	2	3	4	5	6	7	8	9	10	11	B42
Volume	4	1 (NT)	2	1 (vol. 2)	2	2	5	1	1 (vol. 1)	1 (vol. 2)	1 (vols. 2 and 4 of OT in 1)	2
Material	vellum	vellum/paper	vellum	vellum	vellum	vellum	vellum	vellum	paper	paper	vellum	paper/vellum
Folios	8	8	8	10	10	12	8	8	12	12	8	10
Page size (mm)	339 x 250	284 x 205	380 x 270	330 x 337	480 x 340	445 x 335	505 x 365	495 x 345	280 x 205	297 x 210	305 x 215	403 x 292
Written area	238 x 172	210 x 145	260 x 174	235 x 160	340 x 230	298 x 210	340 x 217	352 x 225	213 x 150	215 x 140	215 x 145	290 x 195
Column / line	2 / 47	2 / 43-47	2 / 47	1 / 34	2 / 35, 36	2 / 35, 38	2 / 33	2 / 59	2 / 47-50	2 / 41, 42	2 / 42, 43	2 / 42
Place	The Netherlands	The Netherlands	The Netherlands	Italy	not specified	not specified	Flanders	France	Germany	Germany	The Netherlands	Germany
Provenance	not specified	Monastery	house of Augustinian canons	not specified	Cartusian monastery	not specified	Benedictine Abbey	not specified	not specified	not specified	house of Augustinian canons	—
Script	hybrida	hybrida	textualis rotunda	humanist	textualis rotunda	textualis rotunda	textualis quadrata	secretary	hybrida	cursiva	textualis rotunda	textualis quadrata
Scribe	2	1	1	1	1	3	2	1	4	1	1	-
Punctuation	6	4	3	4	4	3	5	2	1	3	4	4
Justification	line fillers	line fillers	line fillers (rarely)	x	x	x	stretching the last letter	x	x	x	line fillers; wavy line; stretching	adjustment of types
Syllable separation	lines, columns, pages	lines, columns, pages	lines, columns, pages	lines, columns, pages	lines, columns, pages	lines, columns, pages	lines, columns, pages	lines, columns, pages	lines, columns, pages	lines, columns, pages	lines, columns, pages	lines
Separation sign	>, /	-	/	-	/, //	/	/, //	/, //	;, /, //	/	/	//
Book	3-8	6-8	7-10, 15	3	4-9	8-15	8	6-8, 17	3-9	5-8, 10-15	11-30	6
Initial	3-6	3-8	4-10	2	2-6	2-14	8	4-8	2-7	3, 4	13-21	4
Chapter	2	2	2, 3	1, 2	2	2	2, 3	2	2	2, 3	2	2

No	1	2	3	4	5	6	7	8	9	10	11	B42
Initial I	in (except in left column)	in (books) / margin (chapters)	in (except for chapter initials in left column on the verso pages)	margin	margin (with two exceptions )	often in (book) / margin (chapter)	basically, in (margin in vol. 5)	in	in and margin (chapter) / mainly in (book)	margin	margin (book) / mainly margin (chapter)	margin
Colors	3	2	8#	5#	4	5#	3#	7#	2	2	7#	-
Guide letter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-	<input type="radio"/>	<input type="radio"/>	-	-
Red stroke	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-	<input type="radio"/>	-(ornamental)	<input type="radio"/>	-	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-(inserted by hand)
Use		<input type="radio"/>	<input type="radio"/>	-	<input type="radio"/>	-	<input type="radio"/>	-	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Preface set of the Paris Bible	40/64 + 5	20/22 + 11	40/64 + 5	40/64 + 38	20/64 + 1	47/64 + 15	49/64 + 12	62/64 + 4	14/16 + 1	43/64 + 38	6/25	41/64 + 14
Books	No Psalter	<input type="radio"/>	No Psalter; OT different	NT different	4 books are not included; very different	No Nehemiah, different	No Psalter, No Nehemiah, different	<input type="radio"/>	No Psalter	NT slightly different	<input type="radio"/>	<input type="radio"/> except for inclusion of 4 Esdras
Hebrew names	<input type="radio"/>	?(-)	-	-	-	-	-	<input type="radio"/>	?	?(-)	?	-





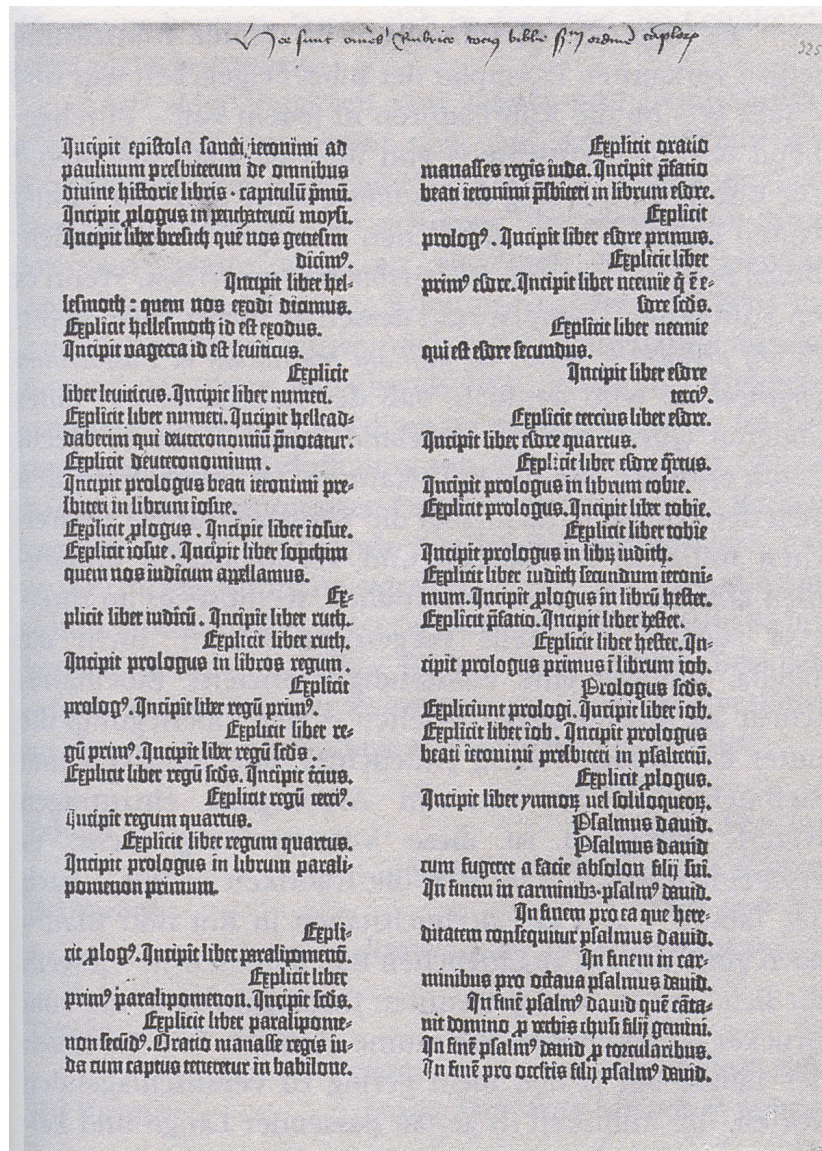
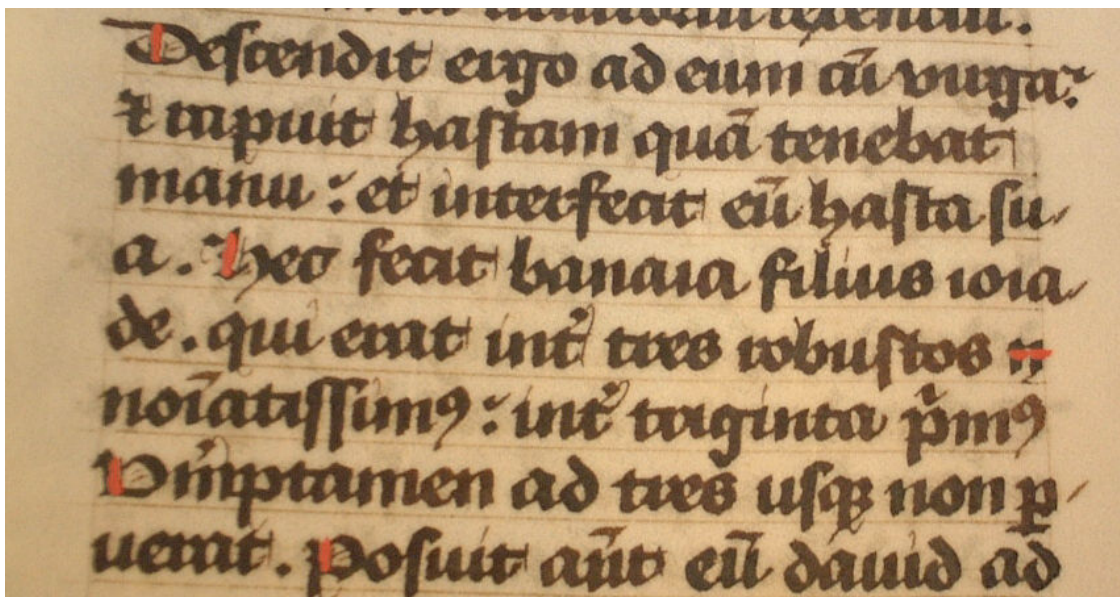


Figure II.2. Printed Rubrication Table.

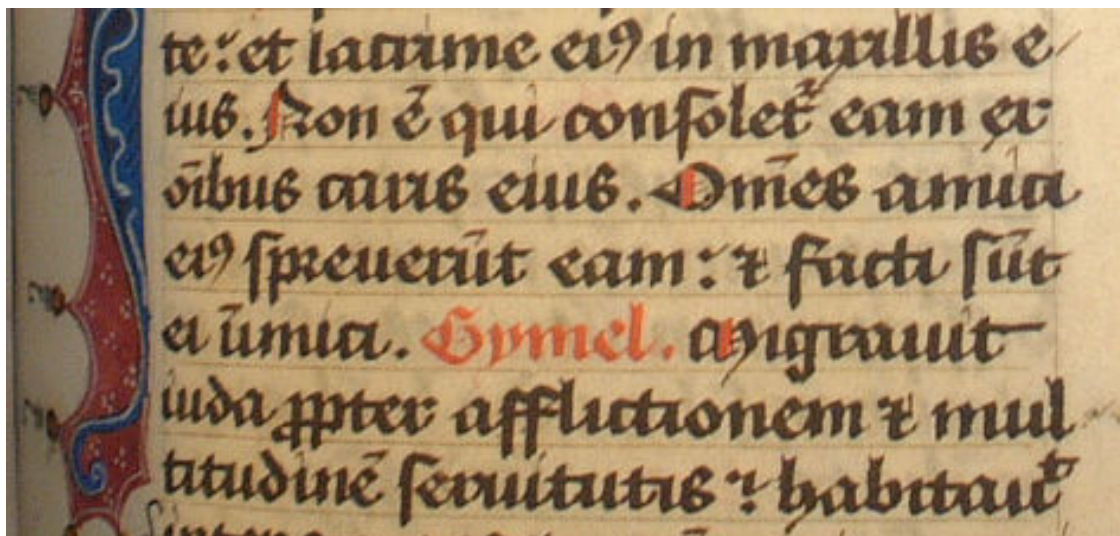
Reproduced from Gerhardt Powitz, *Die Frankfurter Gutenberg-Bibel: Ein Beitrag zum Buchwesen des 15. Jahrhunderts* (Frankfurt: Gesellschaft der Freunde der Stadt- und Universitätsbibliothek, 1990), 51.





a. Justification by a line-filler

(Victoria and Albert Museum, National Art Library, Reid 23, p. 180, part).



b. Justification by stretching out the last letter

(Victoria and Albert Museum, National Art Library, Reid 23, p. 417, part).

Figure II.3. Justification in manuscript no. 11.

### III. Methodology for Collation

#### A. Various Methods of Collation

##### 1. Importance of Collation

There are two kinds of comparison of a text, or collation, as Charlton Hinman wrote: “the comparison of different *editions* of a given work and the comparison of different *copies* of the same edition.”<sup>1</sup> The present study uses only with the second of these two kinds. Collation was developed for textual criticism to follow the process of the textual transmission, and approach as closely as possible the author’s original intention. This methodology is important not only to the textual criticism but also to the study of printing history.

In the hand press books, there are often variants within the same setting as a result of corrections made while the print run was in progress; if any mistake was found, the press-crew briefly stopped the printing press to correct it. These “stop-press” variants provide important clues to reconstructing the process of printing and the procedure of printing house. Without collation, stop-press variants are very difficult to detect because they can be rather subtle.

Since there was no equipment for many years, collation used to be done with the naked eye in order to discover textual variation between copies that were otherwise almost identical. It was not until the second half of the twentieth century that several devices for collation were developed to increase the efficiency of collation. The appearances of various collators were reported often by their inventors, but there is no complete review of these devices. In the recent book published in 2003, Joseph A. Dane was the first to compare relative efficiency of major mechanical collating machines.<sup>2</sup> In 2004, a concise introduction of various collators was published online.<sup>3</sup>

This chapter reviews various methods and instruments that have been used to collate printed books in the past — they are not necessarily confined to mechanical methods — mainly based on the accounts by each inventor and users, Dane’s review, and the author’s personal experience. The review leads to the requirements for the method of collation of the early printed books, and new methods which make use of digital images

are proposed to meet these requirements. The application of these two methods to the B42 study is described with technical details and software requirements.

## 2. Collation with the Naked Eye

In the case of early Japanese and Chinese printed books, no special equipment exists. It is not too difficult to place two copies side by side and minutely study the corresponding pages, because they are usually rather thin, light, and not very large. If the books are in private possession, one can cut the sewing thread, put one page over the other physically, and hold the pages to the light to compare them.<sup>4</sup>

For the books printed in early modern Europe, however, this method often fails to work properly because they are usually bulky, heavy — especially those which are bound in leather over thick wooden boards, as is often the case with the early printed books in contemporary binding, and printed on thick paper. Therefore, making collation means to compare the two copies only with the unaided eye, line by line, word by word; Gordon Lindstrand referred to this manner as “the head-wagging, finger-pointing method of individual sight collation”.<sup>5</sup> It is worth noting in parentheses that Roland B. McKerrow introduced a last-resource method for the identification of editions in *An Introduction to Bibliography*: laying a ruler on the page from one full stop to another at a distance of some ten lines apart and noting the letter(s) that it cuts, then seeing whether the ruler placed in a similar position on the other copy cuts the same letter(s).<sup>6</sup> This technique may be adopted to find a stop-press variant of a certain kind, although it can never find a stop-press variant which does not affect the position of the types such as the correction of an inverted type.

Unless otherwise noted, the word “collation” is normally used to refer to this approach, that is, the careful comparison by the naked eye. When only a small number of copies of relatively short texts, such as Elizabethan or Jacobean plays, are concerned, it is not too ambitious to attempt collation with the naked eye; for example, Greg compared the twelve extant copies of the First Quarto of *King Lear*.<sup>7</sup> Unfortunately, however, the collation of a long text without any mechanical aid is laborious, exasperating and time-consuming, and errors are still unavoidable. Differences tend to escape notice, as the above-mentioned examples of the “collation” of the B42 clearly demonstrate (see chapter I.D.1).

### 3. Mechanical Collation: Mechanisms and Merits

#### a. Hinman Collator

About a half-century ago, an American Shakespearean scholar, Charlton (Joseph Kadio) Hinman, developed the first and most famous optical instrument for mechanical collation; this is called the Hinman Collator after its inventor — it became tradition to name the instrument in this way.<sup>8</sup> A recent article on the Hinman Collator by Steven Escar Smith gave a detailed account of its invention and marketing.<sup>9</sup> Hinman recognized the need for two different instruments for collation: one for working with originals, and another for microfilms or photographic reproductions. In the late 1940s, he experimented on the latter machine whose main component was a pair of microfilm projectors. Considering the fact that reproductions were not always sufficiently reliable and that the time required to microfilm a book was almost great as the time required for collation, he suggested that originals should be used whenever possible.<sup>10</sup> Thus, the instrument he perfected was of the former type, designed mainly for collating originals. This large instrument, some six feet tall and weighing more than 100 kg, consists of (1) two platforms for supporting the two copies to be compared, and (2) a complex combination of mirrors and strong lights (see figure III.1). By lighting the two objects alternately, an operator can see them in continuous succession at the same place through an eyepiece. When they are identical, switching lights has no visible effect. But if there is any difference, it appears to flicker on and off, thus catching the operator's attention.

According to Hinman, this machine enables not only more precise collation, but also some forty or fifty times faster collation.<sup>11</sup> With the aid of this apparatus, in the 1950s Hinman collated as many as seventy-nine copies of Shakespeare's First Folio (London, 1623) in the Folger Shakespeare Library in Washington, D.C. with fruitful results, which allowed him to pursue Shakespearean textual criticism.<sup>12</sup> As a result of several years' collation, he succeeded in identifying stop-press variants and publishing a facsimile edition of an 'ideal' copy of the First Folio.<sup>13</sup> His collation made Folger's collection of the First Folios more valuable by making full use of it.<sup>14</sup>

Strictly speaking, he was not the first to conceive the idea of mechanical collation using mirrors. Hinman himself wrote that a war-time story put him on the right track, although he learnt later that the story was not true — Hinman had been in the Navy



for four years during the Second World War —; the story was about an unsuccessful attempt to assess the damage of air attack by comparing photographs of the same area taken before and after the bombing.<sup>15</sup> There is no evidence that Hinman knew it, but in the field of astronomy, a similar instrument called “blink comparator” or “blink microscope” has been used since the early twentieth century to compare two photographs of the same area of the sky taken at different times, which played a major role in discovering the planet Pluto in 1930.<sup>16</sup>

In the study of the history of printing, there was another approach. As early as 1911, Gustav Adolf Erich Bogeng had briefly proposed the identification of duplicate settings with stereoscopic glasses.<sup>17</sup> Bogeng suggested in 1931 that stereoscopic comparison could be performed even without a stereoscope with the normal but well-trained eye, if the distance of the points to be compared were less than 63mm.<sup>18</sup> However, Bogeng’s idea seems to have attracted little attention, at least among English-speaking scholars.

It was Hinman, however, who put the idea to practical use for bibliographical study and proved the usefulness of mechanical collation specialized for books. The recent article on the invention and the sales of the Hinman Collator demonstrates what a great influence it had upon bibliographical study.<sup>19</sup> Being the first substantial mechanical collator, the Hinman Collator resulted in the possession of major libraries in spite of its expensiveness;<sup>20</sup> it cost more than 6,000 dollars in the year 1966.<sup>21</sup> Fourteen American libraries were reported to have the Hinman Collator in 1963,<sup>22</sup> and the number of the libraries became twenty-eight in both America and England in the 1969 census published by Arthur M. Johnson, an engineer who took the responsibility in making and selling the machines.<sup>23</sup> Johnson made minor changes and improvements to some of those machines, but they were the same in terms of the mechanism and the essential efficiency.<sup>24</sup> The last machine was made in 1978, according to Smith. Once a machine goes out of order, however, it seems quite common to leave it or to discard it, probably because it is too delicate and complex to try repairing it – or even impossible because the inventor had already died in 1977. The most recent census listed forty libraries which held the Hinman Collator, but some of them were not usable any more.<sup>25</sup>

Another example of collation with the Hinman Collator on this scale was that of Warner Barnes in the 1960s.<sup>26</sup> Warner, in compiling a bibliography of the writings of

Elizabeth Barrett Browning, collated an average of six copies of each of eighteen editions printed between 1820-1863 and found hitherto unknown variants. According to Edwin Wolf, 2nd, “the plays of Dryden, a whole carload of first, second, third and subsequent editions of American authors” have been also collated by the machine.<sup>27</sup> In other words, the Hinman Collator were mainly used for editorial work.

#### b. Subsequent Collators

There are two major streams of the subsequent mechanical collators. Some machines are modified versions of the Hinman Collator, while others employ the stereoscopic principle. Some scholars also took an approach towards portable collators; if a control copy or its reproduction can be taken around, a researcher is able to collate other copies by bringing the control copy and the portable collating machine to libraries in different places which hold other copies of the same edition.

Collating machines in the line of Hinman have remained essentially the same since the debut of the Hinman Collator, although various modifications and improvements were made on later collating machines. Since the Hinman Collator was expensive and not easily accessible to everyone, several other cheaper instruments were devised and they were collectively called the “Poor Man’s Collating Machine”. In the 1960s, three methods were announced in sequence: two of them, invented by Vinton A. Dearing<sup>28</sup> and by Gerald A. Smith<sup>29</sup> respectively, used a microfilm reader; the other one invented by Richard Levin used photocopies.<sup>30</sup> These simpler collating machines have certain merits in addition to their lower price; they utilized an already existing instrument, and the difference in magnification did not matter, because microfilm readers and photocopiers could theoretically adjust it.

#### c. Stereoscope Collators

A stereoscope collator also uses mirrors, but its mechanism is not based on the blinking lights system employed by Hinman, but the capacity of the human visual sensory nerve — dimensional apprehension and depth perception. Each copy is placed on the platform (for example, an wooden arm) and arranged three-dimensionally, and a pair of adjustable mirrors are placed in the right position. To make collation, see directly the left-hand copy with the left eye, and right-hand copy with the right eye through the mirrors (left and right

is interchangeable). Then, the two images appear to be superimposed in the operator's brain; where there is no difference, they look to be a background image, but where there is any difference, it seems to rise off the surface three-dimensionally in the mental perception.

The first stereoscope collators were invented by Gordon Lindstrand in 1960. He developed two kinds of collator: one is to compare the copies of the same edition, and the other is to compare the different editions (the cross-edition collation). Here concerned is the first type of collator. The machine was a binocular optical instrument and called the Lindstrand Mark I Comparator (see Figure III.2).<sup>31</sup> Compared with the Hinman Collator, this machine was much simpler, thus easier and considerably faster in operation in addition to being much less costly — approximately one tenth the price —, but it was said to be slightly less efficient. Neither was it appropriate for being carried around.

In the late 1980s, a portable version of the Lindstrand Comparator was made by Randall McLeod, the McLeod Portable Collator (see Figure III.3).<sup>32</sup> The McLeod Collator was not box-shaped and weighed only 17 kg. It was designed to be dismantled, and thus packed in, for example, a suitcase. The inventor McLeod actually carried the dismantled instrument in a suitcase during his travels by aircraft and trains. He was reported to have collated about forty copies of an English translation of the *Orlando Furioso* (London, 1591) with his own machine.<sup>33</sup> About sixteen collators were sold to private scholars and to institutions.

In 1997, the latest collator appeared. R. Carter Hailey, then a doctorate student at the University of Virginia, made an announcement of the still simpler and smaller collator "Hailey's Comet."<sup>34</sup> He used it for collation of *Piers Plowman* (London, 1550).

#### d. Other Methods

There were several collators outside the lines of the Hinman Collator or the stereoscope collator. In the early 1970s, a collating machine was designed by John Horden in Leeds.<sup>35</sup> It consisted of two industrial television cameras and a common screen; thus it accepted not only books and microfilms, but also videotapes. However, there seems to be no remarkable results from this system, presumably because it required large-scale equipment.

Several independent methods can be grouped together and called photographic

collation. The first example of this style of collation can be found in an article written by William J. Neidig in 1910 on the dating of the Shakespeare quartos of 1619; Neidig used accurate photographs of the title-pages of nine plays in quarto to “demonstrate in a more graphic way the absolute identity of the portions of title-page in question.”<sup>36</sup> The photographs were taken by John Rea Wooley using a special form of camera and standardized in scale; a negative of one title-page was printed exactly over the other in a composite photograph. The composite photograph clearly demonstrated that the portions of the title-page of Shakespeare quartos bearing the dates 1600 and 1608 were identical to those of 1619 because they were perfectly superimposed, and served as strong evidence that they were actually printed “within a few days of the quartos bearing the date 1619.”<sup>37</sup>

Much later in 1978, McLeod, who later devised the McLeod Portable Collator, introduced a photographic method of collation to the study of the title-pages and the headlines of *Shakespeare Sonnets* (London, 1609).<sup>38</sup> To compare two imprints of the title-page, he obtained two photographs from the libraries (here labeled A and B for convenience) and changed the magnification of the one (B) with a photocopier which was loaded with transparencies instead of normal opaque paper. The resulting transparent image (B) was placed over the opaque image of the other (A); after alignment, the two images were placed on the photocopier with transparency (B) down, and then a superimposed image of the two title-pages was made.

Giles Barber and Anne Hamerton at the Taylor Institution Library, Oxford, independently developed a portable collator based on a similar idea in 1984.<sup>39</sup> It was also designed to use an ordinary photocopier loaded with transparent plastic sheets so that a reproduction on a transparency could be overlapped onto another printed copy of the book or its reproduction. They seem to have suggested that original books should be directly put on a photocopier. This would cause little problem for modern books, but it is not the best method for old and/or rare books, because taking a perfect photocopy of a book often conflicts with conservation needs. For example, keeping the pages of fragile books open for any length of time is both difficult and undesirable, without mentioning the damage caused by pushing an open book hard against the glass surface of the photocopier; also prolonged exposure to ultraviolet rays and the heat of the photocopying machine is potentially damaging. Therefore, photographic reproductions should be used

in this type of collation as in McLeod's method.

These photographic methods were based on the principle of superimposition. Where the two photographs were identical, they looked like a single image. These methods proved to be efficient with photographs of high quality, as the results of Neidig, McLeod, and several other scholars showed.<sup>40</sup> In practice, however, these methods are not ideal for collating all the pages of a thick book, because the cost of photographic reproduction will become quite high. Photographic methods are suitable for partial collation such as the title-pages and just a few particular pages.

#### 4. Common Limitations of the Mechanical Collators

These mechanical collators are certainly useful to bibliographers, as the results of the Hinman Collator clearly demonstrated. A new piece of equipment appeared from time to time — the latest one appeared in 1997 — because collators are thought to be effective. Interestingly, however, in spite of their usefulness and the importance of collation, these collating machines have not been widely used, except for the examples cited. In addition, most of the examples are found in the editorial project of modern literary texts, rather than in the study of printing history, let alone incunabula studies. The several disadvantages they have in common will explain this phenomenon.

First, it is necessary that the books to be compared should be in the same place in order to perform collation, regardless of whether the collator is portable or not. This problem did not disturb Hinman, because he worked in the Folger Shakespeare Library, which had seventy-nine copies of the First Folio. However, this is one of the few striking exceptions. Usually, even a great national library such as the British Library does not hold duplicate copies of the same edition of the same work. An unusual project should be mentioned here. From May 2002 to March 2004, Emanuela Sartorelli of the Centro Nazionale di Studi Manzoni in Milan, Italy, succeeded in collating sixty-seven copies of the first edition of Alessandro Manzoni's *I Promessi Sposi* in three volumes (Milano: Silvestri, 1825-26) by the McLeod Collator. For this project, the Biblioteca Nazionale Braidense in Milan arranged the short-term loan of other copies from various institutions, so that Sartorelli made his collation in that library.<sup>41</sup> This arrangement is assumed to have been realized because of the two reasons; the copies in question were not very old, and not only the single researcher but the national library was involved in the project.

In the case of the early printed books, it would be almost impossible to obtain originals on loan from various libraries solely in order to compare them and look for potential differences; they might turn out to be identical in the end. Another alternative is to use reproductions. The existing optical collating machines allow one of the copies or both to be reproductions (photocopies and photographs). However, making reproductions of all the pages of various copies of a voluminous work is not a realistic approach, considering the cost, time, and conservation issues. In addition, it is both crucial and difficult to equalize the scale ratio of the reproductions and the flatness of the page surface perfectly, when a number of institutions are involved. Some collators theoretically solved this scale ratio problem by using the microfilm reader or the photocopier, but in practice, it was reported to be not so straightforward.<sup>42</sup> The stereoscope collators could solve this difficulty by adjusting the distance between books and the eye, although the process is supposed to be not very quick.

The second demerit derives from the first problem, that is, there is always the undesirable chance that the originals may be damaged; keeping the page open flat and throwing strong light on it for a long time are not good for it.

Thirdly, the physical size of the book to be collated greatly affects the efficiency. The Hinman Collator and its successors cannot collate a whole page of large books at once, and require adjustments within a page; this will reduce the speed estimated by Hinman. With the stereoscope collators, the human eye can focus on only a few lines at a time, and it is necessary to adjust the mirrors each time. Perfect adjustment is essential to precise collation, but it is both time-consuming and difficult. Large books are potentially problematic to some collators. The McLeod Collators and Hailey's Comet are designed to put the copies on angled wooden stands, and large and heavy books such as royal folios are assumed to be difficult to sit safely. The manual of the McLeod Collator clearly illustrates this problem; it gives an instruction to prevent the collator from tipping over backwards.<sup>43</sup> Therefore, using reproductions would be better in terms of conservation, although it causes other problems mentioned earlier. Dane assumed that both McLeod, who collated folios, and Hailey, who collated small edition of *Piers Plowman*, "obviously use[d] Xeroxes when possible."<sup>44</sup>

Hiroshi Yamashita also reported some difficulties in collating two seventeenth-century quartos using the Hinman Collator,<sup>45</sup> because of the shrinkage of

paper, the difference in the color of paper, and spots on the page which looked similar to periods and commas, perfect superimposition was difficult to achieve. He stated that detection of these punctuation marks would require the well trained eye, and concluded the Hinman collator would be suited for larger formats.

Fourth, adjustments to machine and book are often not easy and take much time. Training is necessary to have a good command of the apparatus, and a wrong set-up of the machine will lead to an unreliable result.<sup>46</sup> It is also difficult to make the pages flat because of the binding and the shrinkage of the medium. Each copy requires a particular way of handling owing to its unique condition — its binding, the characteristics of the material (paper and vellum), and the cockled page surface.

In addition, the operator's physical conditions affect usability; the Hinman Collator was reported to cause an operator wearing glasses difficulties in using.<sup>47</sup> The stereoscope collators require an operator's aptitude for stereopsis. For example, three academic colleagues and the present author had an opportunity to try the McLeod Collator at the Cambridge University Library in November 2002, and the experiences greatly differed among the four.<sup>48</sup> One easily succeeded, and the two other also successfully superimposed images after a time; the author, however, failed to superimpose the two images in the brain and could not make collation. It was not the inaccurate set-up but the design of the collator and the aptitude that affected the result.

Fifth, and importantly, the results of collation cannot be saved just as the operator sees it by the machine. Therefore, whenever it is necessary to make a double check or to compare the results with those of other scholars, one has to repeat the whole procedure — obtaining the copies, adjusting the books and the machine, and making collation. Moreover, with the stereoscopic collators, it can be never verified objectively what other researchers see, since the images are superimposed only in the operator's brain.

Another practical problem is that the collators are not easily available. They were often produced in small numbers. In the case of the Hinman Collator, the production line stopped and the collators are no longer available.

## 5. Early Attempts at Collation by Computer

### a. Mechanism and Merits

Some of these common limitations rise from the use of originals. A radical solution to these problems is collation without originals, and a few attempts have been made with the aid of digital technology.

In 1983, Paul R. Sternberg and John M. Brayer announced a new method of high-speed collation called “Composite imaging”, a technique that was originally developed for the analysis of NASA satellite images.<sup>49</sup> The necessary equipment is a computer and an image processing system, which consists of a video camera, a display, a digitizer, and a keyboard. Pages are captured by the video camera and digitally stored in the computer. After adjusting the size, the shape, and the position, each image is given a different color, usually red and blue. When the preparation is finished, the computer is instructed to display both images simultaneously on the screen, and then differences appear in red or blue (see Figure III.4). Results can be recorded on photographic films and on computer tapes.

Their method was soon improved by a German company called SIS (Soft-Imaging Software GmbH). In this system, differently colored images, usually red and green this time, were alternately displayed on a screen at a desired speed (see Figure III.5). Martin Boghardt and others started using the improved electronic image processing system and published the results of collation of books including the *Catholicon* held at the Herzog August Bibliothek in Wolfenbüttel in the 1990s.<sup>50</sup>

In recent years, several institutions provide websites which allow a user to display the digital images of the corresponding pages from different copies side by side on the Internet browser. It can be called the modernized sight collation. HUMI created a website to compare two copies of the Gutenberg Bible (the Keio University Library copy and the Cambridge University Library copy), which is accessible only from the campuses of the two universities; three lines of each copy are displayed on the screen, above and below, so that they can be compared line by line on the user’s computer screen.<sup>51</sup> The British Library provides similar websites; on these websites, one can compare two copies of the Gutenberg Bible,<sup>52</sup> the first and the second editions of Geoffrey Chaucer’s *The Canterbury Tales* printed by William Caxton,<sup>53</sup> and any two of the ninety-three copies of Shakespeare’s twenty-one plays printed in quarto.<sup>54</sup> These websites provide easier access



to the material and a more effective means of comparison than the collation of originals. However, they will never become an ideal way of precise collation of all the pages of multiple copies, because a researcher still has to do sight collation with the naked eye after all. There is another possibility of using digital images for sight collation. One can bring a laptop computer or storage media such as a CD-ROM containing digital images of the book to a library which has an original, then make comparison between the image and the original. It will lessen the difficulties of access; one only has to get permission to examine one original. According to the author's experience, it takes at least fifteen minutes to compare a page of the size of the B42, and one cannot be entirely confident in the results; even a very careful examination might miss a slight change in the spacing or in the shape of a letter. These methods are more suitable for partial collation, or a spot check of a few suspicious points than for a thorough collation.

#### **b. Limitations of Early Attempts**

The pioneering collating systems with computers have not become popular, in spite of their potential usefulness — no doubt because of the technological limitations. The area that can be captured effectively by a video camera is about 15 cm x 21 cm, and thus it is necessary to take several images of parts of one page, if it is a large book. The slow performance of the computer used, and its insufficient storage capacity, put a limit on the capturing. In addition, it is difficult for an individual researcher to digitize a whole book because of the cost and the time required. Owing to these limitations, these methods are best suited to the close examination of a few particular points rather than the comprehensive collation of a thick book. Even Boghardt seems to have used that system primarily to make a partial examination or to show effectively differences among copies.

### **B. Requirements for the Method of Collation of the Early Printed Books**

A review of the earlier methods and instruments of mechanical collation, photographic collation, and early attempts at computer collation indicates requirements, some necessary and some desirable, for the collation of printed books which belong to the same setting — especially that of the early printed books.

First, there are five necessary requirements:

- (1) No original has to be physically present, and thus it cannot be damaged. This also brings an advantage that work is free from restrictions such as location and opening hours of the owner institutions. This requirement leads to collation with portable reproductions.
- (2) It has to be applicable regardless of the physical size of the originals.
- (3) Everybody can get the same result from the same operation.
- (4) It can detect not only different words and spellings but also the slightest typographical changes such as differences in spacing, the shapes of the letters, and worn types – in other words, differences which do not affect the reading of the text. Considering the large number of sorts (varieties) in a fount in the incunabula period, this requirement is very important. It excludes the use of common e-texts, except for those which describe these minor typographical differences, if any. Text-based comparison is an important area of investigation, but there is a presumption that it would miss a typographical change of certain kinds, which are assumed to be found in the early printed books. Combined with requirement (1), the digital image reproduction is the best material for collation.
- (5) The results can be recorded in an objective form so that any number of other researchers is able to make a double check.

Second, there are four requirements that are desirable but not essential:

- (6) It can be done at practical speed. In other words, it should enable collation of multiple copies of a work to be finished within a few years at the longest, rather than taking up the whole of a life-time.
- (7) It works without a very special or very large-scale system, so that other researchers can reconstruct the system.
- (8) It can use digital images of the commonly used formats such as JPEG and TIFF. This is necessary because, at the moment, digital reproductions would be provided in these common formats by libraries or institutions, and these images would not be necessarily standardized.
- (9) The initial cost is low enough for an individual researcher such as the author to introduce it.

Earlier attempts at collation by computer succeeded in meeting some of the requirements (nos. 1, 3, 4, and 5), but not all of them. Collation aided by computer is certainly a new step in the right direction for precise collation. The problems of those attempts were not fundamental but merely due to the technical limitations of that time, most of which will be gradually overcome as the technology progresses.

The performance of personal computers has already considerably improved, while the price steadily becomes lower. Various devices for digitization of old and rare books — such as single-shot digital cameras and scanning cameras as well as film scanners — have made remarkable progress and experience in digitization of rare books is accumulating in certain projects and institutions. Indeed, an increasing number of libraries and museums throughout the world have already started digitizing their resources and making them available, and it is becoming common to acquire digital images of the early printed books. Off-the-shelf software for personal use makes it easier to handle the digital images of the common format.

Present-day circumstances make it possible for a researcher, who does not have special knowledge of image processing, to make good use of digital technology for the detailed collation of a whole book on a personal computer.

### C. Technical Details of the Present Study

#### 1. Principle of Superimposition

This section proposes a new practical approach to precise collation that makes use of the superimposition of digital images on a computer screen. It meets all the necessary and desirable requirements described above. In addition to being less costly, this approach is more detailed, more precise, and easier to implement than previous methods. There are two methods of applying the principle of superimposition for collation: static superimposition and dynamic superimposition.<sup>55</sup>

##### a. Static Superimposition (overlapping images)

The first method is to overlay one digital image upon another. It consists of three steps. The first step is to adjust the resolution and the angle of the images using image editing software. The next step is to make one image semi-transparent. The final step is to overlay it onto the other(s). Where the two (or more) images are identical, they are perfectly

superimposed and look like a single image. Where there is any difference, it shows up as a blur.

This method needs software which can edit the image size and adjust the vertical and horizontal alignment, change the transparency degree from 0 to 100 %, and keep, display, and hide each of multiple layers.

Two almost identical images are shown as Figures III.6 and III.7. Figure III.6 shows a partial image of the f. 27r (lines 21-26 in the left column) of the second volume of the paper copy of the B42 held at the British Library (King's Library Copy: London, BL, C.9.d.4), and Figure III.7 shows the corresponding part of the vellum copy at the British Library (Grenville Library Copy: London, BL, G. 12227). At first glance, they may look the same, but minute collation reveals differences. Since they belong to the common setting, they are expected to be identical, unless a stop-press correction was made. Figure III.8 shows overlapped images of Figure III.6 and the semi-transparent Figure III.7. Figure III.8 clearly shows that there are differences in the second and fourth lines of the images. The latter half of the second line in each copy reads as follows; note that a contracted word is expanded and put in square brackets [ ], and a ligatured letter is enclosed in parentheses ( ):

Figure III.6: Et est amic[us] qui

Figure III.7: Et e[st] amic[us] qui

The fourth line of each copy is printed as follows.

Figure III.6: qui odiu[m] [et] rixa[m] [et] co[n]vicia denudabit.

Figure III.7: qui odiu[m] et rixa[m] et co[n]vicia (de)nudabit.

In both cases, the changes do not affect the meaning of the sentence at all, and if read aloud, both lines sound the same. It is the use of contracted forms, abbreviated letters, and a ligature that are changed. In this example, Figure III.6 shows an earlier, uncorrected state as will be discussed in chapters IV and V, and the changes were presumably made for justification, because Figure III.7 has a smoother line ending.

As this example demonstrates, static superimposition enables minute collation and reveals minor differences which are so subtle that it is not only extremely difficult but also unreliable to try to detect them with the naked eye. This static superimposition is also applicable in making a precise judgment whether a particular letter (type) is the same as

another in shape.

#### b. Dynamic Superimposition (flipping images)

The second method is to superimpose digital images in a dynamic way. In other words, it is to flip rapidly between two (or more) digital images in the same position on a computer screen. Taking the example of Figure III.6 and Figure III.7 again, these two images are displayed alternately at high speed: Figure III.6, Figure III.7, Figure III.6, Figure III.7..., and so on. Where there is no difference, it looks like a single stationary image. By contrast, if there is any difference, the image oscillates noticeably. The basic idea is similar to that of the Hinman Collator; this method can be called a digital version of the Hinman Collator.

To perform this method of collation, software requires the following functions. It should enable easy adjustments of the image size, the position on a screen, and the vertical and horizontal alignments; it should display two images alternately or more than three images in succession and in repetition at high speed, and easily change the speed of automatic flipping; it should allow an operator to stop and resume flipping at one's command and to display each image separately in order to record a detected stop-press variant.

Paper is not a suitable medium to show how this method of dynamic superimposition works. Therefore, an example of dynamic superimposition is shown at the URL below: <<http://www.slis.keio.ac.jp/~mari/b42/collation.html>>.

## 2. Application to the B42

### a. Digitized Copies

These two methods of superimposition can be better understood through a description of the actual process of collation. The B42 is the best example for two reasons. Its importance as the first incunabulum gives it a high priority, and there are available digital images, which are indispensable to the present methods.

In 1997, the first digitization of the B42 was successfully done by HUMI using a custom-made book cradle and a 3-CCD single-shot digital camera, which could take a 2,048 x 2,048 pixel image of high-quality color reproduction in only a few seconds. The whole pages of the first volume of the B42 in the possession of Keio University were

digitized within just two days. Among 48 extant copies of the B42, 14 copies have been so far digitized since then.

Table III.1 lists these 14 copies in chronological order of digitization. In the “Copy No.” column, they are numbered by Needham’s census of 1985, and this copy number is mostly used in this study hereafter; the copies preceded by “P” are printed on paper, and the copies preceded by “V” are printed on vellum. The “Library” column briefly refers to the libraries which have the originals. The columns “Digitized by,” “Year,” “Format,” “Dimensions (pixels),” and “Access” show the details of the images; by what institutions and when the copies were digitized, and in what file format the images were made available to the public with the approximate document size in pixels (height x width of a page image, not of the document as a whole), and by what means they are accessible — either for free or as a commercial CD-ROM. Accessible images are often reduced in size from the master images for various reasons, and in some cases the resolution of the master images is much higher than the figures listed here. In three cases (P25, P39 digitized in the year 2001, and V11), which are marked with \* in the “Dimensions” column, the images were produced by scanning color positive films, and thus larger images can be produced by re-scanning them when necessary. The “Use” column shows whether the images can be used for collation. ○ means there is no trouble in using for collation, △ suggests some problems, and × means the images turned out to be non-usable in the present method for one reason or another. The margins are somewhat trimmed in the available images of the copies nos. 9 (P29), 11 (P25), and the web version of 12 (P30). Needless to say, all the images were reproduced in full color.

More than half, nine copies at seven institutions, were digitized by HUMI. Copy nos. 1, 2, 3, 4, 6, and 7 were digitized by HUMI using the same single-shot digital camera, and the images are of uniform quality. The images of no. 11 were also made by HUMI, but from scanning the 5” x 4” films as a byproduct of the paper facsimile published in 2003.<sup>56</sup> Nos. 13 and 14 were also digitized by HUMI with a single-shot digital camera of higher resolution than before. These images produced by HUMI were kindly supplied to this study in the original resolution.

The images of each of the five other copies were produced by a different institution through a different process, and they are not uniform in resolution and quality. No. 5 (V6) was digitized by its owner with a scanning camera, No. 8 (V11) by Toppan

Printing Co. Ltd. by scanning 6 x 7 cm analogue films, no. 10 (V8) by a company called Octavo using a scanning camera (Octavo Digital Imaging Laboratory version 2.0),<sup>57</sup> and no. 9 (P29), the web version of no. 11 (P25), and no. 12 (P30)<sup>58</sup> were digitized by each owner library using the i2S DigiBook system (overhead scanner).

Digital images of each copy were tested by both of the present methods, that is, static and dynamic superimposition. It turned out that the quality of the images greatly affected the efficiency of these methods. These two ways of application can be better understood from the description of the actual process in the next sections.

#### b. Application of Static Superimposition

Commercial software is adopted to carry out the realistic and versatile collation of the early printed books at low cost. At an early stage of this study, the non-latest laptop computer of average performance for personal use (CPU: Pentium III-850Mhz, RAM: 384 MB) was tested and proved to be usable. At a later stage of this study, a more powerful personal computer with a wider monitor was used to increase the speed.

To perform static superimposition, a common image-editing software, Adobe Photoshop (Japanese version 7.0.1), was found easy to meet the requirements. The less advanced versions and the cheaper version of it, namely, Adobe Photoshop Elements, or its trial version, were also tested and proved to be useful.

First, two image files are opened on Photoshop, then adjusted. They should be vertically aligned by rotating the canvas, and made equal in size by resizing the pixel dimensions. Cockled portions are often found in a page, but they are left unadjusted, because a careless adjustment might affect the shape of an unknown variant type.

Next, one image is copied and pasted onto the other as a new layer, then the opacity is changed to some 40 to 60% in order to make it semi-transparent. Figure III.7 shown above is taken from V10, and it is overlapped onto Figure III.6 (P27) as a new layer and made semi-transparent (50% opacity), while Figure III.6 remains unchanged; Figure III.8 is the resulting superimposed image. The pioneering attempts colored the images red or blue, but the present method can spare the coloring process; a superimposed image clearly shows differences. Therefore, the images preserve the natural colors.

Figure III.8 shows only two superimposed images, but in the actual collation, more than three images can be superimposed. Each new image should be pasted as a new

layer and the opacity changed to between 40 to 60%, according to the conditions of each image. It makes the work more efficient to have all the corresponding images of a given page from all the copies as multiple layers — for example, a file which contains ten images of folio 1r as multiple layers —; it is easy to show them all at once as well as to display selected images only. Saving the file as PSD format which can preserve the layers enables any other researcher to make a double check and verification.

As shown in table III.1, most of the images of the B42 are made accessible in compressed JPEG format in full color, as web resources. It is confirmed that the differences in the file format does not matter. For example, the images of two pages (folios II 316v and 317r) were found wanting in P29's CD-ROM. They were obtained as black and white prints and experimentally digitized by an average flatbed scanner in three different common formats, TIFF, BMP, and JPEG; none caused a problem in collating with other digital images.

The resolution of the images offered to the public is not standardized, according to the date of digitization and the institutions. The average page size is about 2000 x 1400 pixels, and some of the image can be enlarged a little over 100% to match the control copy; V6 (1340 x 965 pixel) causes little trouble in most cases, but the web version of P25 (1000 x 700 pixel) and the web version of no. 12 (800 x 600 pixel) turn out to be too small to make a precise collation. Considering that the physical size of the original B42 is about 40 x 30 cm (16 x 12 inch), the other images are not of very high resolution relative to the original according to the present-day standards. Images of higher resolution are of course preferable; high-resolution images of a few pages of P30 and P39 were supplied to the author, and they were of immense help.<sup>59</sup> However, the images large enough to see the details by the unaided eye will set the minimum standards for material for this method.

Not only the resolution but also the shooting conditions may cause difficulties. Securing the flatness of the page surface is crucial for successful collation, but it is often very difficult because the old books often have cockled portions, especially in vellum copies. In addition, being in the form of a bound codex, a page image tends to look irregular in shape:<sup>60</sup> either foreshortened around the gutter of the book or enlarged towards the fore-edge. In some cases, cockle of portions of a page is so strong that the images cannot be superimposed properly and required partial sight collation. The image



of V8 is the only example of a two-page spread from directly above, while in all the other examples each page was taken separately. Therefore, the images of V8 preserve the book shape — in other words, they are rhomboid — and cannot be superimposed onto those of others.

### c. Application of Dynamic Superimposition

For dynamic superimposition, Macromedia Director MX (Japanese version 9) offers the best solution. Director is a multimedia authoring tool and is normally used to make an interactive program/presentation, but it proves to be suitable for collation; it can easily start, stop, and resume automatic flipping between images at various speeds. This software can adjust images, but to rotate an image on this software tends to cause the deterioration of the image, while to resize scarcely cause a problem. Any other image-editing software can be also set as external editor. In the present study, Adobe Photoshop is often used, because the author is more familiar with it.

The same examples can demonstrate this procedure. First, the two images, figure III.6 and III.7, are read in Director and placed in adjoining frames of the stage. Adjusting the size and alignment can be done both at this stage or later stages. Their position on the stage is easily changed. The next step is to select these two frames, set the play tempo at 6-10 frames per second (fps), and play them in loops; then the images will be repeatedly displayed alternately. The appropriate play tempo depends upon the performance of the computer used. Stopping the play mode to record a detected stop-press variant, one can easily stop playing and make a note.

Regarding the resolution and the flatness of the images, conditions are the same as static superimposition. The images of nos. 10, 11 and 12 (V8, the web versions of P25 and P30) are not usable.

The dynamic superimposition method is found to make it a little easier to cope with curvature and with cockled pages, as is often the case with vellum copies. Another merit of the method with Director is that adjustment on Photoshop is always possible. In addition, it makes it a little easier to detect a slight change in the shape of letters.

Another software might be considered an alternative: namely, Adobe ImageReady. Although it is much less effective, this software is usually attached to Photoshop and is thus much less costly than Director. The first step to perform dynamic

superimposition on ImageReady is to make a file of multiple layers either on Photoshop or ImageReady in a same process of static superimposition, but to keep the opacity to 100 %. The next step is to start ImageReady, and to produce frames from the layers. Then it is ready to play the animation; to play the frames in an unlimited loop will cause a similar effect, although it is not as smooth as in Director. The file can be saved as a PSD file.

### 3. Advantages over the Earlier Methods

Compared with the previous mechanical collating machines and photographic methods, the present collation based on the superimposition of digital images has several advantages. They are summarized as follows in relation to the requirements for the method of collation of the early printed books described in III.B.

Neither static nor dynamic superimposition requires the originals to be physically present, and thus there is no chance of giving physical damage to them (1). It is applicable regardless of the physical size of the originals or the images; adjustments of the size and the alignment are much easier with digital images than with originals (2). The present methods do not require any special aptitude in the operator. Every operator can get the same result from the same operation, once having learnt the simple procedures for using software (3).

In addition, it is possible to collate more than three copies at once, while the previous methods enable collation between only two copies. An efficient way to collate all the available copies is to select one copy as a control copy, and collate each copy with the control copy in turn. In other words, first collating the control copy with copy A, collating the control copy with copy B, collating the control copy with copy C..., and so on.

Collation can be expected to finish within a reasonable span of time (6). It takes some five minutes on average to collate one page of such a large book as the B42 including the time required for adjustment. With this methodology, it is no longer too ambitious to attempt collating all the pages of a thick early printed book such as the B42. Both methods work without a very special or very large-scale system (7). It would be faster and more comfortable, of course, with a more powerful computer and a larger monitor, but a laptop computer of medium performance is sufficiently enough for

collation. Adopting common software on the market, the initial cost is low enough for an individual researcher to introduce it (9). The images do not need to be in special format. On the contrary, the images in common formats, in which they are provided from the libraries, can be used without converting (8). Even the color mode does not matter.

It can be more detailed and precise than previous methods. It is not only different words and spellings that can be discovered; even the slightest typographical differences are easily detected (4).

The most significant advantage is that the present method is, to an important extent, objective. The earlier collating machines depend on what a subjective pair of eyes sees (or what the brain composites), whereas the present method can save the results as files and thus enables any number of other researchers to make a double check (5).

These two methods are almost equally precise and effective. It takes some one to five minutes on average to collate one page including the time required for adjustment. The dynamic superimposition method makes it a little easier to cope with cockled pages, as is often the case with vellum copies. This dynamic flipping method requires a slightly more powerful computer, and Director is less common and more costly software than Photoshop. But it takes less time to adjust the images. It also causes less eyestrain than static superimposition. Therefore, this study employs dynamic superimposition as the primary method. Static superimposition is also used as the secondary method when necessary.

## D. Copies to be Collated

### 1. Procedure of Collation

This study aimed at as comprehensive collation as possible. There are technically three different kinds of research materials: digital images (digital facsimiles), photographic facsimiles (paper facsimiles), and of course, originals. The only way to make a precise and comprehensive collation in a practical scheme is to collate digital images by means of static or dynamic superimposition of images. The two other kinds of material, paper facsimiles and originals, are suitable to examine particular points for reference.

The present collation was performed in the following procedure. Each stop-press variant was separately recorded in chapter IV, and then analyzed in chapter V:

- (1) Primary collation: to collate all the pages of the selected digital facsimile by

superimposition of images.

- (2) Secondary examination of the facsimiles: to make an examination of the spots where a stop-press variant was found in primary collation using the paper facsimiles and several digital facsimiles which could not be used in procedure (1).
- (3) Secondary examination of the originals: to make an on-site examination of the spots where a stop-press variant was found in primary collation using the originals.
- (4) Commissioned secondary examination: to ask a librarian/curator of each institution to examine the spots where a stop-press variant was found in primary collation on behalf of the present author.

## 2. Primary Collation

As shown in table III.1, the nine copies of the B42 among the fourteen digitized copies were found usable for the present methods. They were used for comprehensive cross-copy collation. A total of 1,282 text pages—324 leaves (648 pages) of the first volume and 317 leaves (634 pages) of the second volume—which belong to the same setting were minutely collated. The following six paper and three vellum copies were used for this primary collation. The copy number, location, and the name of the institution are given below.

P16: Mainz, The Gutenberg Museum (Kraus-Shuckburgh copy)

P27: London, The British Library (King's copy)

P29: Vienna, The Austrian National Library

P33: Cambridge, The Cambridge University Library

P39: Tokyo, The Keio University Library (volume 1 only)

P46: Mainz, The Gutenberg Museum (Laubach copy) (volume 2 only)

V6: Göttingen, The Göttingen State and University Library

V10: London, The British Library (Grenville copy)

V11: Vatican, The Vatican Library (Barberini copy)

All the images except for those of V11 were collated by dynamic superimposition. The use of the images of V11 was allowed only on campus of the Printing Museum in Tokyo and duplication of the images was not permitted. Therefore, collation was made as follows: the author brought CD-ROM(s) containing the images of

the control copy of each volume to the Printing Museum after opening hours, when the author was allowed to use a computer in which the images of V11 were stored; the images of the control copy and V11 were collated using Adobe Photoshop installed on that computer.

An efficient way to collate all the available copies is to select one copy as a control copy, and collate each copy with the control copy in turn. In other words, first collating the control copy with copy A, collating the control copy with copy B, collating the control copy with copy C..., and so on. Thus the difference between copy B and copy C can be discovered in relation to copy A. Figure III.9 illustrates the process. It should be noted that “control” copy does not imply that it has the better text, or it does not serve for a judgment of right or wrong, nor earlier (uncorrected) or later (corrected). A control copy is used as a basis only to find differences between each of other copies, and detected differences are later analyzed. In other words, any complete copy can serve as a control copy.

In the present collation, P39 was used as the control copy for the first volume. The primary reason for selection of P39 is that it was one of the two digitized copies when this research first started in 1999. P39 lacks the second volume, but as far as the first volume is concerned, it is complete and consists of the first setting, except for three leaves (i.e., six pages): ff. 129, 134, and 138. The previous collation by the author was made between the two digitized copies, P39 and P33, and detected twenty differences. The result also strongly suggested that each vellum page was printed later than the corresponding paper page. Therefore, it leads to the conclusion that a paper copy is preferable as a control copy.

For the second volume, P27 was selected as the control copy, because it is a complete copy printed on paper, of which the second volume consists of the first setting only, and the images of high quality are available through HUMI.

Earlier scholars showed that there are two settings in certain portions of the B42, namely all or parts of the ten different quires, because of the increase in the number of copies to be printed. In the first volume, seven quires out of the total of thirty-three quires show two settings: quires 1, 2, 3, 4, 14, 15, and 16. In the second volume, three quires out of the total of thirty-two quires have two settings: quires 1, 2, and 17.

Table III.2 shows the distribution of these two settings among the copies

examined in the present study. The control copy for each volume is painted in pale grey. “Rep.” column shows in what kind of data the copy was used in the present collation: digital images used in the primary collation (digi), digital images unusable for the present superimposition methods and used as reference (d fac), paper facsimiles (fac), and originals. Original copies examined by the author are marked with #.

1 stands for “the first setting”, and 2 stands for “the second setting”. All the pages in the remaining fifty-five quires belong to the common setting, except for the replacement settings (sometimes called “Ersatz”) found on a few pages in some copies, which are shown as “R” in the table. In the table; “-” shows a missing quire. Taking an example of P39, quire 1 of the first volume is shown as “1” and it means this whole quire belongs to the first setting. “2/1/R” of quire 14 indicates that this quire has a mixed setting: 14/1.10 (folios 129 and 138) are the leaves of the second setting, 14/2-5.7-9 (folios I 130 to 133 and 135 to 137) are of the first setting and 14/6 (f. I 134) is of the replacement setting.

The physical structure is important in analyzing the detected stop-press variants. Table III.3 shows the quires and corresponding folio numbers. A quire was the minimum unit of the division of work, and most quires consist of ten leaves (five sheets folded once). Each sheet has two folio leaves, that is, four pages, and the printing of the B42 was done page by page, not sheet (two-pages) by sheet.

First, pages of each copy belonging to the same setting were collated. In other words, all the pages belonging to the first setting were collated, except for folios I 129, I 134, and I 138 of the first volume. For folios I 129 and I 138, pages belonging to the second setting were collated with P39. F. I 134 is unique to the control copy and cannot be collated with other copies. These three folios of the other copies belonging to the first setting were collated with those of P27.

Second, pages belonging to the second setting were collated. For the collation of the second setting, V10 was selected as the control copy: quires 1, 2, 3, 14, 15, 16 of the first volume, and quires 1, 2 were collated with V10. However, quire 4 of the first volume and quire 17 of the second volume were not collated, because there were not multiple copies in the present copies as shown in table III.2.

### 3. Secondary Examination

#### a. Digital Images

Digital images of four other copies, i.e., three copies printed on paper and one on vellum, were partially examined. They were not collated page by page, but examined only where a stop-press variant was found as a result of primary collation. It may be possible to try sight collation, in other words, collation without any aid. However, it does not merit the time and effort required, since sight collation is most likely to miss some of the unrecorded variants. Therefore, they are used not in order to find a new stop-press variant, but in order to confirm a detected stop-press variant. These four copies listed below were examined for this purpose.

P13: Munich, Bavarian State Library<sup>61</sup>

P25: Pelplin, High Priests' Seminary Library

P30: Austin, The Harry Ransom Center, The University of Texas at Austin

V8: Washington, D.C., The Library of Congress

#### b. Paper Facsimiles

In the same way, three photographic facsimiles, or, paper facsimiles, held in the Keio University Library were partially used as reference; the spots where a stop-press variant was found as a result of primary collation were examined. Two of their originals are printed on paper, and one on vellum.<sup>62</sup>

P20: Paris, Mazarin Library (Paris: Edition Les Incunables, 1985)

P35: Burgos, The Burgos Public Library (Valencia: Vicent García Editores, 1995)

V7: Berlin, The Berlin State Library – Prussian Cultural Heritage (München, Idion Verlag, 1977-1978)

These paper facsimiles are of the highest quality and much easier to access than the originals, but they are still expensive and often treated as semi-rare books — except for the cheaper facsimile edition of the V7 reproduced in black and white. There have been warnings against the use of reproductions for bibliographical studies.<sup>63</sup>

At an early stage of this study, digital images of the facsimile of P20 were supplied by HUMI to test in the present method, and two variants were found. It also revealed, however, that the facsimiles were not perfectly reliable, as far as the detection of a minor typographical change was concerned. For example, some half-overlapped printed letters, portions of printed letters which are covered by rubrications and illuminations, and worn types found in the originals, are not very well reproduced. Another concern is about a hand correction. There are many corrections made by hand in the B42: for instance, scratching out printed letters, overwriting, inserting, and adding a contraction bar. With the originals, they are easy to distinguish, thanks to ink smudges, absence of impression, differences in the color, size, and script between manuscript corrections and printed letters. With digital images, it is in most cases as easy as with the original. There is a presumption, however, that some of these corrections cannot be recognized in the photographic facsimiles, since the impression of the original B42 type or slight differences in colors are missing from these facsimiles. Therefore, they were not digitized for collation; rather, they were partially examined with the naked eye for reference. A black and white microfilm is less reliable for the same reason, so they were not used at all in the present study.

### c. Originals

The following fourteen original copies of the B42 were examined by the present author. The on-site investigations were done in several installments. Some of them had been examined at the early stage of this research, and other stop-press variants were found later, which were not confirmed in the following copies: P22, P26, P28, P36, P38, P44, V1, V9, and V12, which are marked with “\*.”

P13: Munich, Bavarian State Library

P14: Frankfurt am Main, State- and University Library

P15: Aschaffenburg, Hof- und Stiftsbibliothek

P17: Stuttgart, Württemberg State Library

\*P22: Oxford, Bodleian Library

\*P26: Princeton NJ: Scheide Library

\*P28: New York: Pierpont Morgan Library

\*P38: New York: Pierpont Morgan Library (Old Testament only)



P42: Kassel, State Library (Immenhausen) (vol. 1 only)

\*P44: Paris: National Library of France (Cremer)

\*V1: Paris: National Library of France

V4: Fulda, State Library (vol. 1 only)

\*V9: New York: Morgan Library & Museum

\*V12: London: Lambeth Palace Library (New Testament only)

Therefore, in total twenty-nine copies – twenty paper and nine vellum copies – were examined by the present author.

#### 4. Commissioned Partial Examination

In addition, results of on-site investigations of eleven original copies were kindly supplied in the middle stage of this study, when collation of the two paper copies (P39 and P33) of the first volume and secondary examination of nine other copies were finished: those of copies held in the National Library of France (V1 and P44), the Huntington Library (V2), the Library of Congress (V8), the Morgan Library & Museum (V9, P28 and P38), the Bavarian State Library (P13), John Rylands Library (P23), the Scheide Library of Princeton University (P26), and the New York Public Library (P36).<sup>64</sup> Except for three copies (P23, P36, and V2), they were later confirmed by the present author: namely, P13, P26, P28, P38, P44, V1, V8 (using a published CD-ROM), and V9.

Therefore, the results of examination of in total thirty-two copies (twenty-two paper and ten vellum copies) are shown in chapter IV. All the detected stop-press variants were confirmed in twenty-two copies (sixteen paper and six vellum copies); in eleven other copies (nine paper and four vellum copies), the detected spot-press variants were partially confirmed.

#### E. Chapter Conclusion

A new approach to precise collation based on the superimposition of digital images — static superimposition and dynamic superimposition — on a computer proposed in the present study can be more detailed, precise, easier and at lower cost than previous methods. Furthermore, it is more objective to an important extent. The most significant contribution of digital technology to the history of printing is this ability to investigate

such minor differences among copies belonging to the same setting that often resulted from stop-press corrections. This approach offered a way to overcome the practical impossibility of collation of the B42.

There is no ready-made software specialized in collating the books, especially the early printed books. However, image identification is a growing field, especially in legal-criminal science (for facial image identification) and medical science (for comparison of medical scans). To take an example, in the summer of 2003, the development of new software, the Change Detection System, was reported, which compares two medical digital images of the brain and finds brain tissue changes.<sup>65</sup> The development of image identification technology will certainly give a new opportunity for collation.

A limitation of the present method lies in that it has to leave the libraries to produce the digital images, since it is unlikely that a single researcher will be allowed freely to digitize a whole book for private use. Regrettably, there is little possibility that extant copies of the same edition of a work will receive priority for digitization purely for collation. Nevertheless, there are promising results from HUMI, which has already digitized nine copies of the B42. With these results as an impetus, more projects might appear in the future.

The present method still depends on a pair of human eyes for final judgment of differences, although the results can be now saved in an objective way. It would not be practical to aim at a fully-automatic system for collating the early printed books, because each one of them is unique in its physical conditions. However, a half-automated system based on pattern matching technique would be of immense value to bibliographical studies; the system lists all the potential variants, a trained researcher verifies or denies them one by one, and the process will become faster and more efficient. There are promising researches; HUMI is developing a system which can recognize the type using the digital images of the rare books and make a database of the types;<sup>66</sup> the Princeton team presented a tentative result of computer analysis of the earliest Gutenberg type using a pair-wise clustering algorithm.<sup>67</sup> In conjunction with these ongoing researches, a half-automatic system for collation of the early printed books will be realized, hopefully in the near future. Until then, the present method is the only efficient way for a single researcher to collate the early printed books.<sup>68</sup>

## Notes to Chapter III

- 1 Charlton Hinman, "Mechanized Collation: A Preliminary Report," *The Papers of the Bibliographical Society of America* 41, no. 2 (1947): 99.
- 2 Joseph A. Dane, "4. The Notion of Variant and the Zen of Collation," in *The Myth of Print Culture: Essays on Evidence, Textuality, and Bibliographical Method* (Toronto: University of Toronto Press, 2003), 88-113. The use of the word "Zen" in the chapter title eloquently expresses the nature of collation.
- 3 Neil Harris, "11 Devices and Desires," in *Analytical Bibliography: An Alternative Prospectus*. Institut d'Histoire du Livre. Available, <http://ihl.enssib.fr/siteihl.php?page=54&aflng=en&PHPSESSID=5c79f81a98f5c3562d80075ff98969e4> (accessed 2005-12-25).
- 4 林望, リンボウ先生の書物探偵帖 (東京: 講談社, 2000), 216.
- 5 Gordon Lindstrand, "Mechanized Textual Collation and Recent Design," *Studies in Bibliography* 14 (1971): 212.
- 6 Ronald B. McKerrow, *An Introduction to Bibliography for Literary Students* (Oxford: Clarendon Press, 1927; reprinted Winchester, St. Paul's Bibliographies, 1994), 183.
- 7 Greg, *Variants in the First Quarto*.
- 8 Hinman, "Preliminary Reports." See also Charlton Hinman, "Mechanized Collation at the Houghton Library," *Harvard Library Bulletin* 9 (1955): 132-34.
- 9 Steven Escar Smith, "'The Eternal Verities Verified': Charlton Hinman and the Roots of Mechanical Collation," *Studies in Bibliography* 53 (2000): 129-61. Dr. Smith stated that this article was an interim report, and he would prepare the complete report including detailed records of each machine such as the provenance and the collation in which they were used.
- 10 Hinman, "Preliminary Reports," 104-5.
- 11 Hinman did not specify what was in his mind when he said forty times faster in "Houghton Library," but presumably it was sight collation with the naked and unaided eye. In the another article, he wrote "I could actually collate corresponding pages...something like fifty times the speed at which I could collate the same pages without mechanical aid." Hinman, "Preliminary Report," 101.
- 12 Actually, Hinman recorded that he did not collate all the pages of 79 copies in a strict sense, because he did not collate 23 copies "[e]xcept in quires ss-vv in the Tragedies, and in all the pages throughout the book that are hereafter listed as variant". Hinman estimated it would take about a year to collate them with the Hinman Collator. Charlton Hinman, *The Printing and Proof-Reading of the First Folio of Shakespeare*, 2 vols. (Oxford: Clarendon Press, 1963), 245-56, note 1.
- 13 Charlton Hinman, *The First Folio of Shakespeare: The Norton Facsimile Prepared by Charlton Hinman* (New York: Paul Hamlyn, 1968). Hinman succeeded in identifying the work of particular compositors, in finding out that it was set by formes, not by pages as had been previously supposed.
- 14 Henry Clay Folger, who formed the First Folio collection, had been previously "bitterly criticized as a collector, above all because he amassed so many copies of the First Folio." Hinman, *Norton Facsimile*, 1: 7.
- 15 Hinman, "Preliminary Report," 102-103. See also Richard D. Altick, "7 The Scholar and the Scientist," in *The Scholar Adventurers* (New York: Macmillan, 1960), 187-88.
- 16 Tom McNichol, "Beyond Cool," *Wired* 9, no. 04 (2001): 116-127. Also available online: [http://www.wired.com/wired/archive/9.04/pluto.html?pg=3&topic=&topic\\_set=\(2006-02-27\)](http://www.wired.com/wired/archive/9.04/pluto.html?pg=3&topic=&topic_set=(2006-02-27)). I am grateful to Professor Andrew Armour for showing me this article.
- 17 G.A.E. Bogeng, *Umriss Einer Fachkunde Für Büchersammler, Jahrbuch Für Bücher-Kunde und -Liebhaberei* (Nikolassee: M. Harrwitz, 1911), 46 (item 759).
- 18 G.A.E. Bogeng, *Buchkundliche Arbeiten*, iii, *Einführung in die Bibliophilie* (1931),

compiled by Bernhard und Ursula Fabian (Leipzig, 1931; reprint, Hildesheim: Georg Olms Verlag, 1984), 138-139, note.

19 Smith, "Charlton Hinman," 129-161.

20 According to Smith, the CIA purchased a machine. The Hinman collator was said to be useful to detect forgeries. Smith, "Charlton Hinman," 149 and note 14.

21 According to Richard Levin, it was about \$6,000 in 1966. Richard Levin, "A Poor Man's Collating Machine," *Research Opportunities in Renaissance Drama* 9 (1966): 25-26.

22 [A list of Hinman Collators in current use], *The Papers of the Bibliographical Society of America* 47 (1963): 460-461.

23 Arthur M. Johnson, "Hinman Collators: Present Locations," *The Papers of the Bibliographical Society of America* 63, no. 2 (1969): 119-20.

24 Smith, "Charlton Hinman," 144-145.

25 Smith, "Charlton Hinman," 154-156.

26 Warner Barnes, *A bibliography of Elizabeth Barrett Browning* (Folkestone: Dawsons, 1970). On the dust-jacket of the book, with a photograph of him working at the Hinman collator, it is said that Barnes spent 1000 hours in machine collation.

27 Edwin Wolf, 2nd, "Historical Grist for the Bibliographical Mill," *Studies in Bibliography* 25 (1972): 40. The plays of Dryden referred to are presumably the California edition of *The Works of John Dryden* (Berkeley: University of California Press, 1956- ), judging from the following article, but it cannot be confirmed how the Hinman Collator was used in the editorial process. George Robert Guffey, "Standardization of photographic reproductions for mechanical collation," *The Papers of the Bibliographical Society of America* 62, no. 3 (1968): 237-40.

28 Vinton Dearing, "The Poor Man's Mark IV or Ersatz Hinman Collator," *The Papers of the Bibliographical Society of America* 60, no. 2 (1966): 149-58.

29 Gerald A. Smith, "Collating Machine, Poor Man's, Mark VII," *The Papers of the Bibliographical Society of America* 61, no. 2 (1967): 110-13.

30 Levin, "Collating Machine."

31 Lindstrand, "Mechanized Textual Collation."

32 There is a technical manual for the machine written by the inventor. Randall McLeod, *McLeod Portable Collator* (1988), 25p.

33 Harris, "11 Devices and Desires."

34 University of Virginia. *Inside UVA* (online), <http://www.virginia.edu/insideuva/1999/37/collator.html> (accessed 2006-2-27).

35 John Horden, "The Institute of Bibliography and Textual Criticism, Leeds," *The Library, fifth series* 27, no. 4 (1972): 293-301.

36 William J. Neidig, "The Shakespeare Quartos of 1619," *Modern Philology* 8, no. 2 (1910): 145-63.

37 Neidig, "Shakespeare Quartos," 163.

38 Randall McLeod, "A Technique of Headline Analysis, with Application to *Shakespeares Sonnets*, 1609," *Studies in Bibliography* 32 (1979): 197-210.

39 Giles Barber, "Portable Collator," *The Library, sixth series* 6, no. 3 (1984): 330-31.

40 Harris, "Devices and Desires."

41 Harris, "Devices and Desires." This article also said "only in one case was the collator taken to the book." It is assumed that at least one copy and the McLeod Collator were taken to the book.

42 Guffey, "Photographic Reproductions."

43 McLeod, *McLeod Portable Collator*, 11.

44 Dane, "Zen of Collation," 92.

45 Hiroshi Yamashita, "[Supplement to] Some Notes on Nicholas Rowe's Two Editions of Shakespeare (1709)," 松本歯科大学紀要:一般教養 4 (1975): 17-20.

46 Dane mentioned that several researchers used the McLeod Collator in an inaccurate set-up

and that another researcher used the severely damaged Hailey's Comet, and warned that they could not obtain reliable results. Dane, "Zen of collation," 99, 208-209 (note 10).

47 "Collating Machine."

48 I am grateful to Dr. Isamu Takahashi and the Cambridge University Library for this arrangement.

49 Paul R. Sternberg and John M. Brayer, "Composite Imaging: A New Technique in Bibliographic Research," *The Papers of the Bibliographical Society of America* 77, no. 4 (1983): 431-45.

50 Martin Boghardt, "Der Buchdruck und Das Prinzip Des Typographischen Kreislaufs. Modell Einer Erfindung," in *Gutenberg: 550 Jahre Buchdruck in Europa [Ausstellung Im Zeughaus Der Herzog August Bibliothek Wolfenbüttel vom 5. Mai bis 30. September 1990]* (Weinheim: Acta Humaniora, 1990), 24-44.; Martin Boghardt, "Druckanalyse und Druckbeschreibung: Zur Ermittlung und Bezeichnung von Satzidentität und Satzinterner Varianz," *Gutenberg Jahrbuch* 70 (1995): 202-21.; Martin Boghardt, "Ein Spezieller Schachtelbogen im Berliner Exemplar des Psalterium Benedictinum von 1459," *Gutenberg Jahrbuch* 72 (1997): 77-94.

51 HUMI Project, *The Gutenberg Bible*, <http://www.humi.keio.ac.jp/treasures/incunabula/B42/fpx/1/001.html> (accessed 2006-2-27).

52 British Library, *Gutenberg Bible: Comparing the texts*, <http://prodigi.bl.uk/treasures/gutenberg/search.asp> (accessed 2006-02-27).

53 British Library, *Caxton's Chaucer: Comparing the texts*, <http://prodigi.bl.uk/treasures/caxton/search.asp> (accessed 2006-02-27).

54 British Library, *William Shakespeare in Quarto: View 21 of Shakespeare's Plays Online*, <http://www.bl.uk/treasures/shakespeare/homepage.html> (accessed 2006-02-27).

55 I am grateful to Mr. Shigeaki Iwai, then a member of the HUMI Project and who originally devised these methods.

56 *Biblia Gutenberga* (Pelplin: Bernardinum, 2003).

57 It was reported to have taken six-and-a-half minutes to scan each page spread. David Banks, "NPR: Digitizing the Gutenberg Bible: High-Tech Photos of Library of Congress Copy Allow Web Scrutiny," Feb. 19, 2002, <http://www.npr.org/programs/atc/features/2002/feb/gutenberg/020219.gutenberg.html> (accessed 2006-02-27).

58 Harry Ransom Center, *The Digital Gutenberg Project: The Gutenberg Bible at the Ransom Center*, <http://www.hrc.utexas.edu/exhibitions/permanent/gutenberg/project/> (accessed 2006-02-27).

59 Images of P30 were kindly supplied by Dr. Richard W. Oram and Mr. Steve Wilson; those of P39 were kindly supplied by Mr. Masaaki Kashimura of the HUMI Project.

60 V11 was photographed when it was unbound for repair.

61 The original of P13 was also examined on site.

62 All the four were, somewhat misleadingly, printed on watermarked paper. In P20, watermarked paper is used even for the flyleaves. The facsimile of V7 is a mixed copy as is clearly stated in the colophon; several pages where V7 has the second and replacement settings were supplied from two other copies so that all the pages belong to the first setting. Specifically, folios 21 to 32, 34, 120 to 159, and 261r of the first volume are supplied from V4, and for folios 11 to 16 of the second volume were supplied from V6; the binding of the V7 facsimile is a reproduction of that of V4.

63 For example, see Franklin B. Williams Jr., "Photo-Facsimiles of STC Books: A Cautionary Check List," *Studies in Bibliography* 21 (1968): 109-119.

64 I owe the results of V1 and P44 to Dr. Antoine Coron; that of V2 to Dr. Stephen Tabor; those of V8, V9, P26, P28, P36, and P38 to Dr. Paul Needham; that of P13 to Dr. Bettina Wagner; and that of P23 to Dr. Peter McNiven.

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65 Nicole Stricker, "INEEL Feature Story - System detects tissue changes - INEEL researchers develop medical imagery breakthrough," Idaho National Engineering and Environmental Laboratory, <http://www.inl.gov/featurestories/2003-08-06.shtml> (accessed 2006-02-27).

66 岸田智宏, 小沢慎治, 樫村雅章. "初期印刷本活字のデータベース化システム". 大英図書館所蔵初期印刷本のデジタル画像作成と書誌学的比較校合研究:平成13年度～平成14年度科学研究費補助金基盤研究(A)(2)研究成果報告書. [東京, 2003,] p. 35-77.

67 Blaise, "Temporary Matrices."

68 Most part of this chapter has been published in the following article. Mari Agata, "デジタル画像を用いた刊本の校合の手法 [Towards Collation with Digital Images]," *Library and Information Science* 53 (2005): 1-17.

Table III.1 Access to the Digitized Copies of the Gutenberg Bible

	Copy No. <sup>i</sup>	Library <sup>ii</sup>	Digitized by	Format	Dimensions (pixels)	Access	Use
1	P39	Keio UL (vol.1 only)	HUMI	JPG / FPX	500x350 / 1980x1350	<a href="http://www.humi.keio.ac.jp/treasures/incunabula/B42/index.html">http://www.humi.keio.ac.jp/treasures/incunabula/B42/index.html</a>	○
				JPG	*5900x4000	in-house use	
2	P33	Cambridge UL	HUMI	JPG	1980x1350	on campus (Keio U & Cambridge UL)	○
3	P16	Gutenberg Museum (Kraus)	HUMI	JPG	1970x1350	on campus (Keio U & Gutenberg Museum)	○
4	P46	Gutenberg Museum (Laubach: vol.2 only)	HUMI	JPG	1980x1350	on campus (Keio U & Gutenberg Museum)	○
					800x600	<a href="http://www.gutenberg-museum.de/index.php?id=60">http://www.gutenberg-museum.de/index.php?id=60</a>	
5	V6	Göttingen UL	Göttingen UL	JPG	1340x965	<a href="http://www.gutenbergdigital.de">http://www.gutenbergdigital.de</a> & CD-ROM <sup>iii</sup>	○
6	P27	BL (King's)	HUMI	JPG	1980x1350	<a href="http://prodigi.bl.uk/gutenbg/default.asp">http://prodigi.bl.uk/gutenbg/default.asp</a>	○
7	V10	BL (Grenville)	HUMI	JPG	1980x1350	<a href="http://prodigi.bl.uk/gutenbg/default.asp">http://prodigi.bl.uk/gutenbg/default.asp</a>	○
8	V11	Vatican Library (Barberini)	Toppan Printing Co. Ltd.	JPG	*1600x1050/ 5000x3700	on campus (Vatican & Printing Museum)	○ (on site)
9	P29	Austrian NL	Austrian NL	VCM	2000x1400	CD-ROM <sup>iv</sup>	○- △
10	V8	Library of Congress	Octavo	PDF	--	CD-ROM <sup>v</sup>	×
11	P25	High Priests' Seminary Library in Pelplin	HUMI	JPG	1000x700	<a href="http://www.pbi.edu.pl">http://www.pbi.edu.pl</a> & CD-ROM <sup>vi</sup>	×
				JPG	*5000x4000	in-house use	
12	P30	Texas University	Harry Ransom Center, the U of Texas	JPG	830x600	<a href="http://www.hrc.utexas.edu/exhibitions/permanent/gutenberg/">http://www.hrc.utexas.edu/exhibitions/permanent/gutenberg/</a>	×
				PDF	---	CD-ROM <sup>vii</sup>	
13	P37	Scotland NL	HUMI	---	---	in preparation	---
14	P13	Bavarian State Library	HUMI	---	---	in preparation	---

Table III.1 Access to the Digitized Copies of the Gutenberg Bible (Continued)

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<sup>i</sup> Paul Needham, “The Paper Supply of the Gutenberg Bible,” *PBSA* 79, no.3 (1985): 355-358. The copies preceded by “P” are printed on paper, and the copies preceded by “V” are printed on vellum.

<sup>ii</sup> Some names are abbreviated. U stands for “university”, UL stands for “university library”, and NL stands for “national library.”

<sup>iii</sup> Elmar Mittler and Stephan Füssel, ed., *Gutenberg Digital: Göttingen Gutenberg-Bibel, Musterbuch und Helmaspergersches Notariatsinstrument*, 2 CD (München: K.G.Saur Verlag, 2000). The resolution of master images is 5,700 x 8,200 pixels.

<sup>iv</sup> *The 42-line Gutenberg Bible of the Austrian National Library*, 1 CD (Vienna: Verlag Brüder Hollinek, 2000).

<sup>v</sup> *Biblia Latina, Mainz, ca. 1455: Gutenberg Bible* (Rare Book and Special Collections Division, Library of Congress) (Oakland, CA.: Octavo, 2003), 2 CD.

<sup>vi</sup> *Biblia Gutenbergica*, 1CD (Wydawnictwo Diecezji Pelplińskiej “Bernardinum”).

<sup>vii</sup> *The Gutenberg Bible at the Harry Ransom Center*, 1CD (Texas, The University of Texas at Austin, 2004).



Table III.2 Various Settings in the Ten Quires of B42

rep.	copy	quire	folio	vol. I	1	2	3	4	14	15	16	vol. II	1	2	17
					(1-10)	(11-20)	(21-30)	(31-40)	(129-138)	(139-148)	(149-158)		(1-10)	(11-20)	(162-171)
	diği	P16	Mainz: Gutenberg M (Kraus)		1	1	1	1	1	1	1		1	1	1
	diği	P27	London: BL (George III)		2	2	1	1	1	1	1		1	1	1
	diği	P29	Vienna, NB		1	1	1	1	2	2	2		1	1	1
	diği	P33	Cambridge: UL		1	1	2	2	2	2	1		1	1/2	1
primary	diği	P39	Tokyo: Keio U (v. 1)		1	1	1	1	2/1/R	1	1		-	-	-
	diği	P46	Mainz: Gutenberg M (Laubach) (v. 2)		-	-	-	-	-	-	-		1	1/2	1
	diği	V6	Göttingen: UB		2	2	1	1	2	1	1		2	1	1
	diği	V10	London: BL (Grenville)		2	2	2	1	2	2	2		2	2	1
	diği	V11	Vatican (Barberini)		2	1	2	2	2	2	2		2	2	1
	d fac	P25	Pelplin: Sem		1	1	1	1	1	1	1		1	1/2	1
	d fac	P30	Austin TX: UTexL		1	1	1	1	1	1	1		2	2	2
	d fac	V8	Washington DC: LC		1	2	2	2	1	2	2		1	1	2
	fac	P20	Paris: BMazarine		1	1	1	1	1	1	1		1	1	1
	fac	P35	Burgos: BP		1	2	2	2	2	2	2		1	1	1
	fac	V7	Berlin: SBPK		1	1	2	2/R	2	2	2		1	2	1
	#	P13	Munich: SB		1	1	1	1	1	1	1		1	1	1
	#	P14	Frankfurt am Main, StUB		1	1	1	1	1	1	1		1	1	1
	#	P15	Aschaffenburg, HB		1	1	1	1	1	1	1		1	1	1
	#	P17	Stuttgart, LB		1	1	1	1	1	1	1		1	1	1
	#	P22	Oxford: Bodl.		1	1	1	1	1	1	1		1	1	1
	#	P26	Princeton NJ: JHSchL		2	1	1	1	1	1	1		1	1	1
	#	P28	New York: PML 19206		2	1	1	1	1	1	1		2	1/2	2
	#	P38	New York: PML 12: OT		1/R	1	2	1	1/2/R	1	2		1	2	-
	#	P42	Kassel, LB (vol. 1)		2	2	1	1	1	1	1		-	-	-
	#	P44	Paris: BN (Cremer)		-	-	-	-	1	-	1		-	-	1
	#	V1	Paris: BN		1	1	1	1	1	1	1		1	1	1
	#	V4	Fulda, LB (vol. 1)		1	1	1	1	1	1	1		-	-	-
	#	V9	New York: PML 13		1	1/2	2	2	2	2	2		2	2	1
	#	V12	London: Lambeth: NT		-	-	-	-	-	-	-		-	-	-
		P23	Manchester: Rylands		1	1	1	1	1	1	1		1	1	1
		P36	New York: NYPL		2	2	2	2	1	2	1		2	2	2
		V2	San Marino CA, HEHL		1	1	1	1	1	1	1		1	1/2	1

SOURCE: Data from Paul Needham, "The Paper Supply of the Gutenberg Bible," *The Papers of the Bibliographical Society of America* 79, no. 3 (1985): 355-358.

P16: I 1 (1/1) is missing.

P33: II 15-16 (2/5:6) are 2nd setting.

P39: I 14/1.10 (folios 129 and 138) are 2nd; 14/2-5.7-9 (folios 130 to 133 and 135 to 137) are 1st setting; and 14/6 (f. 134) is the R setting.

P46: II 15-16 (2/5:6) are 2nd setting; as a result of the present collation, f. II 22r is revealed to belong to the replacement setting.

P30: f. II 22r is the R setting.

V7: I 4/4 (f. 34) is the R setting; its facsimile uses several sheets of V4 and V6 on I: 3/1-4/2 (folios 21-32), I 4/4 (f. 34), 14/1-16/10 (folios 129-158), 27/1r (f. 261r).

P38: I 1/1.10, 2r, 3.8, 4.7, 5.6 (ff. 1, 2r, 3 to 8, 10) are the R setting; 14/2r (f. 130r) is a unique R setting; 14/29 (f. 137) :1st setting.

V9 A sheet 2/5.6 (ff. 15, 16) is the 2nd setting.

Table III.3 Quires and Folios

vol. 1			vol. 2		
Quire	Folio	Number of leaves <sup>i)</sup>	Quire	Folio	Number of leaves
1	1-10		1	1-10	
2	11-20		2	11-20	
3	21-30		3	21-30	
4	31-40		4	31-40	
5	41-50		5	41-50	
6	51-60		6	51-60	
7	61-70		7	61-70	
8	71-80		8	71-80	
9	81-90		9	81-90	
10	91-101	11 (8+1)	10	91-100	
11	102-111		11	101-110	
12	112-121		12	111-120	
13	122-128	7 (4+1)	13	121-130	
14	129-138		14	131-140	
15	139-148		15	141-150	
16	149-158		16	151-161	11 (10+1)
17	159-168		17	162-171	
18	169-178		18	172-181	
19	179-188		19	182-191 <sup>iv)</sup>	
20	189-198		20	192-201	
21	199-208		21	202-211	
22	209-218		22	212-221	
23	219-228		23	222-231	
24	229-238		24	232-241	
25	239-249 <sup>ii)</sup>	11 (7+1)	25	242-251	
26	250-260 <sup>iii)</sup>	11 (9+1)	26	252-261	
27	261-270		27	262-273 <sup>v)</sup>	12
28	271-280		28	274-284	
29	281-290		29	285-294	
30	291-300		30	295-304	
31	301-310		31	305-309 <sup>vi)</sup>	5 (3+1)
32	311-320		32	310-319 <sup>vii)</sup>	
33	321-324	4	π	[1-4]	4

## Note

- i) The number of leaves is listed when it is not ten.
- ii) 246v is a blank.
- iii) 260v is a blank.
- iv) 189v is a blank (end of the Old Testament).
- v) 273v is a blank.
- vi) 309v is a blank.
- vii) 318-319 are blanks.

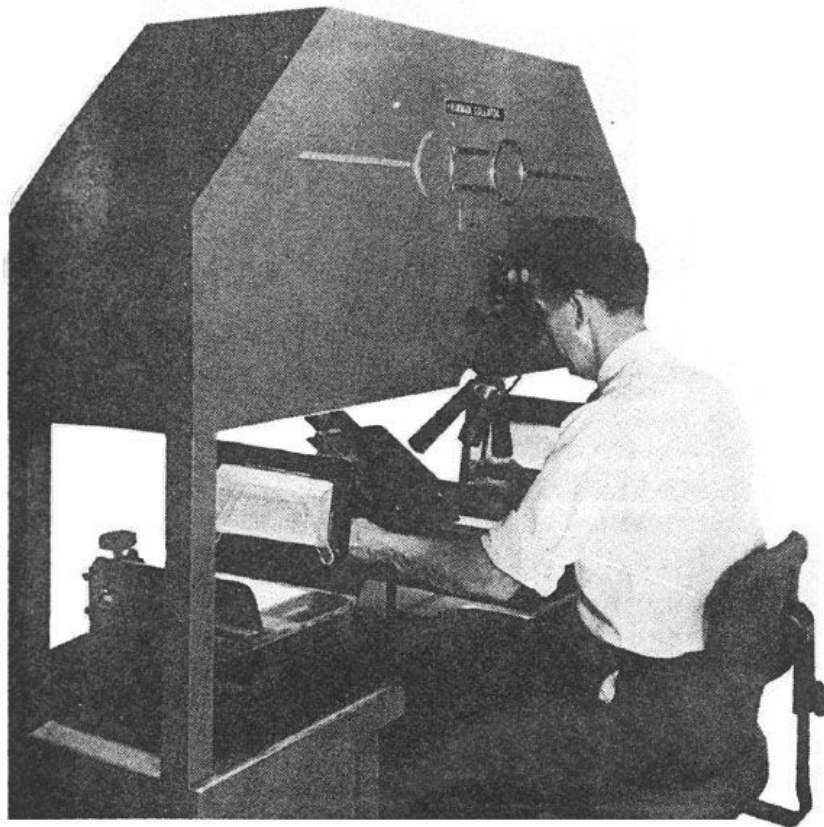


Figure. III.1.a. The Hinman Collator in Operation.

Reprinted from Robin Myers, "A New way of looking at Shakespeare First Folios: the Hinman Collator," *ABMR* 8, no.6 (1981): 221.

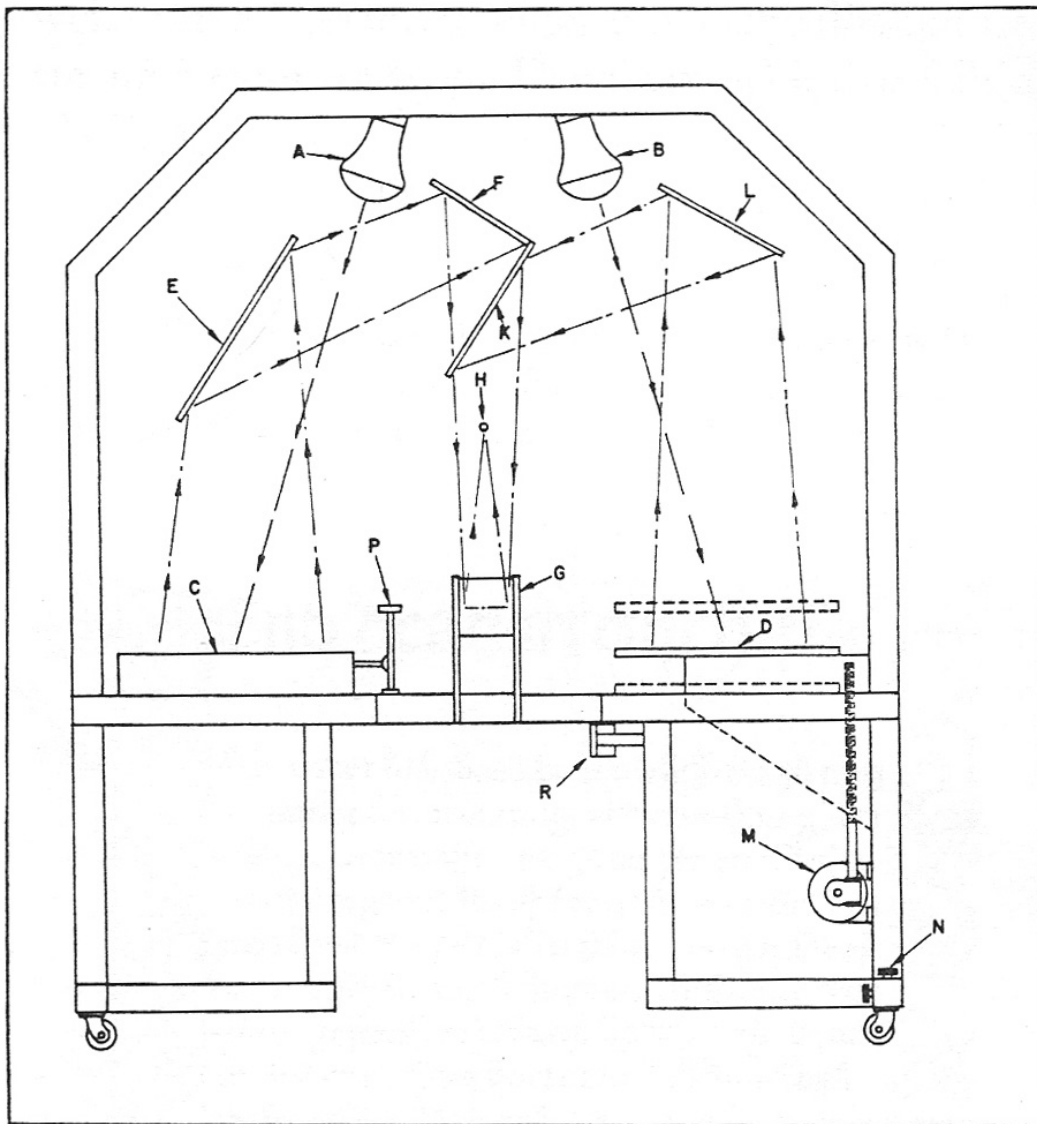


Figure III.1.b. Diagram of the Hinman Collator.

Reprinted from Dieter Krans, "Kann die Verwendung des Hinmann-Collators der Gutenberg-Forschung weiterhelfen?" *Gutenberg Jahrbuch* 58 (1983): 71.

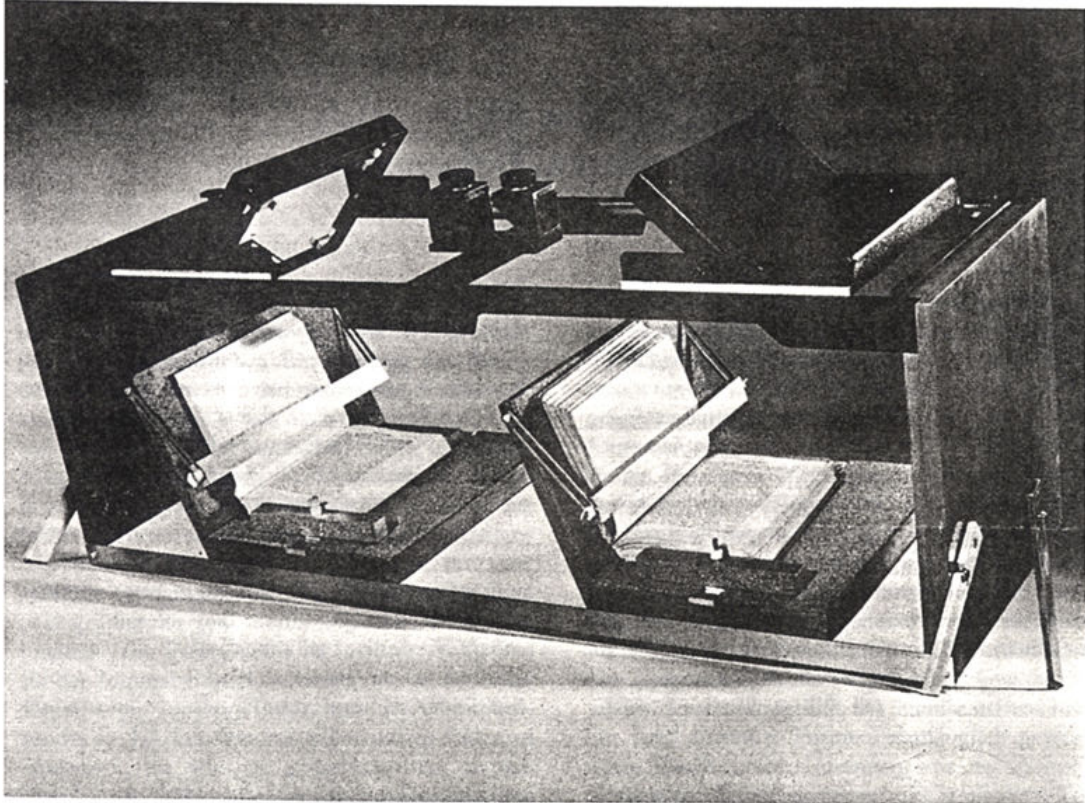


Figure III.2.a. The Lindstrand Comparator Mark I.

Reprinted from Dieter Krans, "Kann die Verwendung des Hinmann-Collators der Gutenberg-Forschung weiterhelfen?" *Gutenberg Jahrbuch* 58 (1983): 77.

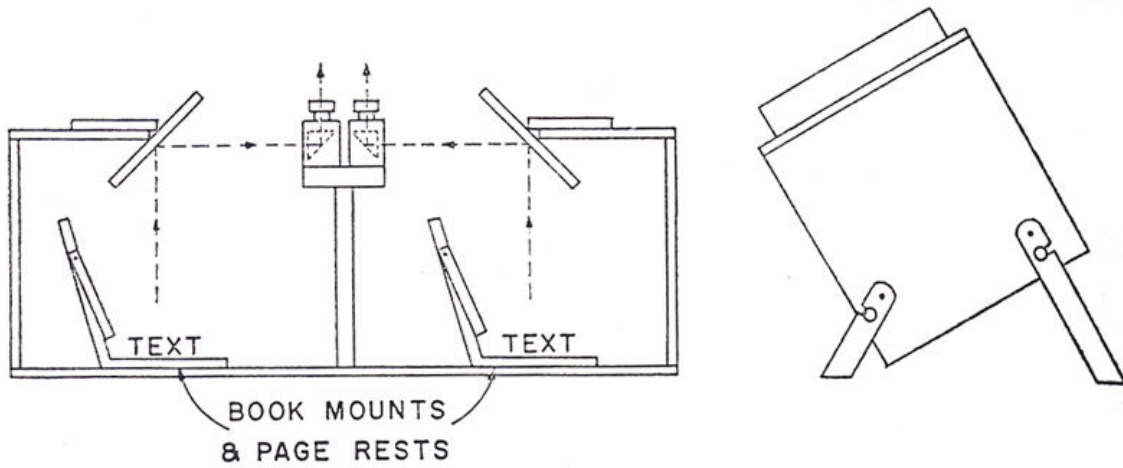


Figure III.2.b. Diagram of The Lindstrand Comparator Mark I.

Reprinted from Gordon Lindstrand, "Mechanized Textual Collation and Recent Design," *Studies in Bibliography* 14 (1971): 208.





Figure III.3. The McLeod Portable Collator in Operation.

Reprinted from Martin Boghardt, "Druckanalyse und Druckbeschreibung: Zur Ermittlung und Bezeichnung von Satzidentität und satinterner Varianz," *Gutenberg Jahrbuch* 70 (1995): 205.

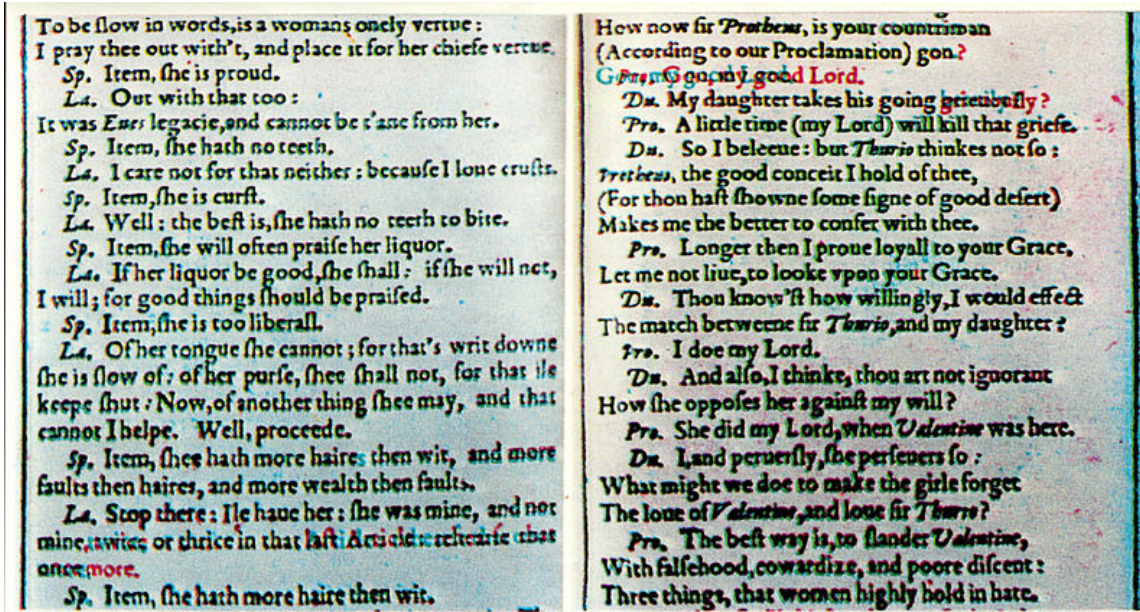


Figure III.4. Composite imaging.

Reprinted from Paul R. Sternberg and John M. Brayer, "Composite Imaging: a new technique in Bibliographic research," *The Papers of the Bibliographical Society of America* 77, no.4 (1983): 439.



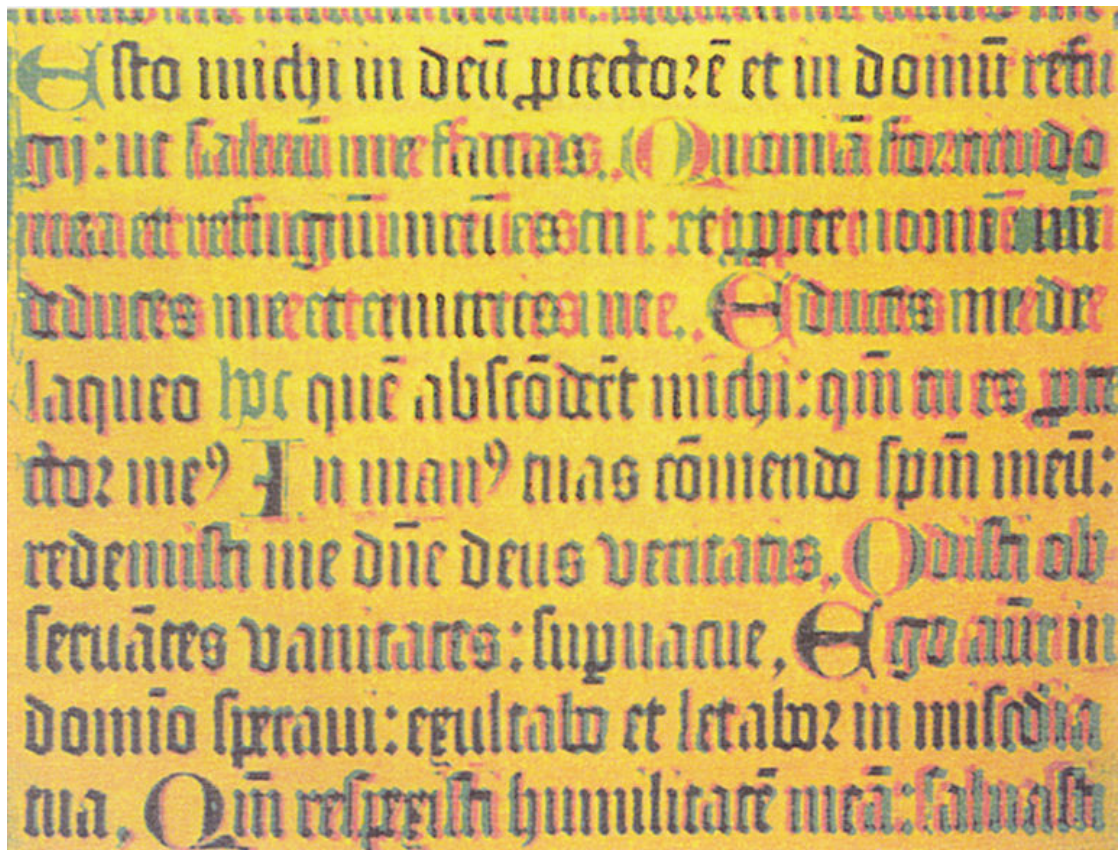


Figure III.5. SIS' Electronic Image Comparison System.

Reprinted from Martin Boghardt, "Ein spezieller Schachtelbogen im Berliner Exemplar des Psalterium Benedictinum von 1459." *Gutenberg Jahrbuch* 72 (1997): 90.

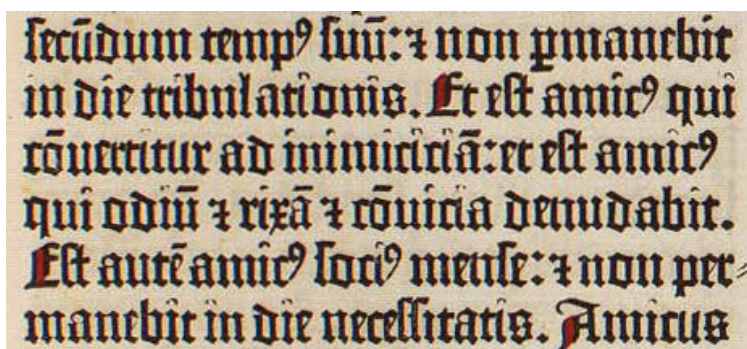


Figure III.6. The 2nd Volume, 27ra 21-26  
The Paper Copy at the British Library (P27)  
(BL, C.9.d.4. By permission of the British Library).

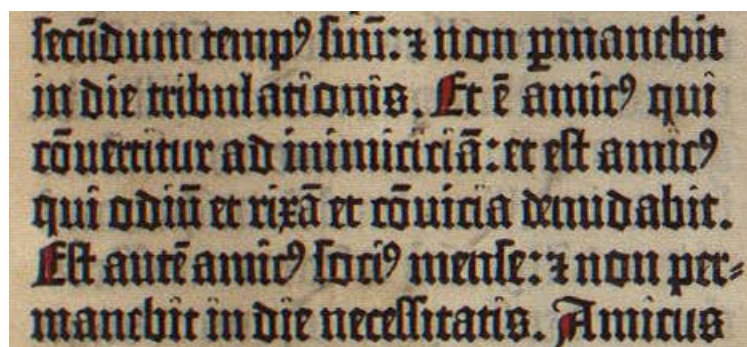


Figure III.7. The 2nd Volume, 27ra 21-26  
The Vellum Copy at the British Library (V10)  
(BL, G. 12226. By permission of the British Library).

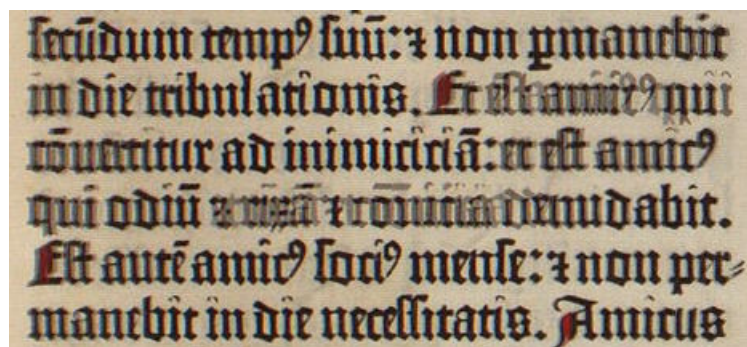


Figure III.8. Superimposed Image of III-6 and III-7.

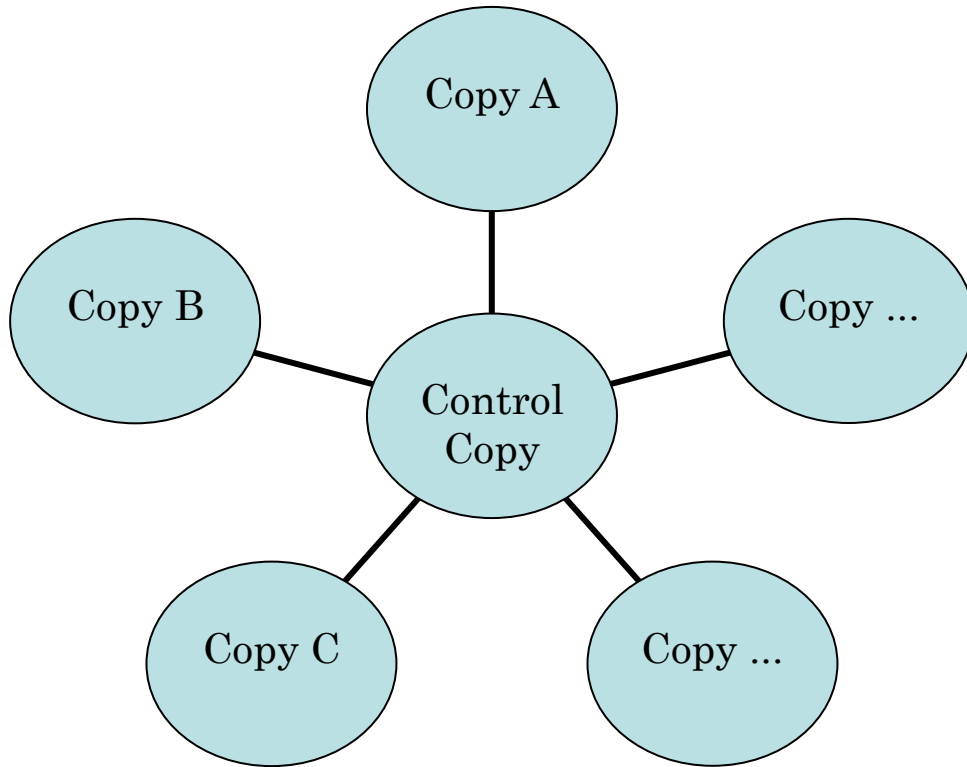


Figure III.9. Cross-copy Collation.

## IV. The Results

### A. The Results of the First Volume

#### 1. List of the Results

##### a. Primary Collation

As a result of the primary collation of nine copies of the first volume (control copy, P39, with P16, P20, P27, P29, P33, V6, V10, and V11),<sup>1</sup> forty-six stop-press variants were detected on thirty-five pages belonging to the first setting, of which only one had been previously recorded. These are listed below in order of appearance. The first Roman numeral (I/II) stands for “first/second volume”, the next Arabic numeral refers to the folio number, r/v stands for “recto/verso,” a/b for “left column/right column,” and the last Arabic numeral for the line number: for instance, “2rb 40” means “folio 2 recto, right column, line 40.” The parentheses show book and chapter in the B42, to which is added the verse number in a modern edition of the Vulgate as a finding aid, because some copies of the B42 are not foliated. As a modern edition, *Biblia Sacra Iuxta Vulgatam Versionem* is consulted.<sup>2</sup> For reference, book and chapter are shown according to the *Newly Revised Standard Version with Apocrypha*, if the division of the books is different from the modern English text.<sup>3</sup>

If one change necessarily causes further changes, they are counted as one. Take an example of a change in the word division: if two words are by mistake printed as one word at first and later divided into two words, then the next word becomes contracted to fit the narrowed space – for example, a change from “delonge et” to “de longe [et] –, it is counted as one variant. If there is more than one variant on a page, which is not a direct result of the first change, it has a different number. Six pages of the first volume have more than one variant on a page: I 144v, I 205r, I 217v, I 250v, I 281r, and I 308r.

I 2rb 40 (1/2r)	Jerome's Epistle to Paulinus 6
I 3ra 39-40 (1/3r)	Jerome's Epistle to Paulinus 7
I 15rb 42 (2/5r)	Genesis 25:11
I 19va 9 (2/9v)	Genesis 31:52

I 23va 6 (3/3v)	Genesis 40:14
I 52ra 38 (6/2r)	Leviticus 7:38
I 106ra 25 (11/5r)	Joshua 8:25
I 114ra 42 (12/3r)	Joshua 24:10
I 131va 25 (14/3v)	1 Kings 3:21 (1 Samuel 3:21 in NRSV)
I 132r (14/4r)	1 Kings 4:15-6:1 (1 Samuel 4:15-6:1 in NRSV)
I 144va7 (15/6v)	1 Kings 26:3 (1 Samuel 26:3 in NRSV)
I 144vb 2 (15/6v)	1 Kings 26:13 (1 Samuel 26:13 in NRSV)
I 150vb 40 (16/2v)	2 Kings 8:16 (2 Samuel 8:16 in NRSV)
I 154ra 37 (16/6r)	2 Kings 14:23 (2 Samuel 14:23 in NRSV)
I 180ra 32 (19/2r)	4 Kings 5:18 (2 Kings 5:18 in NRSV)
I 192va 27 (20/4v)	4 Kings 25:19 (2 Kings 25:19 in NRSV)
I 195ra 2 (20/7r)	1 Chronicles 3:22
I 205ra 4 (21/7r)	1 Chronicles 24:4
I 205ra 25 (21/7r)	2 Chronicles 24:15
I 212vb 40 (22/4v)	2 Chronicles 11:10
I 214vb 24 (22/6v)	2 Chronicles 16:6
I 217va 18 (22/9v)	2 Chronicles 21:18
I 217vb 3 (22/9v)	2 Chronicles 22:4
I 217vb 13 (22/9v)	3 Chronicles 22:4
I 232va 30 (24/4v)	2 Esdras 3:1 (Nehemiah 3:1)
I 246rb 5 (25/7+1r)	3 Esdras 9:43 (1 Esdras 9:43 in the Apocrypha)
I 250va 7 (26/1v)	4 Esdras 5:40 (2 Esdras 5:40 in the Apocrypha)
I 250va 14 (26/1v)	4 Esdras 5:42 (2 Esdras 5:42 in the Apocrypha)
I 250vb 8 (26/1v)	4 Esdras 5:55 (2 Esdras 5:55 in the Apocrypha)
I 250vb 33 (26/1v)	4 Esdras 6:7 (2 Esdras 6:7 in the Apocrypha)
I 251rb36 (26/2r)	4 Esdras 6:41-2 (2 Esdras 6:41-2 in the Apocrypha)
I 259va 42 (26/9+1v)	4 Esdras 16:24 (2 Esdras 16:24 in the Apocrypha)
I 261ra 4 (27/1r)	Prologue to Tobit
I 281ra 37 (29/1r)	Job 3:16
I 281rb 8-9 (29/1r)	Job 3:23-4
I 281rb 39 (29/1r)	Job 4:14

I 282vb 25 (29/2v)	Job 9:19
I 291ra 34 (30/1r)	Job 38:3
I 291va 37 (30/1v)	Job 39:10
I 292rb 38 (30/2r)	Job 41:19
I 292va 1 (30/2v)	Job 4:22
I 293ra 42 (30/3r)	Psalms 2:6
I 299ra 28 (30/9r)	Psalms 32:9
I 303vb 30 (31/3v)	Psalms 52:2
I 304ra 40 (31/4r)	Psalms 54:9
I 308rb 6 (31/8r)	Psalms 71:16
I 308rb 11 (31/8r)	Psalms 71:17
I 308rb 13 (31/8r)	Psalms 71:18

In addition, changes in spacing between words and letters are observed on ninety-nine pages. Most of them are so subtle that they could not be detected without the present method. As the present research advanced, however, it became clearer that the detection of changed spacing requires different treatment. It is sometimes easy but sometimes difficult to determine whether there is a real change or it just looks changed in the digital images, because they might be affected by the page surface conditions as well as the filming conditions; this is why this category was not covered in the previous collation by the author.<sup>4</sup>

Examining multiple copies, however, sometimes makes it easier to surmise and thus such changes are analyzed in the present collation. Furthermore, the present results of the collation of multiple copies suggest that there are not only intentional changes, or corrections, but also incidental changes. Both give clues to reconstruct the work of the printing shop, and thus deserve close attention. It will be useful to find all the possible changed spacing by the collation of digital images, and then examine each original based on that result to confirm whether they are really changed or not, although it is not always possible to determine even if originals are available.

Ninety-nine pages are likely to represent changes in spacing and they are listed below in order of appearance, a brief account of which will be given in section 3.

23v, 25v, 34r, 37v, 44r, 45v, 49v, 57r, 60r, 60v, 61r, 62r, 67r, 69r, 78v, 83v, 85r,

91r, 93r, 98r, 102r, 103v, 105v, 106r, 106v, 107r, 113v, 116v, 118r, 126v, 128v, 132r, 133r, 133v, 136v, 141v, 143v, 145v, 150v, 151r, 156r, 162r, 163r, 168r, 169r, 170v, 171v, 172v, 180r, 182r, 183v, 185r, 186r, 188r, 189r, 190v, 197r, 199r, 199v, 201v, 202v, 204r, 205r, 206r, 207r, 209v, 217v , 221r, 233r, 234v, 243r, 254r, 258r, 259r, 263r, 264r, 264r, 267r, 268v, 271r, 272r, 273r, 280r, 284v, 286r, 289r, 289v, 297r, 299v, 307r, 309r, 311v, 316r, 316v, 317r, 321v, 322r, 322v, and 323r.

#### b. Nine Categories of Stop-press Variants

These stop-press variants may be classified tentatively into nine categories. In the previous study by the author, they were classified into eight, and the present result adds one new category, that is, change of upper/lower case. The present categories are not mutually exclusive or absolute. For example, a correction of a misspelling (category G) may cause a change in the use of contraction (category E), while a correction of word division (H) naturally causes a change in spacing; the distinction between a correction of word division (H) and different spacing (A) is not always clear. These categories are proposed only to make it easier to see what kind of changes the pages received at press in the B42 printing house.

- A. Changes in spacing
- B. Inversion of a type
- C. Different shapes of the same letter
- D. Correction of punctuation
- E. Change of upper/lower case
- F. Use of contraction
- G. Misspelling
- H. Word division
- I. Addition of words

Table IV-1 lists these stop-press variants detected by primary collation of the first volume, except for those of category A, which will be given in the section 3. Therefore, this can serve as a minimum list of the stop-press variants found in the first volume of the B42. The complete list (all of the categories A to I) is given in Appendix 2.



In the “No.” column, they are numbered in order of appearance. Both the definite variants (some of category A, and all of the categories B to I) and possible variants (some of category A) are numbered continuously, and thus the numbers in table IV-1 are not serial. The “Category” column refers to the nine categories of variant mentioned above. The “Folio” column shows where each stop-press variant has been detected by folio number and quire number in parentheses: for example, “2rb 40 (1/2r)” means “folio 2 recto (the recto of the second leaf of quire 1), right column, line 40.” The “1st state” and “2nd state” columns show briefly what the differences are, detailed accounts of which are given below according to the variant category. A contracted word is expanded and put in brackets [ ] — for example, “ē” is expanded to “[est]” —, and a ligatured letter is enclosed in round parentheses ( ) — for example, “(pa)nis” means the letters “p” and “a” are ligatured. If the word in question is continued from the previous line or to the next line, the preceding or following part of the word is shown in parentheses, in which line break is indicated by the sign “/” — for example, “(homi= / ) num” and “edi= ( / ficaverunt)” mean that “=”s are printed and signs “/” are supplied by the present author. Variant letters are not distinguished, except when it has something to do with a stop-press variant: for example, three variants of “s” – standard “s,” long “ſ” and the final s in the shape of the figure 5 like “<sup>s</sup>” – are shown as “s.”

The “1st state copies” and “2nd state copies” columns show the copies which have each state. The result shows there are only two states of variants. The order of these two states is decided on the basis of grammatical correctness, typographical improvements, and the composition rules of the B42 revealed by the preceding studies. There remain four examples which cannot be decided on these grounds. As for these pages, the state of the vellum copies is listed as the 2nd state, because each vellum page is presumed to have been printed after the corresponding paper page, as will be argued below; these pages are indicated by pale green in table IV-1.

### c. Secondary Examination

Table IV.2 lists these stop-press variants including the results of secondary examination of twenty-one other copies: P13, P14, P15, P17, P22, P23, P25, P26, P28, P30, P35, P36, P38, P42, P44, V1, V2, V4, V7, V9 and V8. At an early stage of this research, results of on-site investigations of eleven copies were kindly supplied: P13, P23, P26, P28, P36,



P38, P44, V1, V2, V8, and V9.<sup>5</sup> Eight of them, namely, P13, P26, P28, P38, P44, V1, V8 (using a published CD-ROM), and V9, were later also examined by the present author. These copies are examined in several installments in order to confirm the detected stop-press variants by collation of the digital images, instead of finding new ones. Therefore, in total thirty copies (twenty-one paper and nine vellum copies) can be compared at the present.

## 2. Accounts of Each Stop-press Variant

This section gives a detailed account of each stop-press variant according to the variant category, except for category A, different spacing, which is described separately in section 3. Both the results of primary collation and secondary examination are given below.

Category B. Inversion of a Type: (34), (75), (99), (100), (102), (104), (143), (150), (156), (157)

**(34) I 106ra 25 (11/5r) (Joshua 8:25):** A difference on f. I 106r shows up on line a25. In P14, P17, P16, P27, P30 and P42, the first word is continued from the previous line and make “(homi= / ) num” as shown in figure IV.1. In the remaining paper and all the vellum copies (that is, P13, P15, P20, P29, P33, P35, P39, V4, V6, V7, V8, and V10), this word is printed “(homi= / ) uum” and the first “u” is shorter than the second.

The former (“hominum”) is the correct word. However, as will be argued below, because the erroneous setting “(homi= / ) uum” is found also in all the vellum copies, it can be stated with considerable confidence that this represents the second state, while P14 and the companions represent the first. This should be considered not as an intended correction, but as an accidental change. For instance, this letter may have come loose in the forme at some point, and then was put back in upside-down. The fact that the first “u” looks shorter than the second may support this assumption, in conjunction with nos. (100), (102), and (156) – in these examples, an inverted “n” looks like a smaller “u.”

**(75) I 180ra 32 (19/2r) (4 Kings 5:18) (2 Kings 5:18 in NRSV):** On f. I 180r, a difference shows up on line a32. As figure IV.2 shows, the sixth word in P39 is wrongly printed “nt,” while that of P27 is printed “ut.” When digitally inverted, this letter “n” of P39 is identical to the letter “u” of P27. Thus these are the same types, inverted in P39,

and the right way up in P27. The six paper copies, P14, P16, P20, P29, P33 and P39 have an inverted “n” and the remaining paper and all the vellum copies show the letter “u” correctly.

**(99) I 212vb 40 (22/4v) (2 Chronicles 11:10):** On f. I 212v, a difference shows up in the sixth word on line b40. In P39, letter “i” of “in” is printed upside down, but in P33, this inversion is corrected (see figure IV.3). This inversion is corrected in sixteen other copies: P14, P15, P16, P17, P23, P30, P36 and all the vellum copies. The remaining ten copies have the same inverted letter “i” as P39: P13, P20, P25, P26, P27, P28, P35, P38, P42, and P44.

**(100) I 214vb 24 (22/6v) (2 Chronicles 16:6):** On f. I 214v, the fourth word in P39 is correctly printed “tulerunt.” In P27, this word is wrongly printed “tuleruut”, and the second “u” is printed at higher position than the neighboring letters, as shown in figure IV.4.

**(102) I 217vb 3 (22/9v) (2 Chronicles 22:4):** F. I 217v, has two corrections of an inverted letter. The first word on line b3 is printed “iu” in P27, as figure IV.5 shows. In all the other copies, this word is corrected to “in.” As the previous example, this letter “n” of P27 — that is, an inverted “u” — is positioned higher than the other letters. In P27, this word is corrected by hand. Two other paper copies, P15 and P16, this “n” is also inverted and printed “u,” while in the other copies, this inversion is corrected.

**(104) I 217vb 13 (22/9v) (3 Chronicles 22:4):** The second correction of inversion on f. I 217v appears on line b13. In P27, the second word is printed “inda” and corrected by hand, as figure IV.6 shows. In all the other copies, this word is corrected to “iuda.”

**(143) I 291ra 34 (30/1r) (Job 38:3):** On f. I 291r of P15, P28, P29, P35, P36, P39, and P44, the first word on line a34 is correctly printed “Accinge” as shown in figure IV.7. In P33, this word is wrongly printed “Acciuge”. When digitally inverted, the letter “u” of P33 is identical to the letter “n” of P39. Thus, these are the same type, the right way up in P39, and inverted in P33. Most copies, P13, P14, P16, P17, P20, P23, P25, P26, P27, P33,

P38, P42, V1, V2, V4, V6, V7, V8, V9, V10 and V11 agree with P33.

However, this is assumed to be another example of accident as in no. (143). Because the erroneous setting “Acciuge” is found also in all the vellum copies, it can be stated with considerable confidence that this represents the second state, while P39 and its companions represents the first. “Acciuge” should be considered not as an intended correction, but as an accidental change.

**(150) I 299ra 28 (30/9r) (Psalms 32:9):** On f. I 299r, “i” of the second “ip[s]e” is inverted in P13, P27 and P29, as shown in figure IV.8. This inversion is corrected in P14, P15, P16, P17, P20, P33, P35, P39, P42, V4, V6, V7, V8 and V10.

**(156) I 308rb 11 (31/8r) (Psalms 71:17):** F. I 308r represents three stop-press variants, two of which belong to category B. The first variant appears in the second word on line b11. As figure IV.9 shows, in P39, this word is misprinted as “magnificabuut”. The second “u” of P39 looks slightly shorter than the first. In P33, this inversion of “n” is corrected and the word is printed as “magnificabunt”. Seven copies, that is, P15, P17, P23, P25, P26, P27 and P38 are the same as P39, while all the others agree with P33: P13, P14, P16, P20, P28, P30, P35, P36, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10 and V11.

**(157) I 308rb 13 (31/8r) (Psalms 71:18):** F. I 308r has another correction of an inverted letter two lines below (see no. 156). In P39, as shown in figure IV.10, the third word of line b13 is misprinted “solns.” In P33, however, this word is correctly printed “solus”. P15, P17, P23, P25, P26, P27 and P38 are the same as P39, while the others are identical to P33.

**Category C. Different Shapes of the Same Letter: (5), (40), (53), (112), (121), (135), (136), (155)**

Eight examples are classified in this category. In addition, on f. I 19v (2/9v) (Genesis 31:52), the first “r” in the six word on line a9 “p[er]tieris” looks larger in P20 than that of other copies. However, P20 is a facsimile and not completely reliable, and this is therefore not included in the present result.

**(5) I 23va 6 (3/3v) (Genesis 40:14):** In P39 and the facsimile of P20, “e” in the last word

on I 23va 6 “fuerit” looks smaller than that of P16, P27, P35 and V6 (see figure IV.11). They might be different two pieces of type, or just look so due to filming conditions and the page surface conditions.

**(40) I 114ra 42 (13/3r) (Joshua 24:10):** The first letter on the last line (line 42) of the left column of f. I 114r shows a difference. In P20, P27, P29, P30, P35 and P39, the long “s” in “sed econtrario” is of the later form (looks like l). As shown in figure IV.12, In P16, P33, V6, V7, V8, V10 and V11, this is a long “s” of the primary form, which looks like Γ (two lines cross each other at right angles). In the latter, the spacing between the next word “econtrario” is wider and the corresponding line in the right column, b42, is very slightly shifted to the right. In parentheses, “econtrario” should be printed as two words, “e contrario,” but this correction is not made.

**(53) I 144va 7 (15/6v) (1 Kings 26:3) (1 Samuel 26:3 in NRSV):** The third word in the last line of the left column of f. I 144v is “aute[m]” with a suspension mark above the final letter “ē” in order to show the omission of nasal “m” (see figure IV.13). The suspension bar looks to be positioned at a much higher position and almost touching the “x” on the previous line in P15, P20, P27, P30 and P42, while that of P16, P20, P30, P35, V6, V7, V8, V10 and V11 is clearly printed at normal height. At present, there are two possibilities and it cannot be decided which the case it is: (1) the copies of the former group have “e” and the suspension mark was later added by hand, while the copies of the latter group have “ē” with the suspension mark; (2) there are two kinds of “ē” with the suspension bar and the former “ē” is replaced probably because the suspension mark is positioned too high.

**(112) I 246rb 5 (25/7+1r) (3 Esdras 9:43) (1 Esdras 9:43 in the Apocrypha):** On f. I 246r, the sixth word on line b5 is “samus” and the beginning letter long “s” in P27, P29, P33, and P39 is an abutting type (“Anschluß” or “Nebenforme” as Schwenke called it): the left side of the letter is smooth. The use of an abutting letter at the beginning of a word breaks the composition rule of the B42. Being the first letter of a word, this long “s” should be of the primary form, and is so corrected in all the other copies (figure IV.14).

**(121) I 259va 42 (26/9+1v) (4 Esdras 16:24) (2 Esdras 16:24 in the Apocrypha):** On f. I 259v of P39, the last word “terra” in the bottom line, a42, has two different “r”s. As figure IV.15, shows, the first “r” is shorter than the second, and both of them are abutting types. Since the preceding letter is “e”, to use abutting types here agrees with a basic composition rule of B42 examined by Schwenke; the rule is to use abutting types after letters which have projections to their right: c, e, f, g, r, t, and x.<sup>6</sup> In P33, however, this short “r” is replaced by an “r” of standard height, and both of them are abutting types. P15, P17, P20, P23, P25, P27, P28, P30, P35, P38, P42, and P44 are the same as P39, while the others have replaced it with an “r” of standard height.

This variant seems to raise a new question about the composition rules of the B42. It is worth noting that although several examples of “rr” occur on this same page, no other shorter “r” is found. On other pages, even a cursory look reveals that this short “r” is sometimes used as the first “r” in “rr”, and sometime as the second, and sometimes singly after “e”, and also after “c”. However, it is not a single piece of type because several shorter “r”s are found on a page in some cases. The usage of the shorter abutting “r” has not been studied in detail and it needs further analysis (see variant nos. 135 and 136 in the first volume: no. 68 in the second volume, and chapter V).

**(135) I 281rb 39 (29/1r) (Job 4:14):** A difference on f.I 281r also concerns the shorter “r”. In P39, the first word on line b39 “perterrita” has three abutting-shape “r”s of the same standard height (see figure IV.16). P39 is the only copy to show this state. In P33 and all the other copies, the last “r”, that is, the second “r” in “rr”, is replaced by the shorter one.

Other setting variants on this page – that is, variants (133) and (134) – indicate that P39 represents the earlier state. Therefore, the shorter “r” was here apparently set as a correction. These three variants, nos. (121) and (135), and (68) in the second volume, represent a previously unnoticed rule of composition about the use of the shorter abutting “r”.

**(136) I 282vb 25 (29/2v) (Job 9:19):** On f. I 282v, the fourth word on line b25 is “querit[ur]”. As figure IV.17 shows, the “r” after “e” in P33 is a non-abutting or primary form (as Schwenke calls it); its left side is not smooth. Using the primary form breaks the basic composition rule of B42 mentioned above. This deviation is corrected in P39: P39

has an abutting “r”, whose left side is flat. However, this “r” is not only abutting, but also shorter (as in variant 135 above). P14, P15, P25, P26, P27, P28, P35 and P44 show the earlier state like P33, while the remaining eighteen copies are identical to P39.

**(155) I 308rb 6 (31/8r) (Psalms 71:16):** On f. I 308r, the first word on line b6 is “(su= / ) perextolletur”, and the first “t” in P39 is a non-abutting form: its left side is not smooth, although it is positioned after “x” and should be the abutting form. On the other hand, an appropriate abutting form “t” is printed in P33: the left side of the first “t” is smooth (see figure IV.18). P15, P17, P23, P25, P26, P27 and P38 are the same as P39, while the others represent the corrected state like P33.

Category D. Correction of Punctuation: (3), (107), (115), (117), (147), (152)

**(3) I 15rb 42 (2/5r) (Genesis 25:11):** The last line (line 42) of the right column on f. I 15r shows a difference. The first word of this line – “vide[n]tis” – is the last word of a sentence. In P39, a period is printed before the final letter “s” – obviously by mistake. In P33, however, this period is correctly positioned, that is, after the final “s” (see figure IV.19). They belong to the same setting rather than a replacement setting, since they are identical except for this period. Examination of twenty other copies belonging to the first setting like P39 reveals that only P39 has this period in the wrong position.<sup>7</sup>

It is assumed that after f. 15r of P39 had been printed, someone noticed the mistake and corrected it. Since only one copy out of the copies examined so far shows the mis-setting, the mistake must have been noticed quite early in the print run. It is unlikely, however, that f. 15r (2/5 r) in P39 is a proof pull, for there is no correction mark; nor have other differences been found on any of the three other pages of the sheet – f. 15v, 16r, and 16v (2/5v.6rv).

**(107) I 232va 30 (24/4v) (2 Esdras 3:1) (Nehemiah in NRSV):** On f. I 232v, line 30 of the left column ends with the first half of a word “edi=” and continued to the next “ficaverunt” and this word separation is clearly indicated by a double-hyphen in P16, P29, P33, P35, V6, V7, V8, V10 and V11, as shown in figure IV.20. However, in three copies, P20, P27, and P39, this double-hyphen is omitted; no change in spacing is observed between these two groups of copies. This piece of double-hyphen might have been set but

not well inked; however, the fact that at least two copies do not show the slightest trace makes it less plausible, and suggests that a double-hyphen was added after several pages were printed.<sup>8</sup>

**(115) I 250vb 8 (26/1v) (4 Esdras 5:55) (2 Esdras 5:55 in the Apocrypha):** A difference on f. I 250v appears in the middle of line b8. P39 does not have the period between the second word “pretereuntes” and the third word “Et”, whereas this period is correctly printed in P33 (see figure IV.21). P13, P16, P17, P28, P30 and P38 are identical to P39, and the remaining twenty-one copies are identical to P33.

Even an illiterate person who only knew the punctuation system of the B42 could easily notice these two mistakes. The setting rule concerned here is very simple; the beginning letters of sentences should be set with capitals after periods and question marks. In other words, upper case letters appear only after the periods, question marks, and spaces reserved for the book initials.

**(117) I 251rb36 (26/2r) (4 Esdras 6:41-2) (2 Esdras 6:41-2 in the Apocrypha):** On f. I 251r, the line 36 of the right column shows a difference at the end. As figure IV. 22 shows, in P39 and all the paper copies examined – namely, P13, P14, P16, P17, P20, P27, P30, P33, P35 and P42 – a raised mid-point (•) is printed at the end of line b36. However, it should be a full stop (.), because the next word is “Et,” starting with a capital “E.” According to the setting rule of the B42, a raised mid-point and a colon is always followed by a lower case letter. On the contrary, in the vellum copies examined, this punctuation is corrected and the line b36 ends with a full stop.

A further examination of this page suggests that an interesting accident happened here. Each of the following three lines (b37 to b39) ends with a double hyphen to indicate the word separation over lines, and first two, which are printed at the end of lines b37 and b38, change their position. In all the paper copies, they are positioned higher than the normal ones, while they are positioned at the normal height in the vellum copies. Therefore, this correction from a raised mid-point to a full stop found on b36 can be interpreted as a correction of the position of final types which somehow drifted upwards. The third double hyphen at the end of line b39 does not change; neither is a full stop 4 lines above shifted.

In the B42, double hyphens are set outside the vertical line of the line ending; in other words, they protrude from the column ending. Therefore, something like spaces and quads must have been used to fill the right-hand margin of the line which does not have a double hyphen at the end. This shift of punctuation suggests that a lot of spaces of different widths were used, and would make it very easy for them to slip up or down in the narrow gap between the end of the line and whatever was used to keep the pressure to the set type on the right (such as quoins).<sup>9</sup>

**(147) I 293ra 42 (30/3r) (Psalms 2:6):** After the first word “*eius*” on f. I 293ra 42, a colon looks to be printed in P39, as shown in figure IV.23; it may just look so because of a painted capital, but it could not be confirmed at the present. In other copies, P16, P20, P27, P29, P33, V6, and V10, a period is used and this agrees with the setting rule of the B42, because the next word is “[D]ominus” with a space for one-line-capital D.

**(152) I 303vb 30 (31/3v) (Psalms 52:2):** On f. I 303v, a difference shows up at the end of line b30. As figure IV.24 shows, P39 does not have a colon after the final word “*iniquitatib[us]*”, while P33 has the printed colon at the end of the line, creating space for it by reducing spaces after “*facti*” and “*in*” on this line. This insertion of the colon causes changes in the spacing between words in this line. To correct this omission, a sign is added by hand in P39. P14, P17, P27, P28, P29, P35, P38, P39 and P44 also omit the colon, and seven of them, P14, P17, P27, P28, P29, P35 and P38 have a hand-added colon in the exactly same manner as P39 (P44 cannot be confirmed at the moment). Therefore, this hand-insertion might have been done in the B42 printing shop. The colon is inserted in the remaining paper and all the vellum copies.

#### Category E. Change of Upper/Lower Case:

In the first volume, no example belonging to this category was found.

#### Category F. Use of Contraction: (2), (15), (116), (134), (144), (145)

**(2) I 3ra 39-40 (1/3r) (Jerome's Epistle to Paulinus 7):** F. I 3r has 40 lines, if it belongs to the first setting. The last two lines of the left column, lines a39-40, show a difference (see figure IV. 25). In P14, P17, P33, P35 and P39, these two lines are printed as follows:



“attra(he)nte[m] su(pp)licia pccōrib[us] • [et] famen  
in t[er]ra: no[n] famen (pa)ni(s) • nec sitim aque”

In P13, P15, P16, P30, V4, V7 and V8, these two lines are printed as follows (changed letters are italicized by the author):

“*attrahente*[m] su(pp)licia pccōrib[us] • *et fame*[n]  
in t[er]ra: no[n] *fame*[n] (pa)nis • nec sitim aque”

The meaning of these two sentences remains the same, but ligatured letters and contraction are changed. The intention of this change is assumed to have been to replace the final letter “s” in “panis” on line a40. Since in P33 and P39, “s” of the shape of figure 5 is used, but this is usually used at the end of a line and then replaced. The change on line a39 is not very clear, but is assumed to have been made for justification, because the change on line a40 would have broke the alignment of the line-ending.

**(15) I 52ra 38 (6/2r) (Leviticus 7:38):** On f. I 52r, a difference shows up on line a38, which leaves a space for chapter number to be inserted by a rubricator. As figure IV.26 shows, in P20, the fourth word is “d[e]serto” with a suspension mark above “d” and this line reads “suas domino i[n] d[e]serto synai.”; in the other copies, this word is spelled out and printed “deserto” without any suspension mark. It is assumed that “d[e]serto” is changed into “deserto” because this word does not need to be shortened, as there is enough space at the end of the line.

**(116) I 250vb 33 (26/1v) (4 Esdras 6:7) (2 Esdras 6:7 in the Apocrypha):** On f. I 250v a difference is detected on line b33 as shown in figure IV.27. In P39, the first word of this line is “iniciu[m]” with a suspension mark above the final letter “u” in order to show the omission of nasal “m.” Examination of the original confirmed that this upper bar is not written but clearly printed. In P33, however, the type without a suspension mark is used to print “iniciu”, which does not make sense. Since the abbreviation marks are integral to the letters, and it is very unlikely that the mark was broken away by accident, they are two distinct types.

P13, P16, P17, P28, P30 and P38 are identical to P39 (“iniciu[m]”), while the remaining paper and all the vellum copies are identical to P33 (“iniciu”).<sup>10</sup> In the three copies – P27, V1 and V10 – a mark was added by hand above the final letter “u”. Another

simple typographical correction on this page, variant (115) of inserting punctuation, strongly suggests that the state of P39 was earlier. Thus, this change seems to be an example of a false correction, or miscorrection; a “corrector” in fact made the text worse. It may have been caused by an incomplete attempt to spell it out (“inicium?”), considering that this line has enough space for the change.<sup>11</sup>

**(134) I 281rb 8-9 (29/1r) (Job 3:23-4):** The text from b8 to b9 on f. I 281r evidences a partial resetting. In P39, it reads “(cir= /) cundedit eum deus tenebris. Anteq[uam] co= / meda[m] suspiro”. In P33, it is “(cir= /) cundedit eum de[us] tenebris. Anteq[uam] com= / edam suspiro”. The meaning of the text is the same, but the use of the contraction is different (see figure IV.28). P39 shows a unique state, while all the others have the same contraction as P33.

This change was made to avoid a misleading word division between “co” and “medam,” which implies as if there is a verb root like “medo.” On the other hand, division of “com” (“cum” in compound = with) and “edo” (= eat) makes sense, and it would help a reader to correctly say “com-edam.”<sup>12</sup> Therefore, the nature of this correction is a little different from other variants. This can be classified as a real textual correction and a highly literate person is likely to have made it.

**(144) I 291va 37 (30/1v) (Job 39:10):** The second word on I 291va 37 is “rinocerota” in P20 and this is grammatically correct. In P16, P27, P29, P30, P33, P35, P39, V6, V8, V10 and V11, this word is printed “rinocerota[m]” with the letter “ā” which has a suspension mark above, as figure IV.29 shows. V6 does not show the suspension bar above “a,” but it is likely to be scratched out, judging from the image; another suspension bar is added to the second “o” by hand. Also in P30, this suspension mark is scratched out.

Here it should be remembered that P20 is a facsimile; there is a high possibility that the suspension mark is deleted in the original of P20 and thus there is no trace in the photographic facsimile. This possible change is worth recording until it is confirmed by examination of the original or an image of higher resolution.

**(145) I 292rb 38 (30/2r) (Job 41:19):** A similar example of possible change was found on f. I 292r. The second word on line 38 of the right column is “eu” in P20, while that is

“eu[m]” in all the other copies, as shown in figure IV.30. In this case, “eu[m]” is grammatically correct. Therefore, this represents either deleting the printed suspension bar by hand, or more likely, a change of a type from “u” without a suspension mark to “ū” with a bar.

Category G. Misspelling: (1), (45), (59), (63), (93), (95), (101), (113), (114), (122), (133), (146), (153)

**(1) I 2rb 40 (1/2r) (Jerome's Epistle to Paulinus 6):** On f. I 2r, a difference appears on the last line (line 40, since this is 40-line page in the first setting) of the right column. The fourth word is printed “sctrptura[rum]” in P15, P16, P17, P29, V4 and V8, omitting “i” in the middle of the word, as figure IV.31 shows. On the contrary, “i” is inserted so that this word is correctly printed “scriptura[rum]” in P13, P14, P20, P30, P33, P35, P39, AND V7. As a result, the colon at the line ending, which should be placed within the column according to the setting rule of the B42, is pushed out and protrudes from the column. At first glance, this seems a simple correction of misspelling. On the other hand, however, this change is exceptional as will be argued in chapter V because this is a unique case where vellum copies are not identical to each other.

**(45) I 131va 25 (14/3v) (1 Kings 3:21) (1 Samuel 3:21 in NRSV):** On f. 131v shows a difference on line a25. As figure IV.32 shows, this line reads “reuelatus fuerat (do)min[us] samuel i[n] sylo” and the fourth word is “samuel” in P16. Only P13 agrees with P16. In P14, P15, P17, P20, P27, P30, P39, P42, V4 and V8, this word is corrected and printed “samueli” and it causes further changes in the spelling of neighboring words and this line reads “reuelat[us] fuerat domin[us] samueli i[n] sylo”; a contraction and a ligature are changed.

**(59) I 150vb 40 (16/2v) (2 Kings 8:16) (2 Samuel 8:16 in NRSV):** The first word on line b40 of f. I 150v is printed “sarme” only in P39, while it is corrected to “saruie” in all the other copies (P13, P14, P15, P16, P17, P20, P27, P30, P33, P42, V4, V6, V8), as shown in figure IV.33.

**(63) I 154ra 37 (16/6r) (2 Kings 14:23) (2 Samuel 14:23 in NRSV):** On f. I 154r of P39,

the fifth word of line a37 is wrongly printed as “Surrexit”, with three “r”s. As figure IV.34 shows, in P33, this extra “r” is deleted to correctly print “Surrexit”. Examination of eighteen other copies that belong to the first setting reveals that only in P39 does this word have a superfluous letter “r”.

**(93) I 205ra 4 (21/7r) (1 Chronicles 24:4):** F. I 205r has two instances of correction of misspelling (see figure IV.35). The first one occurs on line a4. In P20 and P27, the fifth word is printed “eleazari” and both have an expunct under “i” because it is unnecessary. This word is corrected to “eleazar” in most copies: P13, P14, P15, P16, P17, P29, P30, P33, P35, P39, P42, V4, V6, V8, V10 and V11. There are further differences on this line. In P20 and P27, which presumably show the earlier state, letters “o” and “c” of “hoc” are not vertical, and “q” and “u” of “qua[m]” on the line above are also inclined. In P39 and its companion copies, these types are vertical. It is clear that these types drifted and inclined at the early stage of printing, because of a lack of enough pressure from spaces and letters to each side. In other words, the types were presumably loosely set.

It is difficult to tell which was the initial motivation of the improvement and which was the by-product. Both are possible; a printing crew might have wanted improve the inclined types, and in passing corrected the text, or the other way around. In the latter case, it is likely that the incorrect word “eleazari” was spotted and corrected thanks to the inclined types.

**(95) I 205ra 25 (21/7r) (2 Chronicles 24:15):** The second correction of misspelling on f. I 205r appears on line a25. In P20 and P27, the third word is printed “(ha)phses” and “h” and “a” are ligatured, as shown in figure IV.36. This word is changed into “aphses” in other copies: P13, P14, P15, P16, P17, P29, P33, P35, P39, P42, V4, V6 and V10. Interestingly enough, the same page shows another clear typographical improvement 2 lines above (see account of no. 94, p. 144).

**(101) I 217va 18 (22/9v) (2 Chronicles 21:18):** On f. I 217v a difference shows up on line a18. As figure IV.37 shows, the second word in P27 is “insanabuli” and it is corrected to “insanabili” in all other copies examined: P13, P14, P15, P16, P17, P29, P30, P33, P35, P39, P42, V4, V6, V8, V10 and V11.

**(113) I 250va 7 (26/1v) (4 Esdras 5:40) (2 Esdras 5:40 in the Apocrypha):** F. I 250v have four variants on a page. The first variant shows up on line a7. As figure IV.38 shows, in P13, P16, P17, P28, P30, P38 and P39, the sentence reads “aut in fine caritate[m] que[m] / populo promisi”. In the other copies, that is, P14, P20, P23, P25, P26, P27, P29, P33, P35, P36, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10 and V11, the last word of this line is changed into “qua[m]”. The word “que[m]” (masculine) does not agree with its antecedent “caritate[m]” (feminine); the change to “quam” (feminine) corrects this.

**(114) I 250va 14 (26/1v) (4 Esdras 5:42) (2 Esdras 5:42 in the Apocrypha):** F. I 250v shows one more variant of change of spelling on line a14. In P39, the second word is “velotitas”. As figure IV.39 shows, this word in P33 is printed “velocitas.” P13, P16, P17, P28, P30 and P38 are the same as P39, and the remaining twenty-one copies are identical to P33.

**(122) I 261ra 4 (27/1r) (Prologue to Tobit):** The last word on line a4 of f. I 261r is printed “Nira= (/ ri)” in P13, P14, P15, P16, P17, P27, P33, P35, P39 and P42. The first upper-case letter is changed and this word is correctly printed “Mira= (/ ri)” in P20, P29, P30, V4, V6, V7, V8, V10 and V11, as figure IV.40 shows.

**(133) I 281ra 37 (29/1r) (Job 3:16):** In line a37 on f. I 281r of P39, the first and the fourth words are different from the other copies: the first word is printed “sicud” and the fourth word is contracted “no[n].” As figure IV.41 shows, in all the other copies – P13, P14, P15, P16, P17, P20, P23, P25, P26, P27, P28, P30, P33, P35, P36, P38, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10 and V11 – the former is corrected to “sicut” and the latter is spelled out as “non”. The difference in the use of contraction of the fourth word is assumed to result from that of the first, because the narrower type “t” makes the space for it. P39 is at present the only copy found to have this spelling.

**(146) I 292va 1 (30/2v) (Job 4:22):** On f. I 292v, differences occur in the first and the final words on line a1. In P13, P14, P15, P16, P20, P27, P33, P35 and P39, they are “Feruescere ... profundum” and the final word is spelled out (see figure IV.42). On the

other hand, they are printed “Feruerscere ... profu[n]dum” in a few paper and all the vellum copies, P17, P30, P42, V4, V6, V7, V8, V10 and V11. The spelling of the first word has been added “r,” and the final word is contracted to fit the narrowed space. In this case, however, the former is the correct word. Therefore, this is another example of miscorrection.

**(153) I 304ra 40 (31/4r) (Psalms 54:9):** On f. I 304r, the last word on line a40 shows a difference. It is misprinted “pusillamini = (tate)” in P13, P15, P16, P17, P20, P30, P33, P39 and P42 (see figure IV.43). The letters “n” and “m” are interchanged and correctly printed “pusillanimi = (tate)” in P14, P27, P35, V4, V6, V7, V8, V10 and V11.

Category H. Word Division: (54), (85)

**(54) I 144vb 2 (15/6v) (1 Kings 26:13) (1 Samuel 26:13 in NRSV):** On f. I 144v, line b2 begins “de longe [et]” in P15, P20, P27, and P42; “delonge” is wrongly divided into two words. As figure IV.44 shows, this wrong word division is corrected into “delonge et” in P13, P14, P16, P17, P30, P39, V4, V6, and V8. Deleting an unnecessary spacing made more space and “et” became spelled out in the later group.

**(85) I 192va 27 (20/4v) (4 Kings 25:19) (2 Kings 25:19 in NRSV):** On f. I 192v of P33, the second and the third words in line a 27 are wrongly printed as one word “euulgo”, which is meaningless (see figure IV.45). They are correctly printed “e vulgo” in all the other copies. This incorrect word division is unique to P33 among the examined copies; thus, it is natural to suppose P33 represents an earlier uncorrected state.

In addition to the correction to the word division, a type was changed. The corrected version has “vu”, while the uncorrected version has “uu” and the first “u” is the abutting form because the preceding “e” is a projecting letter. When the word division was corrected, the first “u” was replaced with “v”. This exchange of “u” with “v” is not the correction of an error, because the use of u/v was not at all fixed in the period. Rather, it agrees with the orthographic habit of the B42. In the B42, “v” is used as the beginning letter of a word, and “u” in any other part of a word, except “ut”, “uel”, and “usque”, regardless of whether the initial ‘u’ is a vowel or a consonant.<sup>13</sup>

### Category I. Addition of Words: (86)

**(86) I 195ra 2 (20/7r) (1 Chronicles 3:22):** On f. I 195r of P39, two words “[et] sesa” are on line a2 and this sentence reads “[et] naaria et sa= / phat [et] sesa sex numero.” (= and Neariah and Shaphat, and Sesa, six in number). All the copies except P33 have these two words. In P33, instead, they are added clearly by hand in the left margin (see figure IV.46). Thus, it can be assumed that f. 195r of P33 represents the earlier version than the others. Thanks to these manually added words, this stop-press variant was pointed out by Needham in 1986.<sup>14</sup> The word “sessa”, regarded as a proper name, is excluded in the modern edition of the Latin Vulgate, and was in fact excluded in the Clementine Vulgate of 1592, but has an ancient manuscript tradition. The modern editors suggest that it may have begun in a marginal gloss as a transliteration of the Hebrew word “shesh” (= six), which was then mistakenly brought into the text. In P14, these two words were marked out in P14. In V1, “sesa” is scratched out, but the same word is again added by hand, and the word “Filius” is changed into “Fili” by hand.

This addition required a partial resetting of text from a2 to a9, but after the tenth line, the text is again synchronized. In fact, the first word of a line became synchronized on line a6, but the line ending is different because of a change in the space reserved for a chapter-number. The space for the chapter-number IIII in P39, which was to be added by a rubricator, is on the first line of the chapter (line a6). On the other hand, the space is created at the end of the last line of the preceding chapter (line a5) in P33, and this is the commonest among the three systems employed for chapter-numbers in B42. This is the only example of addition of words found as a result of the present collation.

### 3. Changes in Spacing and Possible Variants<sup>15</sup>

Table IV.3 lists a hundred and twenty changes in spacing including possible changes. In principle, table IV-3 lists only the result of primary collation, since it is difficult to decide a change in spacing by the examination of the originals with the naked eye. The manner of counting in this category is a little different from that of other categories, because some pages show a lot of possible space changes which are different from copy to copy and the nature of these changes is different from those of other categories. In this category, if a change is very clear, the specific place is numbered as before (for example, f. 23va 19); if there are many possible changes on a line or a page, the folio and line number (for

example, 69ra 41-42) or only the folio number (for example, f. 85r) are listed.


The present result suggests that there are several kinds of changes. First, there are intentional changes: spacing is clearly changed and there is an apparent cause for it, such as justification, deletion of an unnecessary small spacing within a word, and the adjustment of loosely locked types. Second, there seem to be a number of accidental changes: types seem to drift to the left and right, in the absence of enough pressure from letters and types among or around them; they may have been adjusted if noticed. Thirdly, there are other possible changes in spacing between words, which cannot be explained at the present, and whose the chronological order is not clear. A few examples below will illustrate them.

#### a. Intentional Changes

**(94) I 205ra 23 (21/7r) (1 Chronicles 24:14):** This is the third (or the second in order of appearance) difference on f. 205r. On line 23 of the left column in P20 and P27, the last three letters – “n”, “t”, and “a” – of “decimaquinta” are inclined clockwise (see figure IV.36 again). In P16, P29, P33, P35, P39, V6 and V10, this “n” is vertical. On-site examination of P13, P14, P15, P17, P42 and V4 revealed that “n” stands vertical in these copies. However, the spacing of even these copies does not perfectly agree; the spacing between the first word “decimaquarta” and the second word “isbaal” is slightly different in each copy.

There are two explanations for this. In either case, the set type must have been rather loose and not perfectly locked up.

(1) The type is the same but the spacing is adjusted. The line is rather loosely set, and these three types are inclined because there is a lack of sufficient pressure. Considering that the printers have a regular phrase “off their feet” to describe this, it is likely the case.<sup>16</sup> After the pages of P20 and P28 were printed, the press crew noticed it and adjusted the spacing, by adding extra spaces. However, the adjusting was not enough, and the word “isbaal” is still slightly drifting within the line (not inclined, but shifting from right to left or the other way).

(2) Change of the type. A type with a inclined “n” on the face (such as ) was used at first and then it was changed to a type which had vertical “n” on the face. If the type of vertical “n” is narrower than the first slanting “n”, it causes a small space within



the line, and makes the second word “isbaal” drift slightly within the line. However, this is less likely because this kind of faulty type might have noticed at the composing stick, and there is few examples of them.

This page shows two more stop-press variants which belong to category G, nos. (93) and (95). (93) also presents an example of correction of inclined types; inclined letters “qu” (a3) and “hoc” (a4) found in P20 and P27 are changed or corrected and they stand up vertical in P16, P29, P33, P39, V6 and V10.

Another example, **(128) I 268va 19 (27/8v) (Judith 7:4)**, is worth noting. On f. 268v, the spacing between the first and second words on line a19 (“mitte[n]tes cinere[m]”) is narrower in P16, P20 and V7 than in P27, P29, P33, P39, V6 and V10. However, this could be another example of correction of misspelling rather than a change in spacing. In P16, the final letter “ē” of the second word (“cinerē”) is written by hand, and there is a smudge that suggests a scratching out of whatever was printed. The fact that both of P20 and P35, whose photographic facsimiles were consulted in the present study, has an “ē” of strange shape also suggests that it was corrected by hand in the original (see figure IV.47).

There are sixteen examples of deletion of an unnecessary small spacing within a word: nos. (6), (7), (18), (36), (51), (52), (55), (56), (57), (60), (61), (62), (70), (88), (119), and (124). A few examples will illustrate this classification.

**(7) I 23va 19 (3/3v)**: On this page, the first word is printed “canistra” in P16, P27, and V6. However, in P20 and P39, it looks like “ca nistra” with a very small but unnecessary space in the middle of the word, as shown in figure IV.48. Since this space is much smaller than the usual space used between words, it is unlikely to be an original intention, and in this sense it is different from variants of category H, nos. (54) and (85) found on f. 144vb 2 and f. 192va 27 respectively. This small gap is assumed to have been caused by loosely locked types; the spaces used in this line were not enough and types were not well locked, and it was adjusted when noticed. The two other changed spacing found on the same page, **(8) I 23va 26** (deletion of unnecessary spacing), **(5) I 23va 1** (changed spacing between words), also support a hypothesis that this page was at first

rather loosely set.

**(46) I 132r (14/4r) 1 Kings 4:15-6:1 (1 Samuel 4:15-6:1 in NRSV)** was printed at the earliest stage of printing (unit B) due to the division of work. This page is printed in 40 lines. In P16, the vertical alignment is not good, especially for the letters “e,” “i,” and “r.” In P20, P27, and P39, the page is better aligned vertically (see figure IV.49). This may represent changes of defective types (smaller types than usual, or the position of a letter is not correct), or adjustments of loosely set type. The following two pages, namely, 133r (14/5r) and 133v (14/5v), are not well superimposed horizontally between copies, and thus spaces are assumed to have been adjusted in many places all over the pages.

#### b. Accidental Changes

**(110) I 234vb 1 (24/6v) (2 Esdras 7:6) (Nehemiah 7:6 in NRSV)** represents an interesting example. In P39, the final word of the first line on the right column “nabucho=” is printed within the column width. As shown in figure IV.50, however, this word is shifted to the right and “=” completely protrudes from the column in P16, P20, P29, P33, V6 and V10. At the present, two explanations are possible for this difference. The first is that it is an intended change so that the “=” completely protrudes and thus satisfies the setting rule of the B42. Considering that this is the final word of the first line of the right column, it may have been drifted to the right because there is not enough pressure from the right-hand margin.

Similar examples are found on two more pages, which are presumably accidental changes. The one is **(30) I 98ra-b 42 (10/8r) (Deuteronomy 28:48, 58)**. On f. 98r, the latter half of lines a42 and b42 is shifted towards the right and line b42 is worse justified in P39, V6, and V10. Another one is no. **(72) I 172vb 1 (18/4v) (3 Kings 17:7) (1 Kings 17:7 in NRSV)**. On 172v, the first two words on the first line of the right column (“no[n] enim”) look shifted towards the right in P20, P29, P39, V6 and V10, and the beginning of line b1 caves in.

The rest of the listed variants concern changed spacing between words, which scarcely affect the justification or meaning of the text, and no apparent reason is found at the present. Therefore, they seem to be accidental, but they require further analysis. It is worth noting that among them, seven examples, nos. (24), (29), (64), (124), (158), (164)

and (165) have one thing in common. There is non-printed space on the line, either a two-line space reserved for a chapter initial at the line beginning, a one-line space for a chapter number at the end of a line, or a verse capital in the middle of a line. Supposing these spaces were created by pieces of various widths, it is not surprising that types tended to become rather loose and drifted, and then caused changes in spacing.

## B. The Results of the Second Volume

### 1. List of the Results

#### a. Primary Collation

As a result of the primary collation of the second volume (control copy, P27, with P16, P29, P33, P46, V6 and V10),<sup>17</sup> seventy-one stop-press variants were detected on fifty-three pages belonging to the first setting, of which only three had previously been recorded.<sup>18</sup> These are listed below in order of appearance.

The collation also revealed that f. II 22r (3/2r) of P46 (the Laubach copy in the Gutenberg Museum), which has been considered to belong to the common setting, actually belongs to the replacement setting (*Ersatz* leaf). Four other copies were identified by Schwenke as containing a replacement setting on the same page: P21 (Eton), P30 (Texas), P31 (Bodmer), and P37 (Edinburgh).<sup>19</sup> F. II 22r of P46 was collated with the image of P30 and it was confirmed that they are identical.

II 4rb 5 (1/4r)	Proverbs 10:15
II 27ra 6(3/7r)	Ecclesiasticus 6:1 (Sirach 6:1 in NRSV)
II 27ra 11 (3/7r)	Ecclesiasticus 6:3 (Sirach 6:3 in NRSV)
II 27ra 22(3/7r)	Ecclesiasticus 6:9 (Sirach 6:9 in NRSV)
II 27ra 24(3/7r)	Ecclesiasticus 6:9 (Sirach 6:9 in NRSV)
II 27ra 36 (3/7r)	Ecclesiasticus 6:15 (Sirach 6:15 in NRSV)
II 27ra 39 (3/7r)	Ecclesiasticus 6:16 (Sirach 6:16 in NRSV)
II 27rb 26 (3/7r)	Ecclesiasticus 6:29 (Sirach 6:29 in NRSV)
II 30vb 1 (3/10v)	Ecclesiasticus 15:14 (Sirach 15:14 in NRSV)
II 35va 10 (4/5v)	Ecclesiasticus 27:1 (Sirach 27:1 in NRSV)
II 35vb 5 (4/5v)	Ecclesiasticus 27:19 (Sirach 27:19 in NRSV)
II 35vb 13 (4/5v)	Ecclesiasticus 27:22 (Sirach 27:22 in NRSV)

II 35vb 32 (4/5v)	Ecclesiasticus 27:30 (Sirach 27:30 in NRSV)
II 35vb 38 (4/5v)	Ecclesiasticus 27:33 (Sirach 27:33 in NRSV)
II 35vb 41 (4/5v)	Ecclesiasticus 28:1 (Sirach 28:1 in NRSV)
II 53vb 27 (6/3v)	Isaiah 23:2
II 56va 7 (6/6v)	Isaiah 30:4
II 65ra 1 (7/5r)	Isaiah 50:10
II 68rb 30 (7/8r)	Isaiah 60:19
II 87ra 31 (9/7r)	Jeremiah 32:29
II 89va 25 (9/9v)	Jeremiah 36:25
II 97va 1 (10/7v)	Jeremiah 51:17
II 98va 25 (10/8v)	Jeremiah 52:12
II 99vb 8 (10/9v)	Lamentations 2:2
II 102rb 25 (11/2r)	Baruch 2:15
II 116rb 39 (12/6r)	Ezekiel 23:25
II 121va 14 (13/1v)	Ezekiel 33:7
II 122rb 20 (13/2r)	Ezekiel 34:10
II 125va 10 (13/5v)	Ezekiel 40:4
II 127vb 15 (13/7v)	Ezekiel 43:18
II 130va 19 (13/10v)	Ezekiel 48:20
II 139ra 19 (14/9v)	Daniel 10:16
II 142ra 3 (15/2r)	Daniel 14:36
II 142rb 24 (15/2r)	Prologue to Hosea 1:7
II 147vb 30 (15/7v)	Amos 4:5
II 148va 33 (15/8v)	Amos 6:8
II 153va 1 (16/3v)	Nahum 2:10
II 160rb 16 (16/10r)	Zacharias 13:8
II 169va 14 (17/8v)	1 Maccabees 8:12
II 176vb 14 (18/5v)	1 Maccabees 14:46
II 185va 42 (19/4v)	2 Maccabees 11:7
II 189ra 19 (19/8v)	2 Maccabees 15:24
II 200va 32 (20/9v)	Matthew 19:12
II 213va 22 (22/2v)	Mark 10:46

II 214ra 19 (22/3r)	Mark 11:26
II 214ra 33 (22/3r)	Mark 11:31
II 215va 6 (22/4v)	Mark 14:4
II 215va 17 (22/4v)	Mark 14:9
II 217ra 9 (22/6r)	Mark 15:40
II 217rb 10 (22/6r)	Mark 16:9
II 225ra 22 (23/4r)	Luke 10:1
II 227va 30 (23/6v)	Luke 13:8
II 234ra 41 (24/3r)	Luke 23:48
II 241va 28 (24/10v)	John 10:2
II 250ra 37 (25/9r)	Romans 1:32
II 250vb 14 (25/9v)	Romans 3:13
II 253vb 35 (26/2v)	Romans 11:7
II 256rb 18 (26/5r)	1 Corinthians 1:12
II 256vb 42 (26/5v)	1 Corinthians 3:12-13
II 257ra 36 (26/6r)	1 Corinthians 4:6
II 257ra 39 (26/6r)	2 Corinthians 4:7
II 266vb 2 (27/5v)	Galatians 2:6
II 266vb 5 (27/5v)	Galatians 2:7
II 266vb 21 (27/5v)	Galatians 2:13
II 274va 31 (28/1v)	1 Thessalonians 3:5
II 286vb 18 (29/2v)	Acts 3:24
II 289rb 40 (29/5r)	Acts 8:3-4
II 289vb 23 (29/5v)	Acts 8:31
II 290rb 8 (29/6r)	Acts 9:15
II 292vb 14 (29/8v)	Acts 13:25
II 302vb 32 (30/8v)	James 3:2

In addition, changes in spacing between words and letters are observed on twenty-nine pages. They are classified as category A variants, and listed below in order of appearance, a brief account of which will be given in section 3.

6v, 7r, 16v, 24v, 27r, 60r, 66r, 69r, 71r, 73r, 81v, 100r, 106v, 107v, 109v, 129v, 169v, 170v, 172v, 173v, 185r, 188v, 214r, 227v, 258r, 266v, 291v, 293r and 308r.

The same nine categories as the first volume apply to the results. Table IV-4 lists these stop-press variants in the second volume detected by primary collation in order of appearance, except for those of category A, list of which will be separately given in the section 3. The complete list (all of categories A to I) is given in Appendix 3.

#### b. Secondary Examination

Table IV-5 lists these stop-press variants including the results of secondary examination of the fourteen other copies: P13, P14, P15, P17, P20, P22, P25, P30, P35, V7, V8, V11 and V12.<sup>20</sup> The complete list including category A is given in Appendix 3.

### 2. Accounts of Each Stop-press Variant

This section gives detailed account of each stop-press variant according to the variant category, except for category A, which is described separately in section 3. Both the results of primary collation and secondary examination are given below.

#### Category B. Inversion of a Type: (23), (51), (55), (66), (85)

Five variants fall into this category. In every case, either “n” or “u” is inverted and corrected. No correction of inversion of other letters such as “i” is detected.

**(23) II 56va 7 (6/6v) (Isaiah 30:4):** On f. II 56v, the final word on line a7 is “p[er]neneru[n]t” in P17, P25, P27 (see figure IV.51); the second letter “n” should be “u.” This inversion is corrected to print “p[er]uenerunt] in the thirteen other copies: P13, P14, P15, P16, P20, P30, P33, P35, P46, V6, V8, V10 and V11.

**(51) II 139ra 19 (14/9v) (Daniel 10:16):** F. II 139r of two paper copies, P27 and P29, the fourth word on line a19 is wrongly printed “uichil”. The inversion of the first letter “u” is corrected and the word is printed “nichil” in all the other copies (see figure IV.52).

**(55) II 148va 33 (15/8v) (Amos 6:8):** F. II 148v shows an example of inversion, or it can be a replacement of an irregular shape of a type. The third word on line a33 is correctly

printed “anima” in the five paper and five vellum copies: P14, P17, P20, P27, P33, V6, V7, V8, V10 and V11. As figure IV.53 shows, the second letter is “u” in P13; “n” or “u” of an irregular shape in seven paper copies (P13, P15, P16, P25, P29, P35 and P46), which looks similar to a replaced type mentioned below (nos. 25; see also figure IV.62); in P14 and P17, both the upper and the lower strokes of this letter show breaks, probably because of bad inking. Considering that all the other variants indicate that each page was corrected only once, they are likely to be two types, rather than three. It is assumed that P13 was printed at the earliest stage with an inverted letter. During the course of printing, this inverted letter got damaged, and printed in an irregular shape in the several paper copies; at a later stage of printing this page, the defective type was replaced with a “n” in the middle of the print run.

**(66) II 176vb 14 (18/5v) (1 Maccabees 14:46):** On f. II 176v, four paper copies have “simonem” as the second word on line b14: P15, P16, P20 and P25. This word is changed “simouem” in the fourteen other copies, including the vellum copies (see figure IV.54). In this case, however, the later state “simouem” is a wrong reading, and thus it can be called a miscorrection. Considering that “n” in the earlier state looks smaller than usual, this letter “n” is assumed to have been an inverted “u” as in variant (34) in the first volume. Either an inversion of the type was noticed and physically corrected, regardless of the correct reading, or this letter was pulled out during either inking or printing and put back upside down.

**(85) II 241va 28 (24/10v) (John 10:2):** There is a misprint of “u” and “n” on line a28 of f. II 241v of the four paper copies: P14, P16, P17 and P27. In these copies, the eighth word is printed “Qni”: obviously “u” is inverted. As figure IV.55 shows, this inversion is corrected and the word in question is changed into “Qui” in the remaining copies.

Category C. Different Shapes of the Same Letter: (7), (16), (17), (18), (20), (21), (25), (36), (37), (57), (58), (68), (70), (75), (77), (82), (91), (92), (95), (101), (102)

**(7) II 27ra 6(3/7r) Ecclesiasticus 6:1 (Sirach 6:1 in NRSV):** F. II 27r shows seven variants as well as changes in spacing. The first variant appears on line a6 (see figure

IV.56). In two paper copies, P16 and P17, the fourth word is printed “bilinguis.” In the fourteen other copies, it is printed “bilingui(s)” using the “s” in the shape of figure “5,” which occupies smaller space than the standard one. The wording is not changed; what changed here is the shape of the letter “s” and spaces following it. This change is assumed to have made for justification, because in the second state, the line ending is better justified, while the final letters protrude to the left in the first state.

**(16) II 35va 10 (4/5v) (Ecclesiasticus 27:1) (Sirach 27:1 in NRSV):** F. II 35v has six variants, five of which fall into this category. The first variant appears on line a10. The fourth word is “locupletari” in the both states. A difference lies in the final “i” (see figure IV.57). In the nine paper copies (P15, P16, P17, P25, P29, P30, P33, P35 and P46), an abutting “i” is used, while a standard “i” is used in the remaining paper and all the vellum copies. To use a standard “i” breaks the basic composition rule to use an abutting forms of letter after c, e, f, g, r, t, x and y.<sup>21</sup> Judging from another variant on this page, that is, no. (17), and the vellum copies, however, it is assumed that the copies with standard “i” shows the later state. The same kind of change occurs five times on this page. In every case, a set of these nine paper copies shows the earlier state with an abutting letter.

**(17) II 35vb 5 (4/5v) (Ecclesiasticus 27:19) (Sirach 27:19 in NRSV):** The second change in the use of different shapes of the same letter on this page appears at the end of line b5. The last word is “denu= (/ daueris),” and in the same nine paper copies, an abutting form of “n” is used, while in the other copies a standard “n” is used (see figure IV.58).

**(18) II 35vb 13 (4/5v) (Ecclesiasticus 27:22) (Sirach 27:22 in NRSV):** Eight lines below, another change in the shape of “a” occurs (see figure IV.59). The second word on line b13 is printed “capera” and the first “a” is abutting in the nine paper copies mentioned above. It is again replaced by a standard “a” in the other copies (P13, P14, P20, P27, V6, V10 and V11).

**(20) II 35vb 38 (4/5v) (Ecclesiasticus 27:33) (Sirach 27:33 in NRSV):** Another change of this category is detected on line b38 on the same page. The forth word on this line is



“co[n]tine[n]s”; its second letter is “ō” with a suspension mark to indicate the omission of “n.” In the nine paper copies, this “ō” is abutting, while that used in the other copies is of the primary form, as shown in figure IV.60.

**(21) II 35vb 41 (4/5v) (Ecclesiasticus 28:1) (Sirach 28:1 in NRSV):** The last example on f. II 35v appears on line b41. The second letter in the second word “s[er]uabit” is abutting “u” in the nine paper copies showing the earlier state: P15, P16, P17, P25, P29, P30, P33, P35 and P46 (see figure IV.61). In the remaining copies, a primary form of “u” is used.

**(25) II 65ra 1 (7/5r) (Isaiah 50:10):** The final word on the first line of f. II 65r is “audiens” and the second letter “u” presents a difference. In the five paper copies, P14, P15, P17, P27, P35, it appears in an irregular shape (see figure IV.62); both the upper and the lower strokes are combined and it looks like “[ ]” as in nos. (55), (91) and (92). In P27, a sign “v” is added to this “n” by hand to indicate it should be read as “u,” not “n”; it should be remembered that P27 was once housed in a religious house, and thus has hand corrections. This peculiar shape of letter may be an example of a defect type or a poorly cast type. In the seven paper and four vellum copies, it is replaced by “u” of perfect looking: P13, P16, P20, P25, P30, P33, P46, V7, V8, V10 and V11.

**(36) II 98va 25 (10/8v) (Jeremiah 52:12):** In P16, a rare mistake appears on line a25 of f. II 98v. The fifth word on this line is “decimusnonus.” In all the copies except for P16, this word is printed “decimusnon[us]” with abbreviated “us” in the form of “<sup>9</sup>” at the end. Only in P 16, this word is printed “decim[us]nonus”, that is, “<sup>9</sup>” is used in the midst of the word, although it should be set only as a final letter (see figure IV.63). This aberration from the norm must have been noticed at a quite early stage of printing, and corrected in the most of the copies.

**(37) II 99vb 8 (10/9v) (Lamentations 2:2) :** On f. II 99v, a variant appears on line b8. The third word is “Precipitauit” and the abutting form of “r” is printed in P15, P29 and P33; “P” and “r” are almost touching each other (see figure IV.64). In other copies, however, this “r” is changed into “r” of the standard form with projected thorns on its left.

This change into “r” of the standard form improves the rhythmical appearance of the page by making a small space between “P” and “r.” On fourteen lines below, line b22, “Precipita= (/uit)” appears again, which also has “r” of the standard form.

**(57) II 160rb 16 (16/10r) (Zacharias 13:8):** F. II 160r, “omini” is printed as the fifth word of the line b16. In eight paper copies, P13, P15, P16, P17, P20, P27, P33 and P35, “n” is about the same size as the previous letter “m” (see figure IV.65). In P14, P30, P46, V6, V10 and V11, “n” is smaller than “m.” Consequently, the space between “omini” and “terra” becomes wider in the later states copies. The reason of this change is not clear.

**(58) II 169va 14 (17/8v) (1 Maccabees 8:12):** A variant on f. II 169v occurs on near the end of line a14. In P16, it is printed “(ha)b eba[n]t conser= (/ vaveru[n]t)” with unnecessary spacing between “(ha)b” and “eban[n]t”: in addition, a standard-shape “o” is used in “conser” (see figure IV.66). The examination of the seventeen other copies revealed that only P16 shows this state. In the others, it is printed “(ha)beba[n]t (co)nser= (/ vaveru[n]t)” without the unnecessary space in the word, and “o” is abutting; or it might be overlapped onto “c,” or ligatured with “c.” The copies of the second state are also better justified.

**(68) II 185va 42 (19/4v) (2 Maccabees 11:7):** The last line of the left column of f. II 185v has “ferre” at the end. In P27, the first “r” of “rr” is of standard height, while the second one is shorter; both are of the abutting form (see figure IV.67). Since the preceding letter is “e,” to use an abutting type agrees with the composition rule of the B42. In all the other copies examined, however, the first “r” is replaced with by a shorter “r,” and both “r”s are shorter. Since the earlier state is found only in P27, It is assumed that this change was made at an early stage of printing.

This change from a standard “r” into a shorter “r” does not agree with the change detected on f. I 259va 42 (no. 121). No. 121 also shows a change concerning a letter in “rr” after “e” (terra), but “shorter r – standard r” is changed into “standard r – standard r.”

**(70) II 189ra 19 (19/8v) (2 Maccabees 15:24):** On line a19 of f. II 189r, a new variant

shape of an upper-case “E” is found in the three copies: P29, P33 and P35. In these copies, the last word is “Et” starting with a wider upper-case “E” (see figure IV.68), which comes after the period; which has clear thorns at the left-side and extends to the right. This “E” is not recorded in the B42 type synopses made by Schwenke or by Zedler.<sup>22</sup> In other copies, this letter is replaced by the standard “E”; at the same time, spaces before and after the period became wider and the next line, b19, seems to be shifted to the right.

**(75) II 214ra 33 (22/3r) (Mark 11:31):** On f. II 214r, a change of the different shapes of the same letter is observed. In P46, the second word on line a33 is “credidistis” and the first “d” is of the primary form. Positioned after “e,” the use of the primary form here breaks the composition rule. Therefore, in the other seventeen copies, it is changed into an abutting-form “d” (see figure IV.69).

**(77) II 215va 17 (22/4v) (Mark 14:9):** The next example is also made for the observance of the composition rule. The fourth word on line a17 of f. II 215v is “euangeliu[m]” in the all copies. In P17, P25 and P33, an abutting “a” is used, although the preceding letter is “u” with no projection and it should be followed by a primary-form letter. Therefore, this “a” is replaced by the “a” of the primary form with thorns in the other copies: P13, P14, P15, P16, P17, P20, P25, P27, P29, P30, P33, P35, P46, V6, V7, V8, V10 and V11 (see figure IV.70).

**(82) II 227va 30 (23/6v) (Luke 13:8):** A similar change appears on f. II 227v. The final word on line a30 is “responde[n]s.” As shown in figure IV.71, an abutting “o” is used after “p” in the three copies, P25, P27 and P29, although there is no necessity of abutting. It is changed into a standard-shape “o” in all the other copies.

**(91) II 257ra 36 (26/6r) (1 Corinthians 4:6):** Another irregular shape of a letter appears on line a36 on f. II 257r. The first two letters “ui” are the latter half of a word “transfigurauit” and continued from the line above. There is no mistake in the thirteen copies: P13, P15, P20, P25, P29, P33, P35, P46, V6, V7, V8, V10 and V11. However, in the eight paper copies – P14, P15, P16, P17, P25, P29, P33 and P46 –, the first letter is of the irregular shape (see figure IV.72). It may have been a defecting or a poorly-cast type

of “u” and later replaced with a regular “u,” when noticed. There still remains a possibility that this irregular shape in the earlier state is “n” (or inverted “u”), and the stroke was added by hand when the mistake was detected, although the examination of the original copies (P14 and P17) did not give a conclusive answer.

**(92) II 257ra 39 (26/6r) (2 Corinthians 4:7):** The same irregular shape appears three line below on the same page. The first letters on line a39 and the final letters on the previous line make “(e=) nim” in the same later state copies: P13, P20, P27, P30, P35, V6, V7, V8, V10 and V11. As figure IV.73 shows, the first letter in P15, P16, P25, P29, P33, P46 is of the irregular shape, which looks the same as (91); P14, P17, P25, there are gaps both the upper and lower end of the vertical strokes.

There is one more typographical mistake on this page: in fact, between these corrections. On line a37, “supra” is misprinted as “snpra” – “u” is inverted (see the third line of figure IV.73). No copy shows a correction of this mistake.

**(95) II 266vb 5 (27/5v) (Galatians 2:7):** The fifth word on line b5 of f. II 266v shows a difference. The first “m” of “michi” is of abutting form in P16. In all the other copies, however, it is changed into “m” of the primary-form. Since this is the beginning letter of a word, to use a standard “m” agrees with the composition rule (see figure IV.74).

**(101) II 289vb 23 (29/5v) (Acts 8:31):** The irregular shape of “n” or “u” appears on line b23 of f. II 289v. In P33, the middle letter of “Qui” is of the irregular shape, of which several examples are given above. P33 is the only copy to show this state. In the other copies, this letter is clearly printed “Qui” (see figure IV.75).

**(102) II 290rb 8 (29/6r) (Acts 9:15):** The last example of this category appears on f. II 290r. The fifth word on line b8 is “nomen.” In P29 and P33, “o” is smaller than other letters and “e” is abutting (see figure IV.76). In the other copies, a primary form “e” is used and this agrees with the composition rule. In addition, in these copies, the second letter “o” seems to be a little larger, but a difference is so subtle that it is possible that it may just look different due to differences in page surface conditions or digital image conditions.

## Category D. Correction of Punctuation: (45), (52), (89), (96)

**(45) II 121va 14 (13/1v) (Ezekiel 33:7):** Four examples fall into this category. The first example appears on f. II 121v. On line a14, the text runs on “requira[m] Et” without a period before “E” and the final word on this line is spelled out “spe=( / clatore[m])” in P13, P14, P15, P16, P17, P20, P25, P27 and P29. It breaks the composition rule, because in the B42, an upper-case letter should be always preceded by a period. The period is inserted in the other paper and all the vellum copies (P22, P30, P33, P35, P46, V6, V7, V8, V10 and V11), thus the text reads “requira[m].Et” (see figure IV.77). The insertion of the period causes a further change, because it narrowed the space; the final two letters are ligatured as “s(pe)=( / clatore[m])” in the corrected state.

**(52) II 142ra 3 (15/2r) (Daniel 14:36):** On. f. II 142r, seven paper copies, P13, P14, P17, P20, P30, P35 and P46, omit a period between the second word and the third; the text on this line runs on “spiritus sui Et clamauit abbacuc di= (/ cens.)” In the other eleven copies, a period is correctly inserted and the two letters are ligatured to fit the narrowed space; “spiritus sui. Et clamauit ab(ba)cuc di= (/cens.)” (see figure IV.78)

**(89) II 256rb 18 (26/5r) (1 Corinthians 1:12):** F. II 256r shows a correction of the position of a punctuation on line b18. In P16, it is printed from the second word “ego aut[em] a(pp)lo ego•(ve)ro cep(he):”; a raised mid-point is printed between “ego” and “(ve)ro,” but scratched out by hand. This raised mid-point is, however, printed correctly before “ego” in all the other copies and it reads “ego aut[em] a(pp)lo•ego (ve)ro cep(he):” (see figure IV.79). It is clear that only this raised-mid point and “ego” are interchanged, because this line shows no further change in spacing.

**(96) II 266vb 21 (27/5v) (Galatians 2:13):** F. II 266v has three variants, and this variant appears on line b21. In P16, this line ends with “simula” and there is no sign of “=” to indicate the word separation over the line. Only P16 shows this uncorrected state. In all the other seventeen copies, it is printed “simula= (/tioni)” and the continuation is clearly indicated by “=” (see figure IV.80).

Category E. Change of Upper/Lower Case: (35)

**(35) II 97va 1 (10/7v) (Jeremiah 51:17):** This is the only example of a change of upper-case letter and lower-case letter detected by the present collation. In three copies, P15, P16 and P30, the first word on f. II 97v starts with a capital letter: “Confusis est omnis conflator i[n] scul=” (see figure IV.81). However, this should be a lower-case letter, because the previous word, that is, the final word on f. II 97rb 42 is “scie[n]tia:” with a colon at the end. Since the printing of most part of the B42 was sequential, f. II 97r had been already printed when this page was at press; somebody is assumed to have noticed this mistake at an early stage of printing of this page, and made a correction. In the other copies, this mistake is corrected. It creates extra space and “in” is spelled out: “confusis est omnis conflator in scul=” in P13, P14, P17, P20, P22, P25, P27, P29, P33, P35, P46, V6, V7, V8, V10 and V11.

Category F. Use of Contraction: (9), (10), (11), (12), (15), (86)

**(9) II 27ra 22 (3/7r) (Ecclesiasticus 6:9) (Sirach 6:9 in NRSV):** Among the seven variants detected on f. II 27r, four fall into this category. The first example appears on line a22. In two paper copies, P16 and P27, a new sentence begins: “Et est amic[us] qui”; in these two copies, the final letter “i” is printed completely out of the column ending. In the other copies, this line is better justified by abbreviating “est” into “ē”: “Et [est] amic[us]” (see the first line of figure IV.82).

**(10) II 27ra 24 (3/7r) (Ecclesiasticus 6:9) (Sirach 6:9 in NRSV):** On two lines below, another change of contraction is found. In the earlier state copies, P16 and P27, line a24 is “qui odiu[m] [et] rix[m] [et] co[n]iucia denudabit.” with two abbreviated “et” which looks like figure 7. In the other copies, both “et”s are spelled out and two letters “de” are changed into a ligatured “(de)” and it reads “et rixa[m] et co[n]iucia (de)nu” (see the last line of figure IV.82). The reason why this change was made is not clear, because even the earlier state did not break any known composition rule. It may have been made because the line was a little too spacious, or reflected a preference of a person who made this change (see below, no. 12).

**(11) II 27ra 36 (3/7r) (Ecclesiasticus 6:15) (Sirach 6:15 in NRSV):** On line b36 of f. II 27r of P16 and P27, the text after a colon reads “[et] non est digna ponderatio auri” and the final “i” protrudes from the column ending (see figure IV.83). In the other copies, “et” is spelled out; instead, “est” is abbreviated, which saves much space. It reads “et non [est] digna”: the final word “auri” is perfectly printed within the column.

**(12) II 27ra 39 (3/7r) (Ecclesiasticus 6:16) (Sirach 6:16 in NRSV):** Three lines below, on line b39 of f. II 27r, another change of contraction is detected. In P16 and P27, the text after a colon is “[et] qui metuunt do=” with abbreviated “[et]” (see figure IV.83). In the other copies, it is changed into “et qui metuunt (do)=” in which “et” is expanded and the final letters “do” is ligatured. In relation to the next line, this second state is slightly better justified. This change is similar to no. (10) on line a24. In both cases, “et” is spelled out, and a letter “d” is ligatured with the next letter; they may reflect a preference of a person who made this change.

**(15) II 30vb 1 (3/10v) (Ecclesiasticus 15:14) (Sirach 15:14 in NRSV):** The fourth word on the first line of f. II 30v shows a difference. Only in P46, this word is printed “illu[m]” – with “ū” with a suspension mark, which is textually correct. An examination of the original copy of P46 confirmed that the suspension mark is actually printed. In the other copies, however, “u” without a suspension mark is used to print “illu” (see figure IV.84). A suspension mark is added by hand in copies P16, P17, P29 and P30 for correction.

As will be argued below, because the erroneous setting is found in all the vellum copies, it can be stated with considerable confidence that P46 represents the first. There are two possible explanations. First, it might have been an incomplete attempt to change “illū in” into “illum i[n].” Second, the next word “in” might have been mistaken for “m” and the intention of a “corrector” was to change “illu[m] m” to “illum” by deleting a “superfluous m,” although it was in fact “illu[m] in” in the original state.

**(86) II 250ra 37 (25/9r) (Romans 1:32):** On f. II 250r, an interesting example is detected. In the eleven paper copies (P13, P14, P15, P16, P17, P22, P25, P27, P29, P30 and P33), the third word is printed “cognouisset” (singular form). In the other copies, namely, P35,

P46, V6, V7, V8, V10, V11 and V12, “ē” with a suspension mark is used in stead of “e” to spell the plural form “cognouisse[n]t” (see figure IV.85). P20 (photographic facsimile) shows the suspension mark, but it seems too close to the letter; therefore, it is likely that the mark was added by hand to the original copy of P20. In all the other pre-correction state copies, the mark is written by hand: P13, P14, P15, P16, P17, P22, P25, P27, P29, P30 and P33. This hand correction is presumed to have been made at the printing shop rather than by a later owner of each copy (see below, chapter V.E).

Category G. Misspelling: (1), (19), (22), (33), (46), (47), (48), (50), (53), (54), (56), (71), (72), (74), (76), (79), (80), (84), (87), (88), (90), (94), (99), (100), (105), (108)

**(1) II 4rb 5 (1/4r) (Proverbs 10:15)** : On f. II 4r of P16 and P46, the starting word of line b5 is “(Sub= /) stantia” (see figure IV.86). In other copies, however, it is printed “(Sub= /) stancia”: P13, P14, P15, P17, P20, P25, P27, P29, P33, P35, V7 and V8. This change causes no change in spacing. It is not appropriate to call it a “correction,” because the use of “ti” and “ci” are not fixed in the fifteenth-century.<sup>23</sup> Considering that there is not only a change from “ti” to “ci” in the first volume (no. 114: “verotitas” to “verocitas”), but also a change from “ci” to “ti” (no. 76 on f. II 215va 6), it may have reflected a preference of a person who made this change.

**(19) II 35vb 32 (4/5v) (Ecclesiasticus 27:30) (Sirach 27:30 in NRSV)**: Among the six variants on f. II 35v, this is the only change concerning the spelling. The fourth word on line b32 shows a difference. Nine paper copies (P15, P16, P17, P25, P29, P30, P33, P35, P46) have “vnde” (see figure IV.87). On the other hand, the other copies have “unde” (P13, P14, P20, P27, V6, V10, V11).

**(22) II 53vb 27 (6/3v) (Isaiah 23:2)** : On f. II 53v, a difference appears on line b27. Only in P27, the third word is printed “Tra[n]sfreta[n]ces”; the third letter from the end is “c” (see figure IV.88). On the other hand, it is correctly printed in “Tra[n]sfreta[n]tes” with “t” in all the other copies.

**(33) II 87ra 31 (9/7r) (Jeremiah 32:29)**: A difference on f. II 87r appears on line a31. In



P33, this line begins “hanc • [et] succende[n]t”; a one letter, “c,” is omitted from “succnedent,” and inserted by hand (see figure IV.89). In all the other copies, this “c” is inserted, and the letters “ha” are ligatured because the space is reduced: it reads “(ha)nc • [et] succende[n]t.”

**(46) II 122rb 20 (13/2r) (Ezekiel 34:10):** A variant on f. II 22r shows up on line b20. P33 has “(gre= /) gem mea[m]: nec” (see the last line of figure IV.90). P16, P20, P25, P30 and P35 agree with P33; in P16, “ā” is changed into “ū” by hand, because “meam” (feminine) does not agree with its antecedent “gregem” (masculine). In other copies, this word is correctly printed “meu[m]:” (P13, P14, P15, P17, P27, P46, V6, V7, V8, V10 and V11).

This “meum,” however, does not appear in the modern edition. In the modern edition, it reads “non pascant gregem nec pascant amplius pastores...” Interestingly, two lines above does the phrase “grege[m] meu[m]” appear. Therefore, the “meum” on line b20 might have been printed by mistake; a compositor might have remembered the previous phrase or made an eyefix, or the mistake might have occurred much earlier, when a scribe had originally copied the manuscript.

One more thing to be mentioned on this page is that there is an uncorrected mistake on three lines above, where a new sentence begins (see the first line of figure IV.90.d). It is printed “Ecce egoip[s]e,” which is obviously a misprint of “Ecce ego ip[s]e” in three words. Although there is a plenty of space both before and after a period, this word division is not corrected in any copy examined in the present study.

**(47) II 125va 10 (13/5v) (Ezekiel 40:4):** On f. II 125v, a variant appears on line a10. The fourth word is misprinted as “aurbius” in P15, P17, P20, P29, P46; in P15 and P17, a correction is made by hand. In the other copies, it is corrected to print “auribus” (see figure IV.91). Since this change is completed only by exchanging the letter “b” and “i,” it causes no further change.

**(48) II 127vb 15 (13/7v) (Ezekiel 43:18):** F. II 127v shows a variant on line b15. The second word in the four paper copies (P16, P25, P29 and P46) is “fabritatu[m]” (see figure IV.92). In the other copies, this word is printed “fabricatu[m]”: “ta” is changed into “ca.”

**(50) II 130va 19 (13/10v) (Ezekiel 48:20):** On f. II 130v, line a19 shows a difference. In the eight paper copies (P14, P20, P25, P29, P30, P33, P35, P46), this line is widely spaced and reads “(tribu= /) bus israhel . Omns primitie ...” (see figure IV.93). In the other copies, “Omns” is changed to correctly print “Omnes.” A space for an “e” is created by reducing the spaces before and after the period without affecting other parts of this line.

**(53) II 142rb 24 (15/2r) (Prologue to Hosea 1:7):** F. II 142r has two variants, one of which was already described (no. 52, an insertion of a period). Another variant on this page shows up on line b24. Seven copies (P13, P14, P17, P20, P30, P35 and P46) have “dūo” as the sixth word, which does not make sense (see figure IV.94). In all the other copies, this is corrected into “d[omi]no” by replacing the “u” with a suspension mark by “n” with a suspension mark.

**(54) II 147vb 30 (15/7v) (Amos 4:5):** On f. II 147v, a variant appears at the beginning of line b30. In P27, “(sacri= /) ficace” is printed. P27 shows a unique state, and all the other eighteen copies have “(sacri= /) ficate” (see figure IV.95).

**(56) II 153va 1 (16/3v) (Nahum 2:10):** The first line of f. II 153v shows a difference. In P20, P29, P30 and P33, it is printed “facies omne[m] sicut nigredo” (see figure IV.96). In the eleven other copies, it reads “facies omniu[m] sicut nigre(do).” The second word is corrected to “omniu[m]” and “do” of the final word are ligatured to fit the reduced space. Each of the four earlier state copies demonstrates a manual correction executed in the same manner; the latter half of “ē” is scratched out to make it “ī” (see chapter V.E).

**(71) II 200va 32 (20/9v) (Matthew 19:12):** On f. II 200v, a variant appears on line a32. In the seven copies examined (P15, P22, P25, P27, P29, P30 and P33), the third word on this line is “castraveru[n]t” (see figure IV.97). In the other paper and all the vellum copies, “crastraveru[n]t” is printed. Although the former is a correct word here, it is presumed to represent the earlier state; this is a false correction.

In the later state copies, P13, P14, P16, P17, P20, P46, V7, V8 and V11, this unnecessary first “r” is marked off in the same manner: two pairs of a small signs looking

like “//” are written in faint ink both above and below of “r.”<sup>24</sup> In V6 and V10, the same hand correction is assumed to have been made, although the existence of this hand correction cannot be confirmed any more, because this “r” is scratched out in them; the upper stroke of the preceding “c” is extended towards right to fill the created gap.

**(72) II 213va 22 (22/2v) (Mark 10:46):** F. II 213v shows a difference on line a22. In the eight copies (P13, P15, P17, P20, P25, P33, P35 and P46), the second word is printed “eis” (see figure IV.98). In the other copies, this word is correctly printed “ei[us].” This correction does not affect the justification, because in the corrected state, an abbreviated “us” in the shape of “9” is used to save space.

**(74) II 214ra 19 (22/3r) (Mark 11:26) :** F. II 214r has two variants: correction of misspelling (this variant) and change of letter shape (no. 75 described above under category C). In P46, it reads from the second word “vestr qui in” (see figure IV.99). P46 shows a unique state. In all the remaining seventeen copies, it is printed “vester qui i[n]”; “in” is abbreviated in order to make extra space for an inserted “e.” In P46, “e” is inserted by hand.

**(76) II 215va 6 (22/4v) (Mark 14:4) :** The second word on line a6 of f. II 215v shows a difference. In P17, P25 and P33, it is printed “p[er]dicio” (see figure IV.100). In the other eighteen copies, it is changed to “p[er]ditio.” In other words, “ti” is changed into “ci” this time.

**(79) II 217rb 10 (22/6r) (Mark 16:9):** F. II 217r has two variants, and one of them concerns the spelling. The line b10 is misprinted “(appa=) ruit primo marie madalene” and “d” of “madalene” (misprint of “magdalene”) is of the primary form in P14, P15, P16, P17, P29, P30 and P33. As shown in figure IV.101, In the eleven other copies, it is correctly printed “(appa=) ruit p[ri]mo marie magdalene”; “ri” in “primo” is abbreviated to make space for “g,” and “d” is changed into an abutting one, following the composition rule.

**(80) II 225ra 22 (23/4r) (Luke 10:1):** F. II 225r shows a textual correction on line a22. In

the six copies (P14, P15, P16, P25, P33 and P35), it reads “(ciui= /) tem et locum” and “civitem” does not make sense (see figure IV.102). In the eleven other copies, this line reads “(ciui= /) tate[m] [et] locu[m]”; the first word is corrected and the second word is abbreviated, despite that this line is widely spaced. A space before a period is in fact wider in the corrected state.

In all the earlier state copies, with no exception, the final word on a22 “ciui” is manually corrected into “cīta [i.e. ciuita]” in exactly the same clever way; by adding a suspension mark above the first “i,” changing the first stroke of “u” into “t,” combining the second stroke of “u” and the final “i” to make “a,” and scratching out the upper bow of “i” (see chapter V.E). It is unlikely that five persons independently happened to take such a complicated process. Thanks to this manual correction in P14, Powitz noticed this stop-press variant and showed that a hand correction was found in P14, P15 and P16; he also suggested that this could have been done in the printing shop.<sup>25</sup> The present result strongly supports his argument.

**(84) II 234ra 41 (24/3r) (Luke 23:48):** A difference on f. II 23r shows up on line a41. In five paper copies (P13, P16, P17, P30 and P46), the third word is printed “p[er]tucientes” (see figure IV.103). In the thirteen other copies, the second letter is changed from “t” to “c” and printed “p[er]cutientes.”

**(87) II 250vb 14 (25/9v) (Romans 3:13) :** F. II 250v has a variant on line b14. The third word on this line is wrongly printed “dolese” in the seven copies: P16, P17, P22, P27, P30, P33 and P46. In the twelve other copies, this word is correctly printed “dolose” (see figure IV.104). In the earlier state copies, the wrong letter, the first “e,” is always overwritten by an “o,” which is added by hand (see chapter V.E).

**(88) II 253vb 35 (26/2v) (Romans 11:7):** On f. II 253v, a difference shows up on line b35. In P27 and P30, the fifth word is misprinted as “querbat” (see figure IV.105). In the other copies, missing “re” are added to correctly print “quere(ba)t.” In addition, ligatured “(ba)” is slanted anti-clockwise in all the corrected state copies. This should be regarded as an accidental change, which might have happened because the type got slanted because inadequate number of spaces were used on this line; or the type face might have been

slanting (like (ba)).

**(90) II 256vb 42 (26/5v) (1 Corinthians 3:12-13):** The last line on f. II 256v shows a variant. In P15 and P16, the third and the fourth words are “stipulam : uniuscuisq[ue]” (see figure IV.106). In the sixteen other copies, it is correctly printed “stipula[m] : uniuscuiusq[ue]”; to make space for “us,” the third word is contracted.

**(94) II 266vb 2 (27/5v) (Galatians 2:6):** On f. II 266v, a difference appears at the end of line b2. In P16, the final word is “acce= (/ pit)” and the right-hand edge of “e” is scratched out to make it “i” (see figure IV.107). Only in P16 is detected this mistake. In all the other copies, it is corrected to print “acci- (/ pit).” It is worth noting that the final “=” seem to be replaced by “-”; it may have been badly inked, or it may have been worn, but the fact all the seventeen corrected state copies show the “-” strongly suggested that there are two distinct types: “=” and “-”. There may be another possibility that the final “i” and “-” is a single piece of type (that is, the type “i-”).

**(99) II 286vb 18 (29/2v) (Acts 3:24):** The end of line b18 of f. II 286v shows a variant. In the six paper copies, the final two words are printed “qui lo=” and continued to “ti” on the next line; “cu” is missing from the word “locuti” and it does not make sense. In the other copies, these two letters are added; to make space for them, “qui” (three letters) is abbreviated to “q[ui]” (single letter) so that the text is correctly printed “q[ui] locu= / ti” (see figure IV.108). Each of the six copies which represent the earlier state demonstrates the same hand correction; “=” is scratched out and “cu=” is clearly written in the space (see chapter V.E).

**(100) II 289rb 40 (29/5r) (Acts 8:3-4):** F. 289r has a variant on line a40. The text after a colon reads in P46 “tra(de)[n]s i[n] custodia[m]. Igit[ur] qui disper= (/ si)” (see figure IV.109). The first word is corrected into “tradebat” in all the other copies, and it reads “eres:tra(de)bat i[n] custodia[m]. Igit[ur] q[ui] disper= (/ si).”

**(105) II 292vb 14 (29/8v) (Acts 13:25):** F. II 292v has a variant on line b14. As figure IV.110 shows, the final word on this line is “arbri= (/ tramini)” in the ten copies: P13, P14,

P15, P16, P17, P20, P22, P27, P33 and P46. This spelling is, however, incorrect. In the ten copies (P25, P29, P30, P35, V6, V7, V8, V10, V11 and V12), the unnecessary second “r” is deleted to correctly print “arbi= (/ tramini).”

**(108) II 302vb 32 (30/8v) (James 3:2):** On f. II 302v, a difference shows up on line b32. The fourth word on this line, preceded by a period, is “In m[u]ltis”; the five copies have this word – P20, P25, P27, P29 and P35. On the other hand, in the thirteen other copies, it is “In in[u]ltis” and an “i” without an upper bow or bar is used (see figure IV.111). The correct word here is “In m[u]ltis,” but the reading of the vellum copies suggests that this is the earlier state, and the erroneous “in[u]ltis” is the second. Considering that “m” and “in” in the B42 fount look very similar, consisting of three vertical strokes, this difference might have been caused by either a stop-press correction, bad inking or wear-out of the type “m.”

Category H. Word Division: (8), (13), (27), (34), (39), (44), (78), (98)

There are eight examples of this category. It is not always easy to make a distinction between this category and category A (changes in spacing). Described below is those are most likely to represent intentional corrections for apparent reasons.

**(8) II 27ra 11 (3/7r) (Ecclesiasticus 6:3) (Sirach 6:3 in NRSV):** One of the seven variants on f. II 27r appears on line a11. In P16 and P27, the second word is printed “lignu m” with a wide gap in its midst, as if they are two distinct words “lignu m” (see figure IV.112). The spacing is changed, and it is correctly printed as one word “lignum” in all the other copies: P13, P14, P15, P17, P22, P25, P29, P30, P33, P35, P46, V6, V10 and V11.

**(13) II 27rb 26 (3/7r) (Ecclesiasticus 6:29) (Sirach 6:29 in NRSV):** On the same page, f. II 27r, one more correction of word division is detected on line b26. In P16 and P27, the third and the fourth words are printed as one word followed by a wide space: “inoblectationem . Et” (see figure IV.113). In the other copies, they are correctly separated and the spacing is adjusted to print “in oblectationem. Et.”

**(27) II 68rb 30 (7/8r) (Isaiah 60:19):** F. II 68r shows a similar correction. In all the fourteen paper copies examined (P13, P14, P15, P16, P17, P20, P22, P25, P27, P29, P30, P33, P35 and P46), the sixth and the seventh words on line b30 are printed as one word “adlucendu[m]” (see figure IV.114). On the contrary, all the vellum copies (V6, V7, V8, V10, V11) separate these two words “ad lucendu[m]” by reducing spaces between the preceding words “ampli[us]” and “sol.”

**(34) II 89va 25 (9/9v) (Jeremiah 36:25):** On f. II 89va, a correction of word division appears on line a25. In two copies, P20 and P46, the third and the fourth words are wrongly printed as one word: “no[n]audiuit” (see figure IV.115). In the remaining copies, they are separated to print “no[n] audiuit.”

**(39) II 102rb 25 (11/2r) (Baruch 2:15):** The fourth word on line b25 of f. II 102r shows a difference. In the three copies (P13, P14 and P16), there is a gap in the midst of the word “om nis” (see figure IV.116). It is adjusted in all the other copies to correctly print “omnis.”

**(44) II 116rb 39 (12/6r) (Ezekiel 23:25):** F. 116r has a variant on line b39. In all the paper copies examined, the fifth and the sixth words are printed as one word: “tecu[m]exerce[n]t” (see figure IV.117). In P16 and P30, the separation is indicated by a faint vertical stroke written by hand. In all the vellum copies, on the contrary, this is corrected into “tecu[m] exerce[n]t.”

**(78) II 217ra 9 (22/6r) (Mark 15:40):** One of the two variants of f. II 217r shows up on line a9. The first and the second word are not separated and printed “(iaco=/) biminoris” in P16, P17, P29, P30 and P33. In the other copies, they are separated as “(iaco=/) bi minoris” (see figure IV.118). However, P30 shows still a small space between “bi” and “minoris”; and P15, which showed the earlier state on line b10, shows the corrected state here. Taking these into account, as well as the fact that this is the first word on the line, and a correction is made at the adjacent line in the right column, this may have been an accidental change rather than an intentional change.

**(98) II 274va 31 (28/1v) (1 Thessalonians 3:5):** On f. II 274v, a difference appears on line a31. In the ten paper copies (P13, P14, P16, P17, P20, P27, P30, P33, P35 and P46), the third word is wrongly separated into two: “tempta uerit” (see figure IV.119). In the two other paper and four vellum copies, this word is correctly printed as one word: “temptauerit.”

#### Category I. Addition of Words:

No stop-press variant of this category is found in the second volume.

### 3. Changes in Spacing and Possible Variants

Table IV-6 lists forty changes in spacing found on twenty-nine pages of the second volume. Seven of them are found on the pages which also show variants of other categories: nos. (14), (59), (60), (73), (81), (83), and (97). This table lists basically only the result of primary collation, since it is difficult to precisely decide a change in spacing by the examination of the originals with the naked eye. A few typical examples of intentional changes and accidental changes are described below.

#### a. Intentional Changes

**(41) II 106vb 1 (11/6v) (Ezekiel 4:4):** In seven paper copies (P14, P20, P27, P29, P30, P33 and P46), the first word “iniquitates” on the first line of the right column of f. II 106v protrudes from the column ending (see figure IV.120). Considering that this is the first line of the column, it is assumed that there was a piece of “furniture” (or its predecessor) on the left, which should have applied pressure to the set type, but that it failed to reach the first line. It may have slipped down, as printing of this page progressed. This is corrected in the other copies by reducing spaces before and after a period. P13, P15, P16, P17, P22, P25, P35, V6, V7, V8, V10 and V11 show the corrected state.

Similar examples are detected on f. II 24v: **(5) II 24vb 27 (3/2v) (Incipit to Ecclesiasticus 12)** and **(6) II 24vb 40 (3/2v) (Incipit to Ecclesiasticus 27)**. In P46, the first word of the right column slightly protrudes on two lines, while the other copies have the smooth line beginning. Since this earlier state is found only in P46, it is assumed that the irregularities were noticed very shortly after it had happened. These accidents, however, would not have caused by slipping down of a piece of furniture, because neither



of them is the first or the last line of the column. They may suggest that not only furniture but also several spaces were used to achieve a perfect straight line of the left-hand of each column. In addition, **(24) II 60ra21-b21 (6/10r) (Isaiah 38:17)** and **(28) II 69ra11-b11 (7/6r) (Isaiah 63:16)** are the examples in which the corresponding lines of each column seem to be shifted in the same direction. This may suggest that only various widths of spaces, instead of a piece of furniture, were used to fill a gap between the two columns.

In some cases, a very small but unnecessary spacing in the midst of a word is deleted: **(29) II 71ra 11 (8/1r)** and **(59) II 169vb 3 (17/8v) (1 Maccabees 8:23)**. The latter, (59), appears with a category C variant (no. 60); therefore, it is likely to be an intentional improvement.

**(109) II 308rb 1 (31/3+1r) (1 John 5:18)**: F. II 308r shows an interesting change. In the two copies, P27 and P33, the final word of the first line of the right column (“cre=”) is printed within the column width, and the sign “=” protrude outside of the column, which agrees with the composition rule of the B42 (see figure IV. 121). In all the other copies, however, this word is shifted to the right. It may have been another accident because a furniture might have slipped down and did not reach this first line (see no. 41). However, it is also likely that this is an intentional change, taking into account that the same page shows two more differences in spacing on b13 and b14, and in both cases, only P27 and P33 are different from other copies: **(110) 308rb 13 (31/3+1r) (1 John 5:18)** and **(111) (1 John 5:18)**.

#### b. Accidental Changes

There are some drifting letters and words; the spacing is different from copy to copy. They are assumed to have been caused because the lines were not fully spaced, and thus there was a absence of enough pressure. Examples are nos. **(38) II 100rb 14 (10/10r) (Lamentations 2:22)**, **(43) II 109vb 3 (11/9v) (Ezekiel 12:3)**, **(73) II 214ra 7 (22/3r) (Mark 11:22)** and **(83) II 227va (23/6v) (Luke 13:9)**. Figure IV. 122 illustrates (38) as an example. In some copies, it is correctly printed “effugeret et” (P29, V6, and V10); in some copies, there is a very small gap between “effuger” and “et” and it is printed “effuger et et” (P16, P27 and P46); on-site examinations revealed that some copy show “effugeret et” (P13, P17, P25, P30, V7, V8 and V11); other copies, however, show the third state, that is, “effugere t et” (P14, P20, P22 and P35). It is unlikely that only this part

of the page was corrected twice. It is assumed that the types were at first drifting because the line was not fully spaced, and pages had two states: “effuger et” or “effugere t”; at a later stage, it might have been re-justified to print “effugeret,” or some pages were purely by chance printed correctly.

F. II 27r shows differences in spacing on lines a8, a16, a19 and a20 (no. 14), but there is no apparent pattern; the copies do not agree to each other. Incidentally, this page has seven corrections (nos. 7, 8, 9, 10, 11, 12 and 13); the type might have got loose at the time of these corrections. The same might be true to nos. (60), (73), (81), (83) and (97). The rest of differences cannot be decided whether they are intentional or accidental, because they do not show any improvement in justification.

### C. The Results of the Second Setting

Pages belonging to the second setting were also collated. As for the first volume, pages in quires 1 and 2 (folios 1 to 20) were collated between P27, V6 and V10; pages in quires 3, 14 and 15 (folios 21-30, 129-148) were collated between P33, V6 (quire 14 only) and V10 (see table III.2). For the second volume, a part of quire 2 (folios 15-16) were collated between P33, P46 and V10.

As a result of the collation, seven stop-press variants were detected on five pages in the first volume. In addition, five differences in spacing were detected on five pages. No variant was found on the four pages of the second volume. Table IV.7 lists these twelve variants on nine pages in order of appearance. Since the number is pretty small, all the variants are listed below in order of appearance, detailed accounts of which will be given below.

- (1) I 2va 28 (1/2v) (Jerome's Epistle to Paulinus 6)
- (2) I 3ra 25 (1/3r) (Jerome's Epistle to Paulinus 7)
- (3) I 3rb 2 (1/3r) (Jerome's Epistle to Paulinus 7)
- (4) I 5va 28 (1/5v) (Genesis 2:10)
- (5) I 5vb 15 (1/5v) (Genesis 2:22)
- (6) I 5vb 23 (1/5v) (Genesis 2:25)
- (7) I 14rb 22 (2/4r) (Genesis 24:10)
- (8) I 21rb 28 (3/1r) (Genesis 36:6)
- (9) I 30ra 1 (3/10r) (Exodus 3:3)

- (10) I 132ra 42 (14/4r) (1 Kings 5:4) (1 Samuel 5:4 in NRSV)  
 (11) I 137rb 3 (14/9r) (1 Kings 14:51) (1 Samuel 5:4 in NRSV)  
 (12) I 138ra 10 (14/10r) (1 Kings 16:4) (1 Samuel 16:4 in NRSV)

Category C. Different Shapes of the Same Letter: (3), (4), (5), (6), (7), (10)

**(3) I 3rb 2 (1/3r) (Jerome's Epistle to Paulinus 7):** The second word on line b2 of f. I 3r is printed “interpret[ur].” In P27, the first “e” is of the primary form, which breaks the rule. It is corrected in V6 and V10; it is replaced by an abutting “e” (see figure IV.123).

**(4) I 5va 28 (1/5v) (Genesis 2:10):** F. I 5v has three category C variants. The first one appears on line a28. In P27, the first “a” in the fourth word “paradisum” is of the abutting form, although there is no necessity for abutting. It is changed into a primary-form “a” in V6 and V10 (see figure IV.124).

**(5) I 5vb 15 (1/5v) (Genesis 2:22):** The second change also concerns an “a.” The final word on line b15 is “edificauit” and a standard “a” is used in P27. Since it comes after “c,” it should be an abutting letter. In V6 and V10, this “a” is changed into an abutting one (see figure IV.125).

**(6) I 5vb 23 (1/5v) (Genesis 2:25):** The last example of this page appears on line b23. The seventh word is “vterq[ue]”; in P27, the last abbreviated letter “q[ue]” is of the primary form, although it is preceded by an “e” (see figure IV.126). This deviation is corrected by exchanging it for a “q[ue]” of the abutting form in V6 and V10.

**(7) I 14rb 22 (2/4r) (Genesis 24:10):** On f. I 14r, a difference appears at the end of line b22. In P27, “a” in “nabchor” is of the abutting form, and a period is printed within the printed column; both break the composition rule. In V6 and V10, an “a” was changed into an “a” of the primary form and a period protrudes outside the column (see figure IV.127). However, the latter change might have been accidental; considering that letters on this line seem to overlap each other, this line might have been not fully spaced.

**(10) I 132ra 42 (14/4r) (1 Kings 5:4) (1 Samuel 5:4 in NRSV):** The first word of the last line of f. I 132r of P33 is “rema[n]serat” and the first letter “r” looks damaged or poorly inked. On the other hand, in V6 and V10, the first “r” shows no problem. Therefore, it might have been replaced with another piece of “r” (see figure IV.128).

#### Category F. Use of Contraction: (12)

**(12) I 138ra 10 (14/10r) (1 Kings 16:4) (1 Samuel 16:4 in NRSV):** On f. 138r, the third word on line a10 is printed “Dixerutq[ue]” in P33. In V10, it is “Dixeru[n]tq[ue]” (see figure IV.129). It cannot be confirmed by the digital image, however, whether the abbreviation mark above “u” is added by hand or printed.

#### Category A. Changes in Spacing: (1), (2), (8), (9), (11)

Five examples fall into this category. One example is certainly an intentional change, but the rests cannot be decided whether they are accidental or intentional.

**(1) I 2va 28 (1/2v) (Jerome's Epistle to Paulinus 6):** Line a28 of f. I 2v shows a difference in spacing between the fourth “[et]” and the fifth “virgo”; in P27, it is narrower than that of V6 and V10. However, it is presumed to be an accidental change, because in both states, letters on this line seem to overlap on each other. It suggests that this line does not have enough space between words and letters are shifting.

**(2) I 3ra 25 (1/3r) (Jerome's Epistle to Paulinus 7):** The next page shows a similar example. On line a25 of f. I 3r, the space after the first word “ce[n]tu[m]uigit” is narrower in P27 than in V6 and V10. Like the previous example, letters on this line tend to overlap upon each other (see figure IV.130). The detection of a change in spacing might have been affected by the cockled page surface of the vellum copies, especially V10.

**(8) I 21rb 28 (3/1r) (Genesis 36:6):** On f. I 21r, a difference in spacing appears on line b28. In P33, there is a very small gap in the midst of the third word, which is printed “au tem.” In V10, this word is correctly printed “autem.” It is likely to have been re-justified, but it might have been accidental, if the type was set loose.

**(9) I 30ra 1 (3/10r) (Exodus 3:3):** The first line of the right column of f. I 30r shows a difference. In V10, this line looks shifted to the right and a little better justified than P33.

**(11) I 137rb 3 (14/9r) (1 Kings 14:51) (1 Samuel 5:4 in NRSV):** This is certainly an example of intentional change made for justification. In P27, the first word on line b3 of f. I 137r protrudes from the beginning line of the right column (see figure IV.131). This is corrected in V6 and V10, by reducing a space between “Erat” and “autem.” This type shifting is supposed to have happened because whatever was on the left of the right column failed to exert pressure on the right, as in nos. (5), (6), (24), (28) and (41) in the second volume.

#### Notes to Chapter IV

1 Two pages of V6 (folios I 25v and I 138r) are not included in the Göttingen CD-ROM, and there are instead duplicate images of I 24v and I 139r, respectively. The image of I 83r of V11 is same as the image of the next page (I 83v). At present, it cannot be confirmed whether they represent the original state or they were omitted by mistake.

2 *Biblia Sacra Iuxta Vulgatam Versionem* (Stuttgart: Deutsche Bibelgesellschaft, 1994).

3 *Newly Revised Standard Version with Apocrypha* (Oxford, Oxford University Press, 1989).

4 Agata, “First Report.”

5 I owe the results of V1 and P44 to Dr. Antoine Coron; that of V2 to Dr. Stephen Tabor; those of V8, V9, P26, P28, P36, and P38 to Dr. Paul Needham; that of P13 to Dr. Bettina Wagner; and that of P23 to Dr. Peter McNiven.

6 Schwenke, *Untersuchungen*, 19-20.

7 In addition, on the spot investigation of a paper copy in the Eton College Library (P21) revealed that the position of the period is also corrected.

8 P20 is a facsimile, and a very faint ink impression, if any, might have been cleaned or omitted at some stage of the production process.

9 I am most grateful to Professor James Mosley for this valuable suggestion.

10 V1 was reported to have the first state (iniciu[m]?), but it could not be confirmed by the time of my previous article in 2003. Later I had an opportunity to examine the copy using a magnifying glass and I am strongly positive that the suspension mark was added by hand; admittedly it is difficult to tell in the case of a vellum copy.

11 I am grateful to Dr. Needham for this suggestion.

12 I am grateful to Dr. Needham and Dr. Jensen for this interpretation.

13 Dziatzko, *Gutenbergs Früheste Druckerpraxis*, 54-55.

14 Needham, “Printer’s Copy,” 59-60. I am grateful to him for the explanation.

15 For this section, changes in spacing, I had valuable suggestions from Professor Brian Donaghey, Professor James Mosley, Professor Nobukazu Mushakoji, and Professor Toshiyuki Takamiya.

16 I thank Professor Mosley for this information.

17 The second volume of V11 is not used for superimposition; due to the technical trouble, a computer was changed, and the images were only checked on screen. Therefore, the result of the second volume of V11 is included in the secondary examination. The two pages (II. 316v and 317r) of P29 were omitted from the Vienna CD-ROM, and they were obtained as black and white

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prints, of which the scanned images were produced and used for the present collation.

18 Needham, "Printer's Copy," 59-60; and Powitz, *Gutenberg Bibel*, 78-79. For details, see chapter I.D.1.

19 *Erganzungsband*, pl 80r. See also Needham, "Paper Supply," 338.

20 P39, P42 and V4 do not have the second volume.

21 Schwenke, *Untersuchungen*, 18-22.

22 Schwenke, *Untersuchungen*, between 32 and 33; that of Zedler's is reproduced in Severin Corsten, "Die Drucklegung der zweiundvierzigzeiligen Bible Technische und chronologische Probleme," in *Kommentarband*, 45.

23 I am grateful to Dr. Jensen for this comment.

24 In the photographic facsimile of P35, this sign does not appear, but it cannot be confirmed whether the original copy of P35 shows this mark or not.

25 Powitz, *Gutenberg Bibel*, 78-79.

Table IV.1 The Results of the Primary Collation of the First Volume

No.	Category	Folio (quire)	1st state	1st state	2nd state	2nd state copies
1	G	2rb 40 (1/2r)	scriptura[rum]	P16, P29	scriptura[rum]	P20, P33, P39
2	F	3ra 39-40 (1/3r)	attra(he)nte[m] ... [et] famen / in ... famen (pa)ni(s) ("s" in "samen" is the shape of figure 5)	P33, P39	attrahente[m] ... et fame[n] / in ... fame[n] (pa)nis (standard "s")	P16
3	D	15rb 42 (2/5r)	vide[n]ti.s	P39	vide[n]tis.	P16, P20, P33
5	C	23va 6 (3/3v)	"e" of "fuerit" is smaller	P20, P39	"e" of "fuerit" is larger	P16, P27, V6
15	F	52ra 38 (6/2r)	d[e]serto	P20	deserto	P16, P27, P33, P39, V6, V10
34	B	106ra 25 (11/5r)	(homi= / ) num	P16, P27	(homi= / ) uum (first "u" is shorter)	P20, P29, P33, P39, V6, V10
40	C	114ra 42 (12/3r)	sed econtrario ("s" of the later form; narrower spacing)	P20, P27, P29, P39	sed econtrario ("s" of the primary form; wider spacing)(b42 shifted to right slightly)	P16, P33, V6, V10
45	G	131va 25 (14/3v)	reuelatus fuerat (do)min[us] samuel i[n] sylo	P16	reuelat[us] fuerat domin[us] samueli i[n] sylo	P20, P27, P39
53	C	144va7 (15/6v)	aute[m] (bar above "e" is higher; or added by hand?)	P20, P27	aute[m] (bar above "e" is printed at the lower, normal position)	P16, P39, V6
54	H	144vb 2 (15/6v)	de longe [et]	P20, P27	delonge et	P16, P39, V6
59	G	150vb 40 (16/2v)	sarme	P39	saruie	P16, P20, P27, P33, V6
63	G	154ra 37 (16/6r)	Surrexit	P39	Surrexit	P16, P20, P27, P33, V6
75	B	180ra 32 (19/2r)	nt	P16, P20, P29, P33, P39	ut	P27, V6, V10
85	H	192va 27 (20/4v)	euulgo	P33	e vulgo	P16, P20, P27, P39, V6
86	I	195ra 2 (20/7r)	(sa= / ) phat sex numero.	P33	(sa= / ) phat [et] sesa sex numero. (required a partial resetting from a2 to a9)	P16, P20, P27, P39, V6
93	G	205ra 4 (21/7r)	eis hoc est filiis eleazari ("hoc" is inclined) ("qu" above is also inclined)	P20, P27	eis hoc est filiis eleazar (types are vertical)	P16, P29, P33, P39, V6, V10
95	G	205ra 25 (21/7r)	decimaoctaua (ha)phses	P20, P27	decimaoctaua aphses	P16, P29, P33, P39, V6, V10
99	B	212vb 40 (22/4v)	"i" of "in" is inverted	P20, P27, P39,	inversion of "i" is corrected	P16, P33, V6
100	B	214vb 24 (22/6v)	tuleruut (2nd "u" is higher)	P16, P27	tulerunt ("n" is at normal position)	P20, P29, P33, P39, V6, V10
101	G	217va 18 (22/9v)	insanabuli .	P27	insanabili .	P16, P20, P29, P33, P39, V6, V10
102	B	217vb 3 (22/9v)	iu	P27	in	P16, P20, P29, P33, P39, V6, V10
104	B	217vb 13 (22/9v)	inda	P27	iuda	P16, P20, P29, P33, P39, V6, V10
107	D	232va 30 (24/4v)	edi (/ ficaverunt)	P20, P27, P39	edi= (/ ficaverunt)	P16, P29, P33, V6, V10

Table IV.1 The Results of the Primary Collation of the First Volume(continued)

No.	Category	Folio (quire)	1st state	1st state	2nd state	2nd state copies
112	C	246rb 5 (25/7+1r)	"s" of "samus" is abutting	P27, P29, P33, P39	"s" of "samus" is of the normal shape	P16, P20, V6, V10
113	G	250va 7 (26/1v)	que[m]	P16, P39	qua[m]	P20, P27, P29, P33, V6, V10
114	G	250va 14 (26/1v)	velotitas	P16, P39	velocitas	P20, P27, P29, P33, V6, V10
115	D	250vb 8 (26/1v)	a period is omitted	P16, P39	a period is inserted	P20, P27, P29, P33, V6, V10
116	F	250vb 33 (26/1v)	iniciu[m]?	P16, P39	iniciu?	P20, P27, P29, P33, V6, V10
117	D	251rb36 (26/2r)	· / Et (raised mid-point; "/"s at the end of b37 and b38 are slipped upwards)	P16, P20, P27, P33, P39	. / Et (period; "/" at the end of b37 and b38 are at the normal position)	V6, V10
121	C	259va 42 (26/9+1v)	the first "r" of "terra" is shorter	P20, P27, P39	both "r"s are of the standard height	P16, P29, P33, V6, V10
122	G	261ra 4 (27/1r)	Nira= (/ ri)	P16, P27, P33, P39	Mira= (/ ri)	P20, P29, V6, V10
133	G	281ra 37 (29/1r)	sicud .. no[n]	P39	sicut .. non	P16, P20, P27, P33, V6, V10
134	F	281rb 8-9 (29/1r)	deus tenebris. Anteq[uam] co= / meda[m] suspiro	P39	de[us] tenebris. Anteq[uam] com= / edam suspiro	P16, P20, P27, P33, V6, V10
135	C	281rb 39 (29/1r)	two "r"s of "rr" in "perterrita" are of the standard height	P39	the second "r" of "rr" is shorter	P16, P20, P27, P33, V6, V10
136	C	282vb 25 (29/2v)	a standard "r" is used in "querit[ur]"	P27, P33	a short "r" is used	P16, P20, P39, V6
143	B	291ra 34 (30/1r)	Accinge	P29, P39	Acciuge	P16, P20, P27, P33, V6, V10
144	F	291va 37 (30/1v)	rinocerota (or changed by hand?)	P20, V6	rinocerota[m]	P16, P27, P29, P33, P39, V10
145	F	292rb 38 (30/2r)	eu (or changed by hand?)	P20	eu[m]	P16, P27, P29, P33, P39, V6, V10
146	G	292va 1 (30/2v)	Feruescere ... profundum	P16, P20, P27, P33, P39	Feruescere ... profu[n]dum	V6, V10
147	D	293ra 42 (30/3r)	eius: (or illumination?)	P39	eius.	P16, P20, P27, P29, P33, V6, V10
150	B	299ra 28 (30/9r)	"i" of the second "ip[s]le" is inverted	P27, P29	inversion of "i" is corrected	P16, P20, P33, P39, V6, V10
152	D	303vb 30 (31/3v)	iniquitatib[us] (a colon is omitted)	P27, P29, P39,	iniquitatib[us]: (a colon is inserted)	P16, P20, P33, V6, V10
153	G	304ra 40 (31/4r)	pusillamini = (tate)	P16, P20, P33, P39	pusillanimi = (tate)	P27, V6, V10
155	C	308rb 6 (31/8r)	the left of the first "t" in "(su= / ) perextolletur" is not smooth	P27, P39	the left side of the first "t" is smooth	P16, P20, P33, V6, V10
156	B	308rb 11 (31/8r)	magnificabuut (second "u" is slightly shorter)	P27, P39	magnificabunt	P16, P20, P33, V6, V10
157	B	308rb 13 (31/8r)	solns	P27, P39	solus	P16, P20, P33, V6, V10



Table IV.2 The Results of the Secondary Examination of the First Volume

No.	Category	Folio (quire)	1st state	1st state copies	2nd state	2nd state copies
1	G	2rb 40 (1/2r)	scrptura[rum]	P15, P16, P17, P29, V4, V8	scriptura[rum]	P13, P14, P20, P30, P33, P35, P39, <b>V7</b>
2	F	3ra 39-40 (1/3r)	attra(he)nte[m] ... [et] famen / in ... famen (pa)ni(s) ("s" in "samen" is the shape of figure 5)	P14, P17, P33, P35, P39	attrahente[m] ... et fame[n] / in ... fame[n] (pa)nis (standard "s")	P13, P15, P16, P30, V4, V7, V8
3	D	15rb 42 (2/5r)	vide[n]ti.s	P39	vide[n]tis.	P13, P15, P16, P17, P14, P17, P20, P22, P23, P25, P26, P28, P30, P33, P35, P38, V1, V2, V7, V11
5	C	23va 6 (3/3v)	"e" of "fuerit" is smaller	P20, P39	"e" of "fuerit" is larger	P16, P27, P30, P35, V6
15	F	52ra 38 (6/2r)	d[e]serto	P20	deserto	P13, P14, P15, P16, P17, P27, P30, P33, P35, P39, P42, V4, V6, V7, V8, V10
34	B	106ra 25 (11/5r)	(homi= / ) num	P14, P17, P16, P27, P30, P42	(homi= / ) uum (first "u" is shorter)	P13, P15, P20, P29, P33, P35, P39, V4, V6, V7, V8, V10
40	C	114ra 42 (12/3r)	sed econtrario ("s" of the later form; narrower spacing)	P20, P27, P29, P30, P35, P39	sed econtrario ("s" of the primary form; wider spacing)(b42 shifted to right slightly)	P16, P33, V6, V7, V8, V10, V11
45	G	131va 25 (14/3v)	reuelatus fuerat (do)min[us] samuel i[n] sylo	P13, P16	reuelat[us] fuerat domin[us] samueli i[n] sylo	P14, P15, P17, P20, P27, P30, P39, P42, V4, V8
53	C	144va7 (15/6v)	aute[m] (bar above "e" is higher; or added by hand?)	P15, P20, P27, P30, P42	aute[m] (bar above "e" is printed at the lower, normal position)	P13, P14, P16, P17, P39, V4, V6, V7, V8, V11
54	H	144vb 2 (15/6v)	de longe [et]	P15, P20, P27, P42	delonge et	P13, P14, P16, P17, P30, P39, V4, V6, V8
59	G	150vb 40 (16/2v)	sarme	P39	saruie	P13, P14, P15, P16, P17, P20, P27, P30, P33, P42, V4, V6, V8
63	G	154ra 37 (16/6r)	Surrexit	P39	Surrexit	P13, P14, P15, P16, P17, P20, P23, P25, P26, P27, P28, P30, P33, P36, P42, V1, V2, V4, V6, V8
75	B	180ra 32 (19/2r)	nt	P14, P16, P20, P29, P30, P33, P39	ut	P13, P15, P17, P27, P35, P42, V4, V6, V7, V8, V10, V11
85	H	192va 27 (20/4v)	euulgo	P33	e vulgo	P13, P14, P15, P16, P17, P20, P23, P25, P26, P27, P28, P30, P35, P36, P38, P39, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11

Table IV.2 The Results of the Secondary Examination of the First Volume(continued)

No.	Category	Folio (quire)	1st state	1st state copies	2nd state	2nd state copies
86	I	195ra 2 (20/7r)	(sa= / ) phat sex numero.	P33	(sa= / ) phat [et] sesa sex numero. (required a partial resetting from a2 to a9)	P13, P14, P15, P16, P17, P20, P23, P25, P26, P27, P28, P30, P35, P36, P38, P39, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11
93	G	205ra 4 (21/7r)	eis <i>hoc</i> est filii eleazari ("hoc" is inclined) ("qu" above is also inclined)	P20, P27	eis hoc est filii eleazar (types are vertical)	P13, P14, P15, P16, P17, P29, P30, P33, P35, P39, P42, V4, V6, V8, V10, V11
95	G	205ra 25 (21/7r)	decimaoctaua (ha)phses	P20, P27	decimaoctaua aphses	P13, P14, P15, P16, P17, P29, P30, P33, P35, P39, P42, V4, V6, V8, V10, V11
99	B	212vb 40 (22/4v)	"i" of "in" is inverted	P13, P20, P25, P26, P27, P28, P35, P38, P39, P42, P44	inversion of "i" is corrected	P14, P15, P16, P17, P23, P30, P33, P36, V1, V2, V4, V6, V7, V8, V9, V10, V11
100	B	214vb 24 (22/6v)	tuleruut (2nd "u" is higher)	P15, P16, P27	tulerunt ("n" is at normal position)	P13, P14, P17, P20, P29, P30, P33, P35, P39, P42, V4, V6, V8, V10, V11
101	G	217va 18 (22/9v)	insanabuli .	P27	insanabili .	P13, P14, P15, P16, P17, P20, P29, P30, P33, P35, P39, P42, V4, V6, V8, V10, V11
102	B	217vb 3 (22/9v)	iu	P27	in	P13, P14, P15, P16, P17, P20, P29, P30, P33, P35, P39, P42, V4, V6, V8, V10, V11
104	B	217vb 13 (22/9v)	inda	P27	iuda	P13, P14, P15, P16, P17, P20, P29, P30, P33, P35, P39, P42, V4, V6, V8, V10, V11
107	D	232va 30 (24/4v)	edi (/ ficaverunt)	P20, P27, P39	edi= (/ ficaverunt)	P16, P29, P30, P33, P35, V6, V7, V8, V10, V11
112	C	246rb 5 (25/7+1r)	"s" of "samus" is abutting	P27, P29, P33, P39	"s" of "samus" is of the normal shape	P16, P20, P30, P35, V6, V7, V8, V10, V11
113	G	250va 7 (26/1v)	que[m]	P13, P16, P17, P28, P30, P38, P39	qua[m]	P14, P20, P23, P25, P26, P27, P29, P33, P35, P36, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11
114	G	250va 14 (26/1v)	velotitas	P13, P16, P17, P28, P30, P38, P39	velocitas	P14, P20, P23, P25, P26, P27, P29, P33, P35, P36, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11

Table IV.2 The Results of the Secondary Examination of the First Volume(continued)

No.	Cate- gory	Folio (quire)	1st state	1st state copies	2nd state	2nd state copies
115	D	250vb 8 (26/1v)	a period is omitted	P13, P16, P17, P28, P30, P38, P39	a period is inserted	P14, P20, P23, P25, P26, P27, P29, P33, P35, P36, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11
116	F	250vb 33 (26/1v)	iniciu[m]?	P13, P16, P17, P28, P30, P38, P39	iniciu?	P14, P20, P23, P25, P26, P27, P29, P33, P35, P36, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11
117	D	251rb36 (26/2r)	· / Et (raised mid-point; "///"s at the end of b37 and b38 are slipped upwards)	P13, P14, P16, P17, P20, P27, P30, P33, P35, P39, P42	. / Et (period; "///" at the end of b37 and b38 are at the normal position)	V4, V6, V7, V8, V10, V11
121	C	259va 42 (26/9+1v)	the first "r" of "terra" is shorter	P15, P17, P20, P23, P25, P27, P28, P30, P35, P38, P39, P42, P44	both "r"s are of the standard height	P13, P14, P16, P26, P29, P33, P36, V1, V2, V4, V6, V7, V8, V9, V10, V11
122	G	261ra 4 (27/1r)	Nira= (/ ri)	P13, P14, P15, P16, P17, P27, P33, P35, P39, P42	Mira= (/ ri)	P20, P29, P30, V4, V6, V7, V8, V10, V11
133	G	281ra 37 (29/1r)	sicud .. no[n]	P39	sicut .. non	P13, P14, P15, P16, P17, P20, P23, P25, P26, P27, P28, P30, P33, P35, P36, P38, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11
134	F	281rb 8-9 (29/1r)	deus tenebris. Anteq[uam] co= / meda[m] suspiro	P39	de[us] tenebris. Anteq[uam] com= / edam suspiro	P13, P14, P15, P16, P17, P20, P23, P25, P26, P27, P28, P30, P33, P35, P36, P38, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11
135	C	281rb 39 (29/1r)	two "r"s of "rr" in "perterrita" are of the standard height	P39	the second "r" of "rr" is shorter	P13, P14, P15, P16, P17, P20, P23, P25, P26, P27, P28, P30, P33, P35, P36, P38, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11
136	C	282vb 25 (29/2v)	a standard "r" is used in "querit[ur]"	P14, P15, P25, P26, P27, P28, P33, P35, P44	a short "r" is used	P13, P16, P17, P20, P23, P30, P36, P38, P39, P42, V1, V2, V4, V6, V7, V8, V9, V10, V11
143	B	291ra 34 (30/1r)	Accinge	P15, P28, P29, P30, P35, P36, P39, P44	Acciuge	P13, P14, P16, P17, P20, P23, P25, P26, P27, P33, P38, P42, V1, V2, V4, V6, V7, V8, V9, V10, V11

Table IV.2 The Results of the Secondary Examination of the First Volume(continued)

No.	Cate- gory	Folio (quire)	1st state	1st state copies	2nd state	2nd state copies
144	F	291va 37 (30/1v)	rinocerota (or changed by hand?)	P20	rinocerota[m]	P16, P27, P29, P30, P33, P35, P39, V6, V8, V10, V11
145	F	292rb 38 (30/2r)	eu (or changed by hand?)	P20	eu[m]	P16, P27, P29, P30, P33, P35, P39, V6, V8, V10, V11
146	G	292va 1 (30/2v)	Feruescere ... profundum	P13, P14, P15, P16, P20, P27, P33, P35, P39	Feruerscere ... profu[n]dum	P17, P30, P42, V4, V6, V7, V8, V10, V11
147	D	293ra 42 (30/3r)	eius: (or illumination?)	P39	eius.	P16, P20, P27, P29, P30, P33, V6, V7, V8, V10, V11
150	B	299ra 28 (30/9r)	“i” of the second “ip[s]e” is inverted	P13, P27, P29	inversion of “i” is corrected	P14, P15, P16, P17, P20, P30, P33, P35, P39, P42, V4, V6, V7, V8, V10, V11
152	D	303vb 30 (31/3v)	iniquitatib[us] (a colon is omitted)	P14, P17, P27, P28, P29, P35, P38, P39, P44	iniquitatib[us]: (a colon is inserted)	P13, P15, P16, P20, P23, P25, P26, P27, P30, P33, P36, P42, V1, V2, V4, V6, V7, V8, V9, V10, V11
153	G	304ra 40 (31/4r)	pusillamini = (tate)	P13, P15, P16, P17, P20, P30, P33, P39, P42	pusillanimi = (tate)	P14, P27, P35, V4, V6, V7, V8, V10, V11
155	C	308rb 6 (31/8r)	the left of the first “t” in “(su= / ) perextolletur” is not smooth	P15, P17, P23, P25, P26, P27, P38, P39	the left side of the first “t” is smooth	P13, P14, P16, P20, P28, P30, P33, P35, P36, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11
156	B	308rb 11 (31/8r)	magnificabuut (second “u” is slightly shorter)	P15, P17, P23, P25, P26, P27, P38, P39	magnificabunt	P13, P14, P16, P20, P28, P30, P33, P35, P36, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11
157	B	308rb 13 (31/8r)	solns	P15, P17, P23, P25, P26, P27, P38, P39	solus	P13, P14, P16, P20, P28, P30, P33, P35, P36, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11

Table IV.3 Changes in Spacing in the First Volume

No.	Category	Folio (quire)	1st state	1st state copies	2nd state	2nd state copies
4	A	23va 1 (3/3v)	pro(pa)gines·tres (narrower spacing)	P20, P39	pro(pa)gines ·tres (wider spacing)	P16, P27, V6
6	A	23va 19 (3/3v)	ca nistra· (unnecessary spacing)	P20, P39	canistra ·	P16, P27, V6
7	A	23va 26 (3/3v)	p isto[rum] (unnecessary spacing)	P20, P39	pisto[rum]	P16, P27, V6
8	A	25vb 10 (3/5v)	[et] preciu[m] (narrower spacing) (orders cannot be decided)	P16, P20, P39	[et] preciu[m] (wider spacing) (orders cannot be decided)	P27
9	A	34rb 24 (4/4r)	iudicia ego (wider spacing)	P16, P27, P39	iudicia ego (narrower spacing)	P20, P33, V6, V10
10	A	37va 23 (4/7v)	ait pri[mu]s (wider spacing)	P16, P27, P33, P39	ait pri[mu]s (narrower spacing)	P20, V6, V10
11	A	37va 36 (4/7v)	p(ha)raoni [et] (wider spacing)	P16, P27, P33, P39	p(ha)raoni [et] (narrower spacing)	P20, V6, V10
12	A	44ra 23 (5/4r)	michi. Filiis (narrower spacing)	P27	michi . Filiis (wider spacing)	P16, P20, P33, P39, V6, V10
13	A	45va 1 (5/5v)	non tuipe (wider spacing; "n" in "non" is of the standard shape)	P27	non tuipe (narrower spacing; "n" in "non" is smaller)	P16, P20, P33, P39, V6, V10
14	A	49vb 11 (5/9v)	sacerdotis. (narrower spacing)	P33	sacerdotis . (wider spacing)	P16, P20, P27, P39, V6, V10
16	A	57rb 21 (6/7r)	eni[m] requietionis (narrower spacing)	P16, P27, P33	eni[m] requietionis (wider spacing)	P20, P39, V6, V10
17	A	60r (6/10r)	b3, b13, b19 are not well superimposed			
18	A	60va 7 (6/10v)	ebd omade septime (unnecessary spacing)	P39	ebdomade septime	P16, P20, P27, P29, P33, V6, V10
19	A	60vb 37 (6/10v)	(pri= / ) mo fructus	P39	(pri= / ) mo fructus (wider spacing)	P16, P20, P27, P29, P33, V6, V10
20	A	61ra 26 (7/1r)	sing[u]la sab(ba)ta (narrower spacing)	P20, P29, P39	sing[u]la sab(ba)ta (wider spacing)	P16, P27, P33, V6, V10
21	A	62ra 1 (7/2r)	de terra (wider spacing)	P16, P27, P29, P33	de terra (narrower spacing)	P20? P39, V6, V10
22	A	62ra 2 (7/2r)	vobis terram chanaan	P16, P20, P27, P29, P33	vobis terram chanaan	P39, V6, V10
23	A	67ra 34 (7/7r)	illo·et (narrower spacing)	P16, P20, P33	illo ·et (wider spacing)	P27, P29, P39, V6, V10
24	A	69ra 41- 42 (7/9r)	first half of the line shifted to right?	P29, P33, P39	first half of the line shifted to left? (space for a chapter initial at left-hand side)	P16, P20, P27, V6, V10
25	A	78va 6 (8/8v)	"et" shifted to left?	P16, P20, P27, P29, P33, P39	"et" shifted to right?	V6, V10
26	A	83va 13 (9/3v)	ad fugitiuoru[m] (wider spacing)	P33, P39	ad fugitiuoru[m] (narrower spacing; better justified)	P16, P20, P27, P29, V6, V10
27	A	85r (9/5r)	a23, b24, p30, b39 are not well superimposed			
28	A	91ra 27 (10/1r)	letters in "ceruus" are drifting (cer uus, ceru us, c eruus)			
29	A	93ra 9 (10/3r)	shifted to left?	P20, P27, P29, P33	shifted to right? (space for a chapter initial at left-hand side)	P16, P39, V6, V10
30	A	98ra-b 42 (10/8r)	the latter half of a 42 and b 42 shifted to left and normally justified	P16, P29, P27, P33	the latter half of a 42 and b 42 shifted to right (b42 is not justified)	P39, V6, V10
31	A	102rb 14 (11/1r)	shifted to left	P27	shifter to right	P16, P20, P29, P33, P39, V6, V10
32	A	103vb 4 (11/2v)	the first word "inde" shifted to left	P27, P39	the first word "inde" shifted to right	P16, P20, P29, P33, V6, V10

Table IV.3 Changes in Spacing in the First Volume (continued)

No.	Category	Folio (quire)	1st state	1st state copies	2nd state	2nd state copies
33	A	105va 27 (11/4v)	(Faci=) esq[ue] urbi (narrower spacing; some overlapped)	P16, P27, P29	(Faci=) esq[ue] urbi (wider spacing)	P20, P33, P39, V6, V10
35	A	106rb 13 (11/5r)	sicut preceperat (narrower space)	P16, P27, P33	sicut preceperat (wider space: justified)	P20, P29, P39, V6, V10 (originals: P13, P15, V4)
36	A	106vb 9 (11/5v)	comporten t (unnecessary spacing)	P16	comportent	P20, P27, P29, P33, P39, V6, V10
37	A	106vb 25 (11/5v)	tibi bonum (narrower spacing)	P16	tibi bonum (wider spacing)	P20, P27, P29, P33, P39, V6, V10
38	A	107ra 36 (11/7v)	p[er]cussera[n]t (“e” and “r” is touched each other)	P16	(normal)	P20, P27, P29, P33, P39, V6, V10
39	A	113va 27 (12/2v)	co[n]tra (“o” overlapped with	P27	co[n]tra (not overlapped)	P16, P20, P29, P33, P39, V6, V10
41	A	116vb 42 (12/5v)	[et] transires (narrower spacing)	P20, P27, P29, P39	[et] transires (wider spacing)	P16, P33, P39, V6, V10
42	A	118ra 15 (12/7r)	omnia. Et dixerunt (narrower spacing)	P16, P20, P27, P29, P39	omnia. Et dixerunt (wider spacing; better justified)	P33, V6, V10
43	A	126vb 1 (13/4+1v)	reliquias ci= (narrower spacing)	P16, P29, P29, P33	reliquias ci= (wider spacing; slightly less justified??)	P27, P39, V6, V10
44	A	128va 10 (13/6v)	“booz ad” shifted to right and space between “portam” is	P16, P20, P33	“booz ad” shifted to left with wider spacing	P27, P29, P39, V6, V10
46	A	132r (14/4r)	vertical alignment is not good, especially for “e” “i” and “r”	P16	vertically better aligned	P20, P27, P39
47	A	133r (14/5r)	P16 and P27 are superimposed; P39 and P20 are superimposed			
48	A	133v (14/5v)	P27 is not well superimposed with other copies			
49	A	136vb 1 (14/8v)	.R[o]ndensq[u] (narrower spacing)	P20	. R[o]ndensq[ue] (wider spacing)	P16, P27, P39
50	A	136vb 24 (14/8v)	[et] no[n] (narrower spacing)	P20	[et] no[n] (wider spacing)	P16, P27, P39
51	A	141va 21 (15/3v)	i llu[m] (unnecessary spacing)	P16	illu[m]	P20, P27, P39, V6
52	A	143vb 6 (15/5v)	quadringen ti (unnecessary spacing; not justified)	P16, P20, P27	quadringenti (narrower spacing)	P39, V6
55	A	145vb 33 (15/7v)	p[ro]e]liu[m]:ne fi at (unnecessary spacing between “fi” and “at”)	P27?	p[ro]e]liu[m]: ne fiat (wider spacing between “:” and “ne”)	P16, P20, P39, V6
56	A	150vb 7 (16/2v)	seruien s su b (unnecessary spacing)	P39	seruiens sub	P16, P20, P27, P33, V6 (originals: P13, P14, P15, P17, P20, P42, V4)
57	A	150vb 16 (16/2v)	au te[m] (unnecessary spacing)	P39	aute[m]	P16, P20, P27, P33, V6 (originals: P13, P14, P15, P17, P20, P42, V4)

Table IV.3 Changes in Spacing in the First Volume (continued)

No.	Category	Folio (quire)	1st state	1st state copies	2nd state	2nd state copies
58	A	150vb 31 (16/2v)	"siria" is left, line beginning not smooth	P39	"siria" is right, line beginning smooth	P16, P20, P27, P33, V6 (originals: P13, P14, P15, P17, P20, P42, V4)
60	A	151ra 2 (16/3r)	scriba (unnecessary spacing)	P27	scriba	P16, P20, P33, P39, V6
61	A	151ra 17 (16/3r)	veni sset (unnecessary spacing)	P27	venisset	P16, P20, P33, P39, V6
62	A	151ra 27 (16/3r)	can em (unnecessary spacing)	P27	canem	P16, P20, P33, P39, V6
64	A	156rb 10 (16/8r)	fame et (narrower spacing)	P16, P33	fame et (wider spacing; space for a chapter number at the right-hand side)	P20, P27, P39, V6
65	A	162ra 13 (17/4r)	o[mn]is isr[ah]e (wider spacing)	P16, P29, P33, P39	o[mn]is isr[ah]e (slightly narrower spacing)	P20, P27, V6, V10
66	A	163rb 32 (17/5r)	regebat t(ha)nach (wider spacing)	P16, P20, P27, P39	regebat t(ha)nach (slightly narrower spacing)	P29, P33, V6, V10
67	A	168rb 32 (17/10r)	choa. Negociatores (wider spacing)	P16, P20, P29, P27, P39	choa.Negociatores (narrower spacing; better justified)	P33, V6, V10
68	A	169rb 38 (18/1r)	P39 is not well superimposed with other copies			
69	A	170va 34 (18/2v)	"vbi [est] achias p[ro]p" shifted to left?	P27?	"vbi [est] achias p[ro]p" shifted to right?	P16, P20, P29, P33, V6, V10
70	A	171va 28 (18/3v)	rege isr[ah]e • et recebat a t (unnecessary spacing)	P16, P27, P33, V6?	rege isr[ah]e • et recebat	P20, P29, P39, V10
71	A	171vb 41 (18/3v)	te ducem sup[er] (wider; narrower)	P16, P27, P33, V6? (but V6 is heavily cockled)	te ducem sup[er] (narrower; wider)	P20, P29, P39, V10
72	A	172vb 1 (18/4v)	shifted to left? (smooth line beginning) "F" of th last word is	P16, P27, P33	the first two words, "no[n] enim" shifted to right? "F" of normal shape?	P20, P29, P39, V6, V10
73	A	172vb 5 (18/4v)	group 1	P16, P27, P33	group 2	P20, P29, P39, V6, V10
74	A	180ra 7 (19/2r)	ei. Pater (narrower spacing)	P16, P20, P29, P33, P39	ei. Pater (wider spacing; the last "m" in "rem" on this line is overlapped with "e")	P27, V6, V10
76	A	182rb 5 (19/4r)	subsistes. Abijt (narrower spacing)	P29, P33	subsistes . Abijt (wider spacing)	P16, P20, P27, P39, V6, V10
77	A	183vb 14 (19/5v)	group 1	P20, P27, P29	group 2	P16, P33, P39, V6, V10
78	A	185r (19/7r)	a14, b5: group 1	P16, P27, P29, P33, P39	a14, b5: group 2	P20, V6, V10?
79	A	186r (19/8r)	from the 2nd word, shifted to left	P16, P29, P33?	from the 2nd word, shifted to right	P20, P27, P39, V6, V10?
80	A	188r (19/10r)	b12, b19: group 1	P27, P33	b12, b19: group 2	P16, P20, P29, P39, V6, V10
81	A	188r (19/10r)	b14: group 1	P20, P27, P33, V10	b14: group 2	P16, P29, V6
82	A	189r (20/1r)	copies are not well superimposed			
83	A	190va 3 (20/2v)	scriba[m] templi (narrower spacing; almost one word)	P33	scriba[m] templi (wider spacing)	P16, P20, P27, P29, P39, V6, V10
84	A	190vb 4 (20/2v)	Hec dicit (narrower spacing)	P33	Hec dicit (wider spacing)	P16, P20, P27, P29, P39, V6, V10

Table IV.3 Changes in Spacing in the First Volume (continued)

No.	Category	Folio (quire)	1st state	1st state copies	2nd state	2nd state copies
87	A	197ra 3 (20/9r)	suis: [et] (wider spacing)	P16, P27, P29, P33, P39	suis:[et] (narrower spacing)	P20, V6, V10
88	A	199ra 32 (21/1r)	i srahel (unnecessary spacing)	P16, P20, P27, P29, P39	israhel	P33, V6, V10
89	A	199va 8 (21/1v)	netophatites · ethai fili[us] (space before "ethai" is narrower)	P16, P27, P33, P39	netophatites · ethai fili[us] (equally spaced)	P20, P29, V6, V10
90	A	201vb 42 (21/3v)	(Reuer=) susq[ue] shifted to right?	P39	shifted to left (smooth beginning)	P16, P20, P27, P29, P33, V6, V10
91	A	202va 19 (21/4v)	(prebe=) ret a(da)dezer (narrower spacing)	P16, P20	(prebe=) ret a(da)dezer (wider spacing)	P27, P29, P33, P39, V6, V10
92	A	204r (21/6r)	b32, b34: group 1	P33, P39	b32, b34: group 2	P16, P20, P27, P29, V6, V10
94	A	205ra 23 (21/7r)	isbaal · decimaquinta (narrower space; "n" is not vertical)	P20, P27	isbaal · decimaquinta (wider space; "n" is vertical)	P39 ( " n " is vertical, but spacing is a little different from: P16, P29, P33, V6, V10) (and from originals: P13, P14, P15, P17, P35, P42, V4, V11)
96	A	206r (21/8r)	P39 is not well superimposed with other copies, especially on a31-33, b23-25, b16-17			
97	A	207ra 16 (21/9r)	a16: group 1	P27, P39	a16: group 2	P16, P20, P29, P33, V6, V10
98	A	209va 19 (22/1v)	a19: group 1	P16, P33	a19: group 2	P16, P20, P29, P33, V6, V10
103	A	217vb 6 (22/9v)	(amb[u]la=) uitq[ue]	P27	(amb[u]la=) uitq[ue] (left, smooth line begging)	P16, P20, P29, P33, P39, V6, V10 (originals: P13, P14, P15, P17, P20, P42, V4)
105	A	217vb 21 (22/9v)	(princi=) pes (left, not smooth line beginning)	P27	(princi=) pes (right, smooth line begging)	P16, P20, P29, P33, P39, V6, V10 (originals: P13, P14, P15, P17, P20, P42, V4)
106	A	221rb 17 (23/3r)	(sanctifi=) cati sunt	P27, P29, P39?	(sanctifi=) cati sunt (wider spacing??)	P20, P33, V10?
108	A	233rb 18 (24/5r)	"qui" shifted to right	P16, P27, P33	"qui" shifted to left	P20, P39, V10
109	A	234v (24/6v)	a7, b18: group 1	P39	a7, b18: group 2	P16, P20, P29, P33, V6, V10
110	A	234vb 1 (24/6v)	"nabucho="	P39	"nabucho="	P16, P20, P29, P33, V6, V10 (original: P13)
111	A	243ra 21 (25/5r)	in syria (narrower spacing?) shifted to left?	P16, P27, P29, P33	in syria (wider spacing?) shifted to right?	P20, P39, V6, V10
118	A	254rb 25 (26/5r)	(something looks like ";" is printed between "quid" and "doles")	P16, P20, P27, P33	(in the paper copies ";" is printed between "quid" and "doles")	P29, P38, V6, V10
119	A	258ra 1 (26/9r)	cogi tationes:[et] p[ro]lice	P16, P20	cogitationes:[et] p[ro]lice (wider spacing after "[et]")	P27, P29, P33, P39, V6, V10
120	A	259rb 20 (26/9+1r)	shifted to left from the 2nd word	P16, P27	shifted to right	P20, P33, P39, V10
123	A	263r (27/3r)	a7, a15: group 1	P33, P39	a7, a15: group 2	P16, P20, P29, V6, V10
124	A	263ra 26 (27/3r)	secu tus (unnecessary spacing)	P27	secutus (space for a chapter initial at the left-hand side)	P16, P20, P29, P33, P39, V6, V10



Table IV.3 Changes in Spacing in the First Volume (continued)

No.	Category	Folio (quire)	1st state	1st state copies	2nd state	2nd state copies
125	A	264ra 2 (27/4r)	(pullo=) rum cantum	P27, P33	(pullo=) rum cantum (wider spacing)	P16, P20, P29, P39, V6, V10
126	A	264ra 3 (27/4r)	suos:[et] (narrower spacing)	P27, P33	suos: [et] (wider spacing: justified)	P16, P20, P29, P39, V6, V10 (originals: P13, P15, P17, P20, P23, P25, P26, P28, P30, P36, P44, V1, V2, V4, V7, V8, V9, V11)
127	A	267ra 3 (27/7r)	(ho=) norati simul (narrower spacing)	P27, P33	(ho=) norati simul (wider spacing)	P16, P20, P29, P39, V6, V10
128	A	268va 19 (27/8v)	mitte[n]tes cinere[m] (narrower spacing; "e" is corrected by hand)	P16, P20	mitte[n]tes cinere[m] (wider spacing)	P27, P29, P33, P39, V6, V10
129	A	271rb 19 (28/1r)	et gira[n]tes (narrower spacing?)	P16	et gira[n]tes (wider spacing?)	P20, P27, P29, P33, P39, V6, V10
130	A	272rb 27 (28/2r)	israhel. Porro (narrower spacing)	P16, P33	israhel. Porro (wider spacing: smoother beginning)	P20, P27, P29, P39, V6, V10
131	A	273ra 4 (28/3r)	eustochium quoniam (wider spacing)	P27, V10? (but V10 is heavily cockled)	eustochium quoniam (narrower spacing)	P16, P20, P29, P33, P39, V6
132	A	280ra 14 (28/10r)	meo labore tra[n]slata (narrower spacing)	P20, P39	meo labore tra[n]slata (wider spacing)	P16, P27, P29, P33, V6, V10
137	A	284vb 26 (29/4v)	vos. Roborarem (narrower spacing)	P16, P20	vos. Roborarem (wider spacing; a little better justified?)	P27, P29, P33, P39, V6, V10
138	A	286r (29/6r)	a8, a42, b40: group 1	P27, P39	a8, a42, b40: group 2	P16, P20, P29, P33, V6, V10
139	A	289ra 31 (29/9r)	. Foris (narrower spacing)	P20, P33, P39	. Foris (wider spacing; better justified)	P16, P27, P29, V6, V10
140	A	289rb 19 (29/9r)	q[uo]d tres	P20, P33?	q[uo]d tres (wider spacing)	P16, P27, P29, P39, V6, V10
141	A	289v (29/9v)	a-b 42 not justified	P16, P27, P29, P33, P39	a-b 42 justified	P20, V6, V10
142	A	289v (29/9v)	a23-26: group 1	P16, P29, P39	a23-26: group 2	P20, P27, P33, V6, V10
148	A	297ra 22 (30/7r)	qui requiru[n]t (narrower spacing)	P20, P39	qui requiru[n]t (wider spacing; better justified)	P16, P27, P29, P33, V6, V10
149	A	297ra 29 (30/7r)	in co[s](pe)(ct)u (narrower spacing)	P20, P39	in co[s](pe)(ct)u (narrower spacing)	P16, P27, P29, P33, V6, V10
151	A	299vb 1 (30/9v)	quasi fratrem (narrower spacing)	P16, P20, P27, P33	quasi fratrem (wider spacing)	P29, P39, V6, V10
154	A	307ra 34 (31/7r)	"no[n] sunt abscondita." (shifted to left?)	P27, P33	"no[n] sunt abscondita." (shifted to right?)	P16, P20, P29, P39, V6, V10
158	A	309rb 15 (31/9r)	"(R)enuit" shifted to left	P20, P27, P29, P33, P39	"(R)enuit" shifted to right (space for a chapter initial at the left-hand side)	P16, V6, V10
159	A	311v (32/1v)	a27, v2, b4, b7: group 1	P39	a27, v2, b4, b7: group 2	P16, P20, P27, P29, P33, V6, V10
160	A	316ra 24 (32/6r)	group 1	P39	group 2	P16, P20, P27, P29, P33, V6, V10
161	A	316va 28 (32/6v)	suos [et] (narrower spacing)	P16, P33, P39	suos [et] (wider spacing)	P20, P27, P29, V6, V10
162	A	317r (32/7r)	a14, 23, 32, b20, b32: P39 is not well superimposed with other copies			
163	A	321va 40 (33/1v)	divimus ea[m] (narrower spacing)	P16, P27, P29	divimus ea[m] (wider spacing)	P20, P33, P39, V6, V10

Table IV.3 Changes in Spacing in the First Volume (continued)

No.	Category	Folio (quire)	1st state	1st state copies	2nd state	2nd state copies
164	A	322ra 28 (33/2r)	"iherusalem.Alleluia" shifted to left	P16, P20, P27, P33, P39	"iherusalem.Alleluia" shifted to right (space for a verse capital at the right-hand side)	P29, V6, V10
165	A	322vb 10 (33/2v)	me . (Q)uia (wider spacing)	P16, P27, P29, P33, P39	me . (Q)uia (narrower spacing; better justified; space for a verse capital at the right-hand side)	P20, V6, V10
166	A	323rb 35 (33/3r)	nus deducet (narrower spacing)	P20, P27, P29, P33, P39	nus deducet (wider spacing)	P16, P29, V6, V10

## IV.4 The Results of the Primary Collation of the Second Volume

No.	Category	Folio	1st state	1st state copies	2nd state	2nd state copies
1	G	4rb 5 (1/4r)	(Sub=) stantia	P16, P46	(Sub=) stancia	P27, P29, P33
7	C	27ra 6 (3/7r)	bilinguis. Non (normal "s")	P16, P27	bilingui(s). Non ("s" in the shape of 5; better justified)	P29, P33, P46, V6, V10
8	H	27ra 11 (3/7r)	lignu m	P16, P27	lignum	P29, P33, P46, V6, V10
9	F	27ra 22 (3/7r)	Et est	P16, P27	Et [est] (better justified)	P29, P33, P46, V6, V10
10	F	27ra 24 (3/7r)	[et] rixa[m] [et] co[n]uicia denu	P16, P27	et rixa[m] et co[n]uicia (de)nu	P29, P33, P46, V6, V10
11	F	27ra 36 (3/7r)	[et] non est digna	P16, P27	et non [est] digna (better justified)	P29, P33, P46, V6, V10
12	F	27ra 39 (3/7r)	[et] qui metuunt do=	P16, P27	et qui metuunt (do)= (better justified)	P29, P33, P46, V6, V10
13	H	27rb 26 (3/7r)	inoblectationem . Et	P16, P27	in oblectationem. Et	P29, P33, P46, V6, V10
15	F	30vb 1	illu[m]	P46	illu	P27, V10
16	C	35va 10 (4/5v)	locupletari (abutting "i")	P16, P29, P33, P46	locupletari (normal "i")	P27, V6, V10
17	C	35vb 5 (4/5v)	denu= (/ daueris) (abutting "n")	P16, P29, P33, P46	denu= (/ daueris) (normal "n")	P27, V6, V10
18	C	35vb 13 (4/5v)	caprea (first "a" is an abutting "a")	P16, P29, P33, P46	caprea (normal "a")	P27, V6, V10
19	G	35vb 32 (4/5v)	vnde	P16, P29, P33, P46	unde	P27, V6, V10
20	C	35vb 38 (4/5v)	co[n]tine[n]s (abutting "ō")	P16, P29, P33, P46	co[n]tine[n]s (normal "ō")	P27, V6, V10
21	C	35vb 41 (4/5v)	s[er]uabit (abutting "u")	P16, P29, P33, P46	s[er]uabit (normal "u")	P27, V6, V10
22	G	53vb 27 (6/3v)	Tra[n]sfreta[n]ces ("t" is scratched and corrected by hand?)	P27	Tra[n]sfreta[n]tes	P16, P33, P46, V6, V10
23	B	56va 7 (6/6v)	p[er]neneru[n]t	P27	p[er]ueneru[n]t	P16, P33, P46, V6, V10
25	C	65ra 1 (7/5r)	audiens ("u" of strange shape)	P27	audiens ("u" of the normal shape)	P16, P33, P46, V6, V10
27	H	68rb 30 (7/8r)	ampli[us] sol adlucendu[m]	P16, P27, P29, P33, P46	ampli[us] sol ad lucendu[m]	V6, V10
33	G	87ra 31 (9/7r)	hanc · [et] succende[n]t (b31 shifted to left)	P33	(ha)nc · [et] succende[n]t	P16, P27, P29, P46, V6, V10
34	H	89va 25 (9/9v)	no[n]audiuit	P46	no[n] audiuit	P16, P27, P33, V6, V10
35	E	97va 1 (10/7v)	(: / ) Confusus...i[n]	P16	(: / )confusus...in	P27, P29, P33, P46, V6, V10
36	C	98va 25 (10/8v)	decim[us]nonus (b25 shifted to right)	P16	decimusnon[us]	P27, P29, P33, P46, V6, V10
37	C	99vb 8 (10/9v)	Precipitauit (abutting "r"; smooth line beginning)	P29, P33	Precipitauit (normal "r"; shifted to left from second half of a8 (after [est]; space for "Seth" at the left-hand side)	P16, P27, P46, V6, V10
39	H	102rb 25 (11/2r)	om nis	P16	omnis	P27, P29, P33, P46, V6, V10
44	H	116rb 39 (12/6r)	te :que[m] tecu[m]exerce[n]t	P16, P27, P29, P33, P46	te :que[m] tecu[m] exerce[n]t	V6, V10

## IV.4 The Results of the Primary Collation of the Second Volume(continued)

No.	Category	Folio	1st state	1st state copies	2nd state	2nd state copies
45	D	121va 14 (13/1v)	requira[m] Et...spe= (period is omitted)	P16, P27, P29	requira[m] . Et...s(pe) (period is inserted)	P33, P46, V6, V10
46	G	122rb 20 (13/2r)	mea[m]	P16*, P33	meu[m]	P27, P46, V6, V10
47	G	125va 10 (13/5v)	aurbius	P29, P46	auribus	P16, P27, P33, V6, V10
48	G	127vb 15 (13/7v)	fabritatu[m]	P16, P29, P46	fabricatu[m]	P27, P33, V6, V10
50	G	130va 19 (13/10v)	. Omns	P29, P33, P46	. Omnes	P16, P27, V6, V10
51	B	139ra 19 (14/9v)	uichil	P27, P29	nichil	P16, P33, P46, V6, V10
52	D	142ra 3 (15/2r)	sui Et...abbacuc (period is omitted)	P46	sui . Et...ab(ba)cuc (period is inserted)	P16, P27, P29, P33, V6, V10
53	G	142rb 24 (15/2r)	dūo	P46	dno ("n" with an upper bar, i.e. d[omi]no)	P16, P27, P29, P33, V6, V10
54	G	147vb 30 (15/7v)	ficace	P27	ficate	P16, P29, P33, P46, V6, V10
55	B	148va 33 (15/8v)	auima	P16, P29, P46	anima	P27, P33, V6, V10
56	G	153va 1 (16/3v)	facies omne[m] sicut nigredo	P29, P33	facies omniu[m] sicut nigre(do)	P16, P27, P46, V6, V10
57	C	160rb 16 (16/10r)	omni (larger "n")	P16, P27, P33	omni (smaller "n")	P46, V6, V10
58	C	169va 14 (17/8v)	(ha)b eba[n]t conser= (/vaveru[n]t)	P16	(ha)beba[n]t (co)nser= (/vaveru[n]t) (beter justied)	P27, P29, P33, P46, V6, V10
66	B	176vb 14 (18/5v)	simonem ("n" is smaller)	P16	simouem	P27, P29, P33, P46, V6, V10
68	C	185va 42 (19/4v)	the first "r" of "ferre" is standard; the second is shorter	P27	both "r"s are shorter	P16, P29, P33, P46, V6, V10
70	C	189ra 19 (19/8v)	. Et (wider "E" of an unique shape)	P29, P33	. Et (standard "E"; b19 shifter towards right)	P16, P27, P46, V6, V10
71	G	200va 32 (20/9v)	castraveru[n]t	P27, P29, P33	crastraveru[n]t	P16, P46, V6, V10
72	G	213va 22 (22/2v)	eis	P33, P46	ei[us]	P16, P27, P29, V6, V10
74	G	214ra 19 (22/3r)	vestr qui in	P46	vester qui i[n]	P16, P27, P29, P33, V6, V10
75	C	214ra 33 (22/3r)	credidistis (the first "d" is normal)	P46	credidistis (the first "d" is abutting)	P16, P27, P29, P33, V6, V10
76	G	215va 6 (22/4v)	p[er]dicio	P33	p[er]ditio	P16, P27, P46, V6, V10
77	C	215va 17 (22/4v)	euangeliu[m] (abutting "a")	P33	euangeliu[m] (normal "a")	P16, P27, P46, V6, V10
78	H	217ra 9 (22/6r)	(iaco=) biminoris	P16, P29, P33	(iaco=) bi minoris	P27, P46, V6, V10
79	G	217rb 10 (22/6r)	(appa=) ruit primo marie madalene (+ normal "d")	P16, P29, P33	(appa=) ruit p[ri]mo marie magdalene (+ abutting "d")	P27, P46, V6, V10
80	G	225ra 22 (23/4r)	(ciui= / ) tem et...ipse ventur[us].Et	P16, P33	(ciui= / ) tate[m] [et] ...ipse ventur[us] . Et	P27, P29, P46, V6, V10
82	C	227va 30 (23/6v)	responde[n]s (abutting "o")	P27, P29	responde[n]s (normal "o")	P16, P33, P46, V6, V10
84	G	234ra 41 (24/3r)	p[er]tucientes	P16, P46	p[er]cutientes	P27, P29, P33, V6, V10

## IV.4 The Results of the Primary Collation of the Second Volume(continued)

No.	Category	Folio	1st state	1st state copies	2nd state	2nd state copies
85	B	241va 28 (24/10v)	Qni	P16, P27	Qui	P29, P33, P46, V6, V10
86	F	250ra 37 (25/9r)	cognovisset ("e" without contraction bar)	P16, P27, P29, P33	cognovisse[n]t ("ē" with contraction bar)	P46, V6, V10
87	G	250vb 14 (25/9v)	dolese	P16, P27, P33, P46	dolose	P29, V6, V10
88	G	253vb 35 (26/2v)	querbat	P27	quere(ba)t	P16, P29, P33, P46, V6, V10
89	D	256rb 18 (26/5r)	ego · (ve)ro	P16	· ego (ve)ro	P27, P33, P46, V6, V10
90	G	256vb 42 (26/5v)	stipulam : uniuscuisq[ue]	P16	stipula[m] : uniuscuiusq[ue]	P27, P29, P33, P46, V6, V10
91	B	257ra 36 (26/6r)	(tra[n]sfigura= / ) ni	P16, P29, P33, P46	(tra[n]sfigura= / ) ui	P27, V6, V10
92	B	257ra 39 (26/6r)	(e= / ) uim ("u" of strange shape)	P16, P29, P33, P46	(e= / ) nim	P27, V6, V10
94	G	266vb 2 (27/5v)	acce=	P16	acci- (not "i", but "i")	P27, P29, P33, P46, V6, V10
95	C	266vb 5 (27/5v)	michi (abutting "m")	P16	michi (normal "m")	P27, P29, P33, P46, V6, V10
96	D	266vb 21 (27/5v)	simula ( / tioni)	P16	simula= ( / tioni)	P27, P29, P33, P46, V6, V10
98	H	274va 31 (28/1v)	tempta verit	P16, P27, P33, P46	temptaverit	P29, V6, V10
99	G	286vb 18 (29/2v)	qui lo= ( / ti)	P27, P29, P33	q[ui] locu= ( / ti)	P16, P46, V6, V10
100	G	289rb 40 (29/5r)	eres : tra(de)[n]s... lgit[ur] qui	P46	eres : tra(de)bat... lgit[ur] q[ui]	P16, P27, P29, P33, V6, V10
101	C	289vb 23 (29/5v)	Qui ("u" of strange shape)	P33	Qui	P16, P27, P46, V6, V10
102	C	290rb 8 (29/6r)	"o" in "nomen" is smaller, and "e" is abutting	P29, P33	"e" is of the primary form, and "o" is larger	P16, P27, P46, V6, V10
105	G	292vb 14 (29/8v)	arbri= ( / tramini)	P16, P27, P33, P46	arbi= ( / tramini)	P29, V6, V10
108	G	302vb 32 (30/8v)	. In m[u]ltis...	P27, P29	.In in[u]ltis... (less smoothly justified)	P16, P33, P46, V6, V10

Table IV.5 The Results of the Secondary Examination of the Second Volume

No.	Category	Folio	1st state	1st state copies	2nd state	2nd state copies
1	G	4rb 5 (1/4r)	(Sub= / ) stantia	P16, P46	(Sub= / ) stancia	P13, P14, P15, P17, P20, P25, P27, P29, P33, P35, V7, V8
7	C	27ra 6 (3/7r)	bilinguis. Non (standard "s")	P16, P27	bilingui(s). Non ("s" in the shape of 5; better justified)	P13, P14, P15, P17, P22, P25, P29, P30, P33, P35, P46, V6, V10, V11
8	H	27ra 11 (3/7r)	lignu m	P16, P27	lignum	P13, P14, P15, P17, P22, P25, P29, P30, P33, P35, P46, V6, V10, V11
9	F	27ra 22 (3/7r)	Et est	P16, P27	Et [est] (better justified)	P13, P14, P15, P17, P22, P25, P29, P30, P33, P35, P46, V6, V10, V11
10	F	27ra 24 (3/7r)	[et] rixa[m] [et] co[n]uicia denu	P16, P27	et rixa[m] et co[n]uicia (de)nu	P13, P14, P15, P17, P22, P25, P29, P30, P33, P35, P46, V6, V10, V11
11	F	27ra 36 (3/7r)	[et] non est digna	P16, P27	et non [est] digna (better justified)	P13, P14, P15, P17, P22, P25, P29, P30, P33, P35, P46, V6, V10, V11
12	F	27ra 39 (3/7r)	[et] qui metuunt do=	P16, P27	et qui metuunt (do)= (better justified)	P13, P14, P15, P17, P22, P25, P29, P30, P33, P35, P46, V6, V10, V11
13	H	27rb 26 (3/7r)	inoblectationem . Et	P16, P27	in oblectationem. Et	P13, P14, P15, P17, P22, P25, P29, P30, P33, P35, P46, V6, V10, V11
15	F	30vb 1 (3/10v)	illu[m]	P46	illu	P14, P15, P17, P25, P27, P29, P30, V6, V7, V8, V10, V11
16	C	35va 10 (4/5v)	locupletari (abutting "i")	P15, P16, P17, P25, P29, P30, P33, P35, P46	locupletari (standard "i")	P13, P14, P20, P27, V6, V10, V11
17	C	35vb 5 (4/5v)	denu= (/ daueris) (abutting "n")	P15, P16, P17, P25, P29, P30, P33, P35, P46	denu= (/ daueris) (standard "n")	P13, P14, P20, P27, V6, V10, V11
18	C	35vb 13 (4/5v)	caprea (first "a" is an abutting "a")	P15, P16, P17, P25, P29, P30, P33, P35, P46	caprea (standard "a")	P13, P14, P20, P27, V6, V10, V11
19	G	35vb 32 (4/5v)	vnde	P15, P16, P17, P25, P29, P30, P33, P35, P46	unde	P13, P14, P20, P27, V6, V10, V11
20	C	35vb 38 (4/5v)	co[n]tine[n]s (abutting "ō")	P15, P16, P17, P25, P29, P30, P33, P35, P46	co[n]tine[n]s (standard "ō")	P13, P14, P20, P27, V6, V10, V11
21	C	35vb 41 (4/5v)	s[er]uabit (abutting "u")	P15, P16, P17, P25, P29, P30, P33, P35, P46	s[er]uabit (standard "u")	P13, P14, P20, P27, V6, V10, V11

Table IV.5 The Results of the Secondary Examination of the Second Volume(continued)

No.	Category	Folio	1st state	1st state copies	2nd state	2nd state copies
22	G	53vb 27 (6/3v)	Tra[n]sfreta[n]ces ("t" is scratched and corrected by hand?)	P27	Tra[n]sfreta[n]tes	P13, P14, P15, P16, P17, P20, P25, P29, P30, P33, P35, P46, V6, V8, V10, V11
23	B	56va 7 (6/6v)	p[er]neneru[n]t	P17, P25, P27	p[er]jueneru[n]t	P13, P14, P15, P16, P20, P30, P33, P35, P46, V6, V8, V10, V11
25	C	65ra 1 (7/5r)	audiens ("u" of strange shape)	P14, P15, P17, P27, P35	audiens ("u" of the standard shape)	P13, P16, P20, P25, P30, P33, P46, V7, V8, V10, V11
27	H	68rb 30 (7/8r)	ampli[us] sol adlucendu[m]	P13, P14, P15, P16, P17, P20, P22, P25, P27, P29, P30, P33, P35, P46	ampli[us] sol ad lucendu[m]	V6, V7, V8, V10, V11
33	G	87ra 31 (9/7r)	hanc · [et] succende[n]t (b31 shifted to left)	P33	(ha)nc · [et] succende[n]t	P13, P14, P15, P16, P17, P20, P25, P27, P29, P30, P35, P46, V6, V7, V8, V10, V11
34	H	89va 25 (9/9v)	no[n]audiuit	P20, P46	no[n] audiuit	P13, P14, P15, P16, P17, P25, P27, P30, P33, P35, V6, V7, V8, V10, V11
35	E	97va 1 (10/7v)	(: /) Confusus...i[n]	P15, P16, P30	(: /)confusus...in	P13, P14, P17, P20, P22, P25, P27, P29, P33, P35, P46, V6, V7, V8, V10, V11
36	C	98va 25 (10/8v)	decim[us]nonus (b25 shifted to right)	P16	decimusnon[us]	P13, P14, P15, P17, P20, P27, P29, P30, P33, P35, P46, V6, V10, V11
37	C	99vb 8 (10/9v)	Precipitauit (abutting "r"; smooth line beginning)	P15, P29, P33	Precipitauit (standard "r"; shifted to left from second half of a8 (after [est]; space for "Seth" at the left-hand side)	P13, P14, P16, P17, P20, P27, P30, P35, P46, V6, V10, V11
39	H	102rb 25 (11/2r)	om nis	P13, P14, P16	omnis	P15, P17, P20, P27, P29, P30, P33, P35, P46, V6, V10, V11
44	H	116rb 39 (12/6r)	te :que[m] tecu[m]exerce[n]t	P13, P14, P15, P16, P17, P20, P22, P25, P27, P29, P30, P33, P35, P46	te :que[m] tecu[m] exerce[n]t	V6, V7, V8, V10, V11
45	D	121va 14 (13/1v)	requira[m] Et...spe= (/ clatore[m]) (period is omitted)	P13, P14, P15, P16, P17, P20, P25, P27, P29	requira[m].Et...s(pe)= (/ clatore[m]) (period is inserted)	P22, P30, P33, P35, P46, V6, V7, V8, V10, V11
46	G	122rb 20 (13/2r)	mea[m]	P16, P20, P25, P30, P33, P35	meu[m]	P13, P14, P15, P17, P27, P46, V6, V7, V8, V10, V11

Table IV.5 The Results of the Secondary Examination of the Second Volume(continued)

No.	Category	Folio	1st state	1st state copies	2nd state	2nd state copies
47	G	125va 10 (13/5v)	aurbius	P15, P17, P20, P29, P46	auribus	P13, P14, P16, P25, P27, P30, P33, P35, V6, V7, V8, V10, V11
48	G	127vb 15 (13/7v)	fabritatu[m]	P16, P25, P29, P46	fabricatu[m]	P13, P14, P15, P17, P20, P27, P30, P33, P35, V6, V7, V8, V10, V11
50	G	130va 19 (13/10v)	. Omns	P14, P20, P25, P29, P30, P33, P35, P46	. Omnes	P13, P15, P16, P17, P27, V6, V7, V8, V10, V11
51	B	139ra 19 (14/9v)	uichil	P27, P29	nichil	P13, P14, P15, P17, P20, P16, P22, P25, P33, P35, P46, V6, V7, V8, V10, V11
52	D	142ra 3 (15/2r)	sui Et...abbacuc (period is omitted)	P13, P14, P17, P20, P30, P35, P46	sui . Et...ab(ba)cuc (period is inserted)	P15, P16, P25, P27, P29, P33, V6, V7, V8, V10, V11
53	G	142rb 24 (15/2r)	dūo	P13, P14, P17, P20, P30, P35, P46	dno ("n" with an upper bar, i.e. d[omi]no)	P15, P16, P25, P27, P29, P33, V6, V7, V8, V10, V11
54	G	147vb 30 (15/7v)	(sacri= /) ficace	P27	(sacri= /) ficate	P13, P14, P15, P16, P17, P20, P22, P25, P29, P30, P33, P35, P46, V6, V7, V8, V10, V11
55	B	148va 33 (15/8v)	auima	P13, P15, P16, P25, P29, P30, P35, P46	anima	P14, P17, P20, P27, P33, V6, V7, V8, V10, V11
56	G	153va 1 (16/3v)	facies omne[m] sicut nigredo	P20, P29, P30, P33	facies omniu[m] sicut nigre(do)	P13, P14, P15, P17, P16, P27, P35, P46, V6, V10, V11
57	C	160rb 16 (16/10r)	omni (larger "n")	P13, P15, P16, P17, P20, P27, P33, P35	omni (smaller "n"; wider space between "terra")	P14, P30, P46, V6, V10, V11
58	C	169va 14 (17/8v)	(ha)b eba[n]t conser= (/vaveru[n]t) (unnecessary spacing; "o" in "conser" is of standard shape)	P16	(ha)beba[n]t (co)nser= (/vaveru[n]t) (beter justiied; "o" is abutting or ligatured)	P13, P14, P15, P17, P20, P25, P27, P29, P30, P33, P35, P46, V6, V7, V8, V10, V11
66	B	176vb 14 (18/5v)	simonem ("n" is smaller)	P15, P16, P20, P25	simouem	P13, P14, P15, P17, P27, P29, P30, P33, P35, P46, V6, V7, V8, V10
68	C	185va 42 (19/4v)	the first "r" of "ferre" is standard; the second is shorter	P27	both "r"s are shorter	P13, P14, P15, P16, P17, P20, P22, P25, P29, P30, P33, P35, P46, V6, V7, V8, V10
70	C	189ra 19 (19/8v)	. Et (wider "E" of an unique shape)	P29, P33, P35	. Et (abutting "E" of standard height; b19 shifted towards right)	P13, P14, P15, P16, P17, P20, P25, P27, P30, P46, V6, V7, V8, V10, V11



Table IV.5 The Results of the Secondary Examination of the Second Volume(continued)

No.	Category	Folio	1st state	1st state copies	2nd state	2nd state copies
71	G	200va 32 (20/9v)	castraveru[n]t	P15, P22, P25, P27, P29, P30, P33	castraveru[n]t	P13, P14, P16, P17, P20, P35, P46, V6, V7, V8, V10, V11, V12
72	G	213va 22 (22/2v)	eis	P13, P15, P17, P20, P25, P33, P35, P46	ei[us]	P14, P16, P27, P29, P30, V6, V7, V8, V10, V11
74	G	214ra 19 (22/3r)	vestr qui in	P46	vester qui i[n]	P13, P14, P15, P16, P17, P20, P25, P27, P29, P30, P33, P35, V6, V7, V8, V10, V11
75	C	214ra 33 (22/3r)	credidistis (the first "d" is standard)	P46	credidistis (the first "d" is abutting)	P13, P14, P15, P16, P17, P20, P25, P27, P29, P30, P33, P35, V6, V7, V8, V10, V11
76	G	215va 6 (22/4v)	p[er]dicio	P17, P25, P33	p[er]ditio	P13, P14, P15, P16, P17, P20, P25, P27, P29, P30, P33, P35, P46, V6, V7, V8, V10, V11
77	C	215va 17 (22/4v)	euangeliu[m] (abutting "a")	P17, P25, P33	euangeliu[m] (standard "a")	P13, P14, P15, P16, P17, P20, P25, P27, P29, P30, P33, P35, P46, V6, V7, V8, V10, V11
78	H	217ra 9 (22/6r)	(iaco=/) biminoris	P16, P17, P29, P30, P33	(iaco=) bi minoris (due to loosening?)	P13, P14, P15, P20, P25, P27, P35, P46, V6, V7, V8, V10, V11
79	G	217rb 10 (22/6r)	(appa=) ruit primo marie madalene (+ normal "d")	P14, P15, P16, P17, P29, P30, P33	(appa=) ruit p[ri]mo marie magdalene (+ abutting "d")	P13, P20, P25, P27, P35, P46, V6, V7, V8, V10, V11
80	G	225ra 22 (23/4r)	(ciui= / ) tem et...ipse ventur[us] . Et	P14, P15, P16, P25, P33, P35	(ciui= / ) tate[m] [et] ...ipse ventur[us] . Et (space before a period is slightly wider)	P13, P20, P27, P29, P30, P46, V6, V7, V8, V10, V11
82	C	227va 30 (23/6v)	responde[n]s (abutting "o")	P25, P27, P29	responde[n]s (standard "o")	P13, P14, P15, P16, P17, P20, P30, P33, P35, P46, V6, V7, V8, V10, V11
84	G	234ra 41 (24/3r)	p[er]tucientes	P13, P16, P17, P30, P46	p[er]cutientes	P14, P15, P20, P25, P27, P29, P33, P35, V6, V7, V8, V10, V11
85	B	241va 28 (24/10v)	Qni	P14, P16, P17, P27	Qui	P13, P15, P20, P25, P29, P30, P33, P35, P46, V6, V7, V8, V10, V11
86	F	250ra 37 (25/9r)	cognouisset ("e" without contraction bar, which is added by hand)	P13, P14, P15, P16, P17, P20? P22, P25, P27, P29, P30, P33	cognouisse[n]t ("ē" with contraction mark)	P35, P46, V6, V7, V8, V10, V11, V12

Table IV.5 The Results of the Secondary Examination of the Second Volume(continued)

No.	Category	Folio	1st state	1st state copies	2nd state	2nd state copies
87	G	250vb 14 (25/9v)	dolese	P16, P17, P22, P27, P30, P33, P46	dolose	P13, P14, P15, P20, P25, P29, P35, V6, V7, V8, V10, V12
88	G	253vb 35 (26/2v)	querbat	P27, P30	quere(ba)t	P13, P14, P15, P16, P17, P20, P22, P25, P29, P33, P35, P46, V6, V7, V8, V10, V11, V12
89	D	256rb 18 (26/5r)	ego · (ve)ro	P16	· ego (ve)ro	P13, P14, P15, P17, P20, P25, P27, P30, P33, P35, P46, V6, V7, V8, V10, V11
90	G	256vb 42 (26/5v)	stipulam : uniuscuisq[ue]	P15, P16	stipula[m] : uniuscuisq[ue]	P13, P14, P17, P20, P25, P27, P29, P30, P33, P35, P46, V6, V7, V8, V10, V11
91	C	257ra 36 (26/6r)	(tra[n]sfigura= / ) ni ("n" of "u" of irregular shape)	P14, P15, P16, P17, P25, P29, P33, P46	(tra[n]sfigura= / ) ui	P13, P20, P27, P30, P35, V6, V7, V8, V10, V11
92	C	257ra 39 (26/6r)	(e= / ) uim ("u" of "n" of irregular shape)	P14, P15, P16, P17, P25, P29, P33, P46	(e= / ) nim	P13, P20, P27, P30, P35, V6, V7, V8, V10, V11
94	G	266vb 2 (27/5v)	acce=	P16	acci- (not "///", but "///")	P13, P14, P15, P17, P20, P25, P27, P29, P30, P33, P35, P46, V6, V7, V8, V10, V11
95	C	266vb 5 (27/5v)	michi (abbuting "m")	P16	michi (standard "m")	P13, P14, P15, P17, P20, P25, P27, P29, P30, P33, P35, P46, V6, V7, V8, V10, V11
96	D	266vb 21 (27/5v)	simula (/ tioni)	P16	simula= (/ tioni)	P13, P14, P15, P17, P20, P25, P27, P29, P30, P33, P35, P46, V6, V7, V8, V10, V11
98	H	274va 31 (28/1v)	tempta uerit	P13, P14, P16, P17, P20, P27, P30, P33, P35, P46	temptauerit	P15, P29, V6, V10, V11, V12
99	G	286vb 18 (29/2v)	qui lo= (/ ti)	P20, P27, P29, P30, P33, P35	q[ui] locu= (/ ti)	P13, P14, P15, P16, P17, P22, P25, P46, V6, V7, V8, V10, V11, V12
100	G	289rb 40 (29/5r)	eres : tra(de)[n]s... lgit[ur] qui	P46	eres:tra(de)bat... lgit[ur] q[ui]	P13, P14, P15, P16, P17, P20, P25, P27, P29, P30, P33, P35, V6, V7, V8, V10, V11

Table IV.5 The Results of the Secondary Examination of the Second Volume(continued)

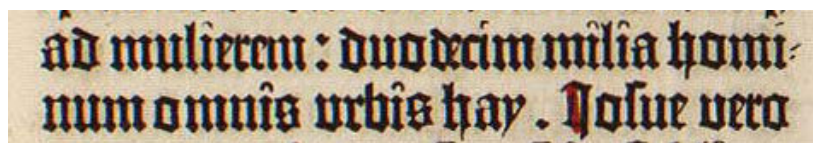
No.	Cate- gory	Folio	1st state	1st state copies	2nd state	2nd state copies
101	C	289vb 23 (29/5v)	Qui ("u" of strange shape)	P33	Qui	P13, P14, P15, P16, P17, P20, P25, P27, P29, P30, P35, P46, V6, V7, V8, V10, V11
102	C	290rb 8 (29/6r)	"o" in "nomen" is smaller, and "e" is abutting	P29, P33	"e" is of the primary form, and "o" is larger	P14, P15, P16, P17, P20, P25, P27, P30, P35, P46, V6, V7, V8, V10, V11
105	G	292vb 14 (29/8v)	arbri= (/ tramini)	P13, P14, P15, P16, P17, P20, P22, P27, P33, P46	arbi= (/ tramini)	P25, P29, P30, P35, V6, V7, V8, V10, V11, V12
108	G	302vb 32 (30/8v)	. In m[u]ltis...	P20, P25, P27, P29, P35	. In in[u]ltis... (less smoothly justified)	P13, P14, P15, P17, P16, P30, P33, P46, V6, V7, V8, V10, V11

## IV.6 Changes in Spacing in the Second Volume

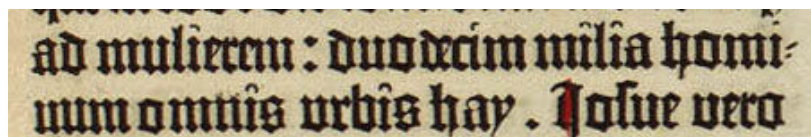
No.	Category	Folio	1st state	1st state copies	2nd state	2nd state copies
2	A	6vb 25 (1/6v)	et p[re]ciosi (narrower space)	P27, P46	et p[re]ciosi (wider space)	P16, P33,
3	A	7rb 14 (1/7r)	principi [bus] (wider unnecessary spacing)	P27	principi [bus] (narrower spacing; better justified)	P14, P15, P16, P17, P20, P25, P33, P46, V7, V8
4	A	16v (2/6v)	P33 and P46 are not well superimposed with other copies, especially on lines a3, a9, a38. the 1st word of b23 protrudes from the line beginning			
5	A	24vb 27 (3/2v)	the first word "lectionis" protrudes to left	P46	the first word "lectionis" is shifted to right; smooth beginning	P16, P20, P27, P29, P30, P33, V6, V8, V10, V11
6	A	24vb 40 (3/2v)	(trans/ ) "lata" protrudes to left	P46	(trans/ ) "lata" is shifted to right; smooth beginning	P16, P27, P29, P30, P33, P35, V6, V8, V10, V11
14	A	27r (3/7r)	a8, a16, a19. a20 is not well overlapped			
24	A	60r (6/10r)	a21-b21 left (better justified)	P16, P33, P25, P46	a21-b21 right	P27, V10, V11?
26	A	66ra 18 (7/6r)	desere magis (wider spacing; b18 beginning is retreating)	P27, P46	desere magis (narrower spacing; a18 well justified & b18 beginning is more smooth)	P16, P25, P33, P35, V6, V8, V10, V11
28	A	69ra 11 (7/6r)	a11-b11 shifted to right	P25? P27, P33	a11-b11 shifted to left (b11 beginning more smooth)	P16, P46, V10, V11
29	A	71ra 11	habitor es (unnecessary spacing)	P16, P17, P27	habitores	P14, P15, P25, P29, P30, P33, P46, V6, V7, V8, V10
30	A	73rb 5 (8/3r)	domus isra(he)  (narrower spacing; almost 1 word; better justified?)	P33, P46	domus isra(he)  (wider spacing)	P16, P25, P27, P30, V7, V8, V10, V11
31	A	81vb 26 (9/1v)	"Hec" shifted towards left	P46	"Hec" shifted towards right	P16, P27, P33, V6, V10, V11
32	A	81vb 36 (9/1v)	"c" and "ō" in "co[n]siderauit" are overlapped	P35, P46	"c" and "ō" are not overlapped but tend to touch	P13, P14, P15, P16, P17, P25, P27, P30, P33, V6, V10, V11
38	A	100rb 14 (10/10r)	effuger et et (or, "effugere t et")	P15, P16, P27, P33, P46 (P14, P20, P22, P35)	effugeret et	P13, P17, P25, P29, P30, V6, V7, V8, V10, V11
40	A	106va 30 (11/6v)	"Et ordi=" shifted to left	P16, P29, P33, P39, P46	"Et ordi=" shifted to right	V6, V10, V11
41	A	106vb 1 (11/6v)	iniquitates eo[rum] Ego (wider spacing; 1st word protrudes from the column beginning)	P14,, P20, P27, P29, P30, P33, P46	iniquitates eo[rum]. Ego (smoother line beginning)	P13, P15, P16, P17, P22, P25, P35, V6, V7, V8, V10, V11
42	A	107vb 18 (11/7v)	impietatis. No[n] (narrower, wider?)	P16	impietatis.No[n] (wider,narrower)	P27, P29, P33, P46, V6, V10, V11
43	A	109vb 3 (11/9v)	letters in the final word "aspi= (/ciant)" are drifting			
49	A	129va 27 (13/9v)	"qu" of "quatuor" is drifting			
59	A	169vb 3 (17/8v)	miserun t (unnecessary spacing)	P16	miserunt	P13, P14, P15, P17, P20, P25, P27, P29, P30, P33, P35, P46, V6, V7, V8, V10, V11
60	A	169vb 6 (17/8v)	t[er]ra (shifted to right)	P16	t[er]ra (shifted to left)	P27, P29, P33, P46, V6, V10

## IV.6 Changes in Spacing in the Second Volume(continued)

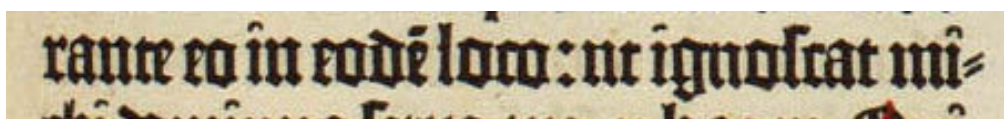
No.	Category	Folio	1st state	1st state copies	2nd state	2nd state copies
61	A	170va 17 (17/9v)	[et] viderunt	P16, P27, P29, P33	[et] viderunt (narrower spacing?)	P46, V6, V10, V11
62	A	170va 24 (17/9v)	group 1	P16, P27, P29, P33	group 2	P46, V6, V10
63	A	170vb 13 (17/9v)	des : et (wider spacing)	P16, P27, P29, P33	des : et (narrower spacing; better justified)	P46, V6, V10, V11
64	A	172v (18/1v)	a-b 41-42, b30 are not well superimposed			
65	A	173v (18/2v)	a8, a33, b12, b14 are not well superimposed			
67	A	185r (19/4r)	a42-b42 of P27 is not well superimposed with other images, and "e" is printed at the lower position on lines b6 and b23.			
69	A	188va 32 (19/7v)	si est potens i[n] ("potens" and "i[n]" looks like almost a word	P13, P27	si est potens i[n]	P14, P15, P16, P17, P20, P25, P29, P30, P33, P35, P46, V6, V7, V8, V10
73	A	214ra 7 (22/3r)	letters in "i(he)sus" is drifting			
81	A	227va 4 (23/6v)	"i" in "liberari" is drifted up	P27	"i" is at lower position	P16, P25, P29, P30, P33, P46, V6, V7, V8, V10
83	A	227va 33 (23/6v)	"ec" in "fecerit" is drifted			
93	A	258rb 16 (26/7r)	: quomo[do]	P16	: quomo[do] (wider spacing; better justified)	P27, P29, P33, P46, V10, V11
97	A	266v (27/5v)	P16 is not well overlapped with other copies			
103	A	291va 1 (29/7v)	deum. (narrower spacing)	P16	deum . (wider spacing; smooth line beginning)	P27, P33, P46, V10
104	A	291va 6 (29/7v)	eu[m]:ut ("narrower spacing; u" of "ut" is at the lower position)	P16	eu[m]: ut	P27, P33, P46, V10, V7, V11
106	A	293ra 13 (29/9r)	ego i[n] diebus (narrower spacing)	P27, P33	ego i[n] diebus (wider spacing)	P16, P46, V10, V11
107	A	293ra 25 (29/9r)	Tu[n]c co[n]stanter (narrower spacing)	P27, P33	Tu[n]c co[n]stanter (wider spacing)	P16, P46, V10, V11
109	A	308rb 1 (31/3+1r)	q[ui] cre= (better justified)	P29, P46	q[ui] cre= (wider spacing; "cre" protrudes from the column ending)	P13, P14, P15, P16, P17, P25, P27, P33, V6, V7, V8, V10, V11
110	A	308rb 13 (31/3+1r)	q[ui] natus (narrower spacing)	P29, P46	q[ui] natus (wider spacing)	P13, P14, P15, P16, P17, P25, P27, P33, V6, V7, V8, V10, V11
111	A	308rb 14 (31/3+1r)	(ge= / ) nerat[i]o dei (narrower spacing)	P29, P46	(ge= / ) nerat[i]o dei (wider spacing; less justified)	P13, P14, P15, P16, P17, P25, P27, P33, V6, V7, V8, V10, V11



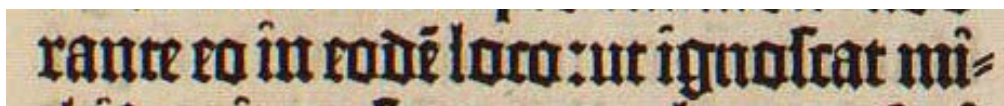
a. P27 (The British Library): a24-25



b. P39 (Keio University Library): a24-25

Figure IV.1<sup>i</sup>. (34) I 106ra 25 (11/5r) (Joshua 8:25).

a. P39 (Keio University Library)

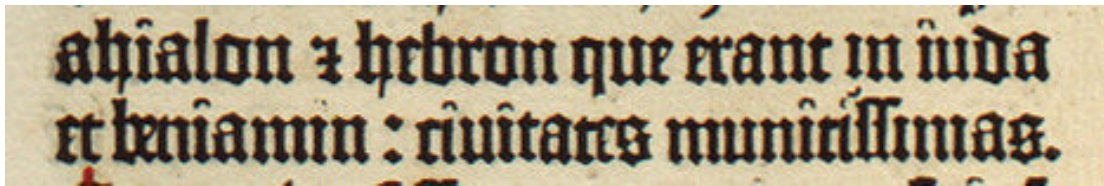


b. P27 (The British Library)

Figure IV.2. (75) I 180ra 32 (19/2r) (4 Kings 5:18)  
(2 Kings 5:18 in NRSV).

<sup>i</sup> In each figure, the earlier state is shown first, followed by the second state.

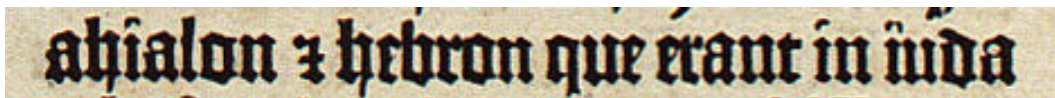
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a. P39 (Keio University Library)



b. P39 (Keio University Library) close-up

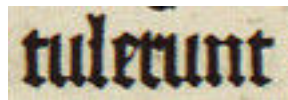


c. P33 (Cambridge University Library)

Figure IV.3. (99) I 212vb 40 (22/4v) (2 Chronicles 11:10).



a. P27 (The British Library)



b. P39 (Keio University Library)

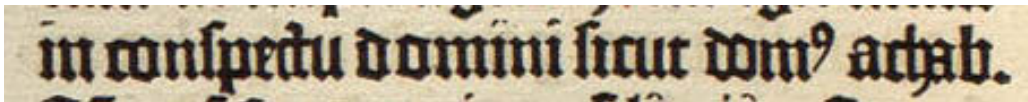
Figure IV.4. (100) I 214vb 24 (22/6v) (2 Chronicles 16:6).





in conspectu domini sicut domus achab.

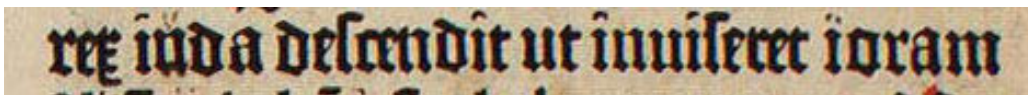
a. P27 (The British Library)



in conspectu domini sicut domus achab.

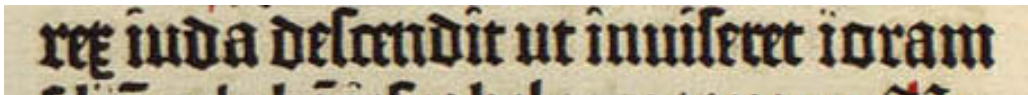
b. P39 (Keio University Library)

Figure IV.5. (102) I 217vb 3 (22/9v) (2 Chronicles 22:4).



rex iuda descendit ut inuideret ioram

a. P27 (The British Library)

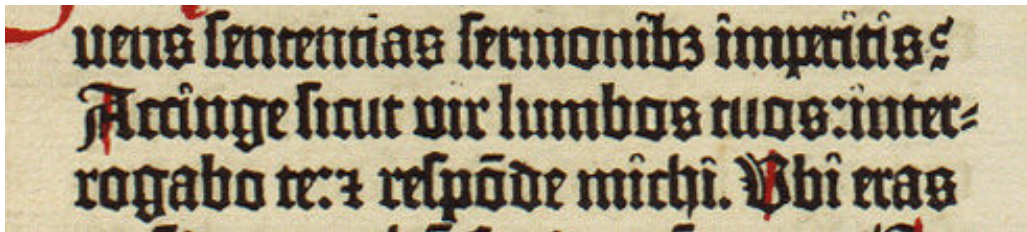


rex iuda descendit ut inuideret ioram

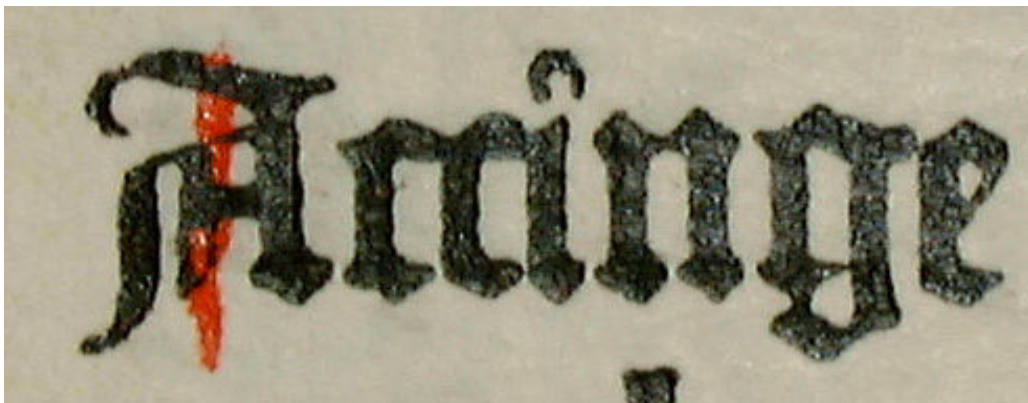
b. P39 (Keio University Library)

Figure IV.6. (104) I 217vb 13 (22/9v) (3 Chronicles 22:4).





a. P39 (Keio University Library)

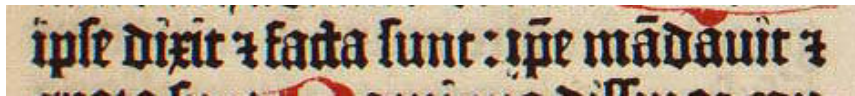


b. P39 (Keio University Library) close-up

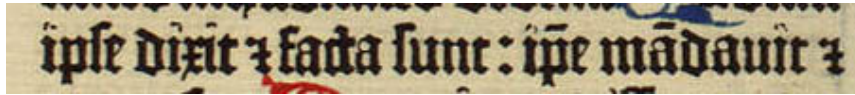


c. P33 (Cambridge University Library)

Figure IV.7. (143) I 291ra 34 (30/1r) (Job 38:3).

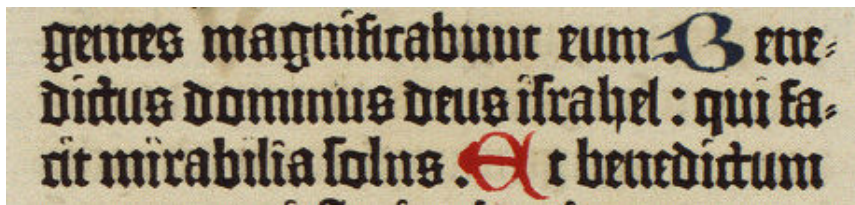


a. P27 (The British Library)



b. P39 (Keio University Library)

Figure IV.8. (150) I 299ra 28 (30/9r) (Psalms 32:9).



a. P39 (Keio University Library)

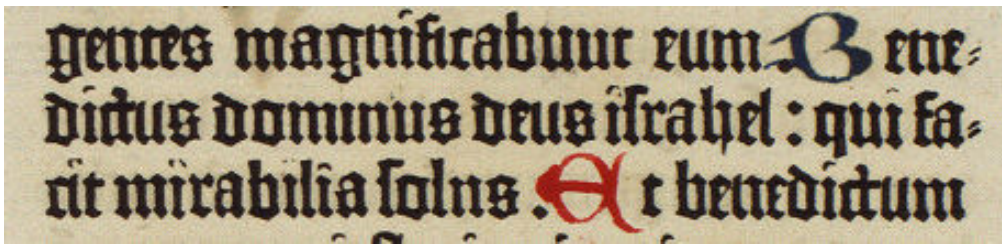


b. P39 (Keio University Library) close-up



c. P33 (Cambridge University Library)

Figure IV.9. (156) I 308rb 11 (31/8r) (Psalms 71:17).



a. P39 (Keio University Library)

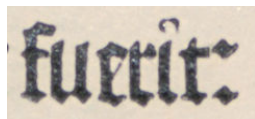


b. P39 (Keio University Library) close-up



c. P33 (Cambridge University Library)

Figure IV.10. (157) I 308rb 13 (31/8r) (Psalms 71:18).

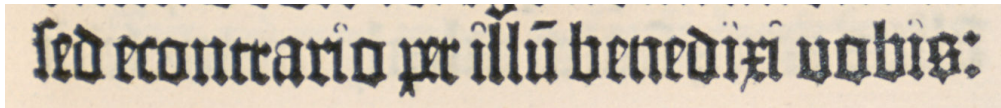


a. P39 (Keio University Library)

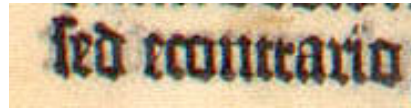


b. P16 (Gutenberg Museum)

Figure IV.11. (5) I 23va 6 (3/3v) (Genesis 40:14).

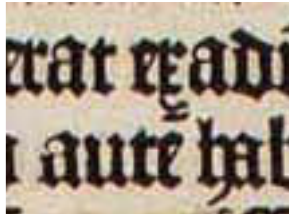


a. P39 (Keio University Library)

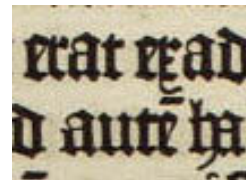


b. V10 (The British Library)

Figure IV.12. (40) I 114ra 42 (13/3r) (Joshua 24:10).

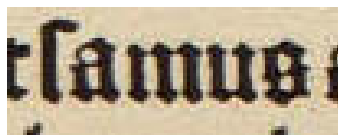


a. P27 (The British Library)



b. P39 (Keio University Library)

Figure IV.13. (53) I 144va 7 (15/6v) (1 Kings 26:3)  
(1 Samuel 26:3 in NRSV).



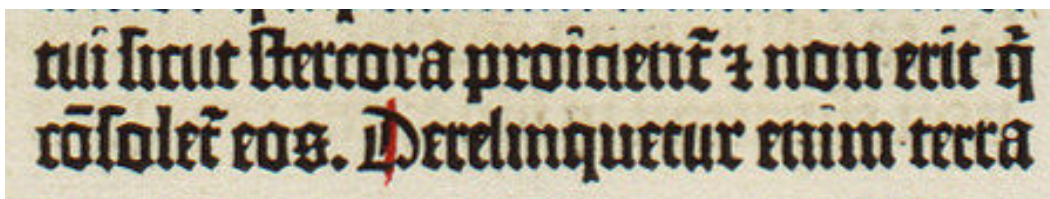
a. P39 (Keio University Library)



b. V10 (The British Library)

Figure IV.14. (112) I 246rb 5 (25/7+1r) (3 Esdras 9:43)  
(1 Esdras 9:43 in the Apocrypha).

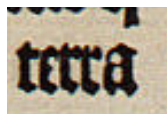




a. P39 (Keio University Library)

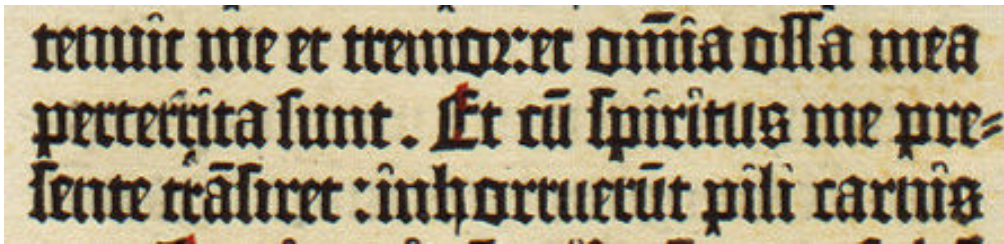


b. P39 (Keio University Library) close-up  
shorter "r" – standard "r"

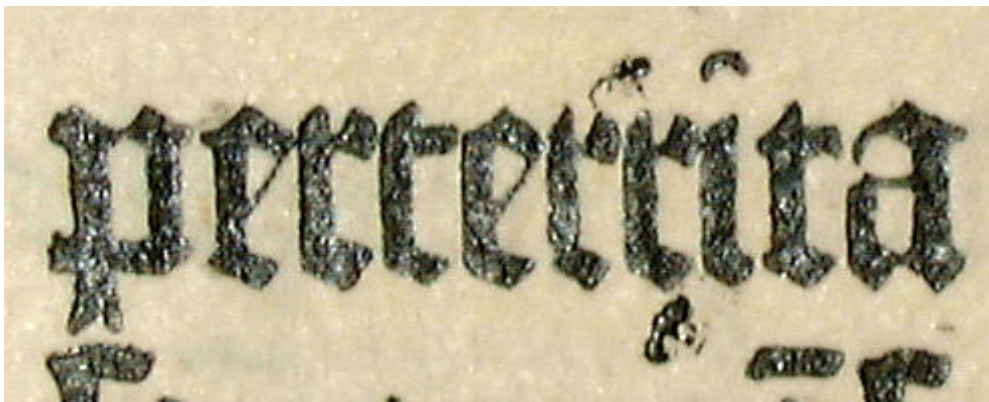


c. P33 (Cambridge University Library)  
standard "r" – standard "r"

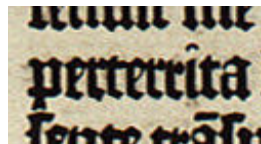
Figure IV.15. (121) I 259va 42 (26/9+1v) (4 Esdras 16:24)  
(2 Esdras 16:24 in the Apocrypha).



a. P39 (Keio University Library)

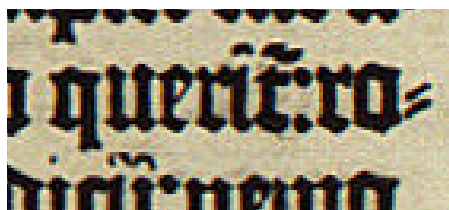


b. P39 (Keio University Library) close-up  
standard "r" – standard "r"

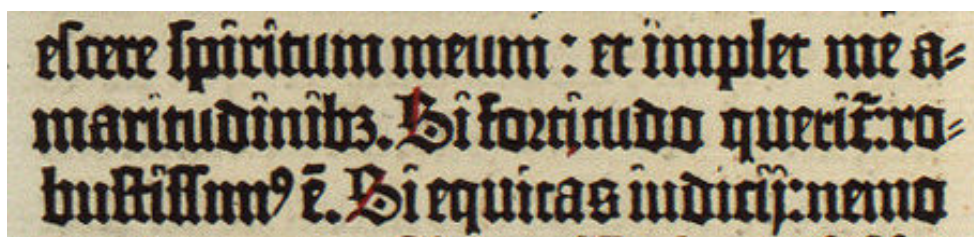


c. P33 (Cambridge University Library)  
standard "r" – shorter "r"

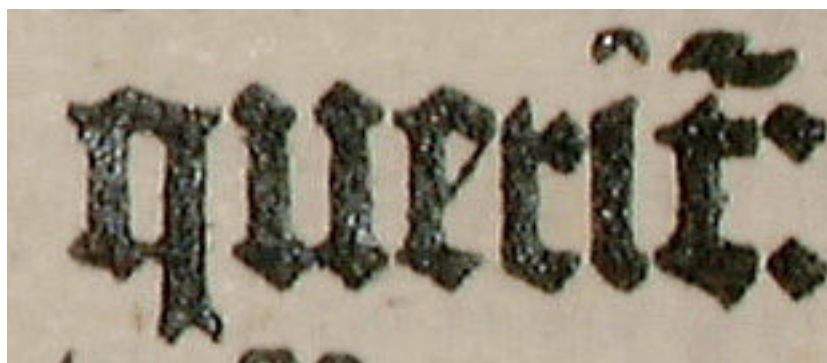
Figure IV.16. (135) I 281rb 39 (29/1r) (Job 4:14).



a. P33 (Cambridge University Library)  
standard "r" of the primary form

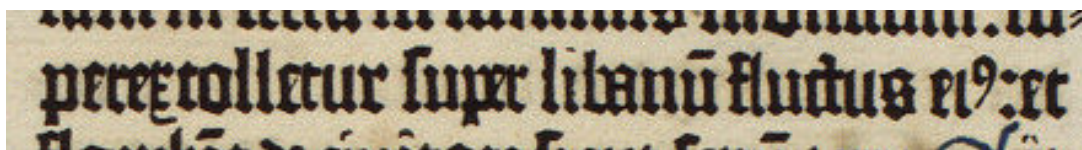


b. P39 (Keio University Library)



c. P39 (Keio University Library) close-up

Figure IV.17. (136) I 282vb 25 (29/2v) (Job 9:19).



a. P39 (Keio University Library)

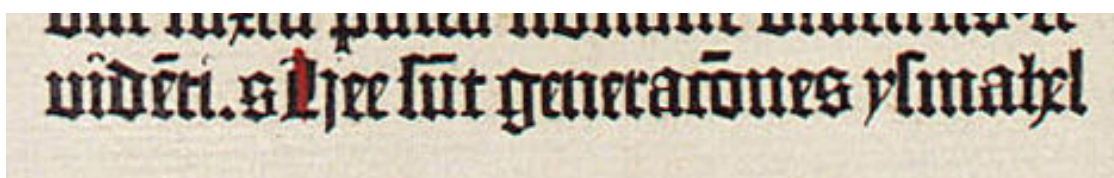


b. P39 (Keio University Library) close-up  
“t” of the primary form



c. P33 (Cambridge University Library)

Figure IV.18. (155) I 308rb 6 (31/8r) (Psalms 71:16).



a. P39 (Keio University Library): uncorrected

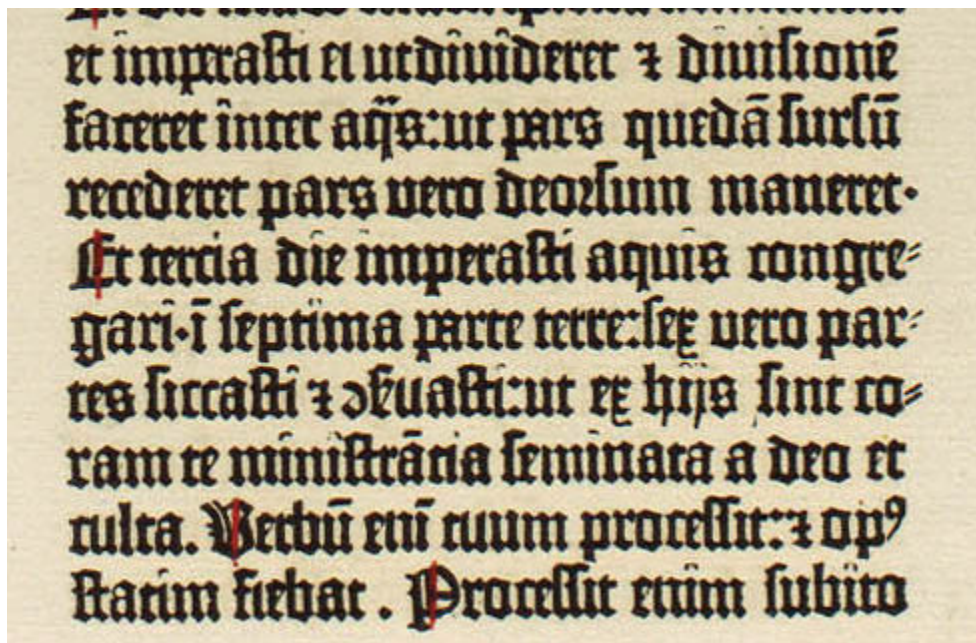


b. P33 (Cambridge University Library)

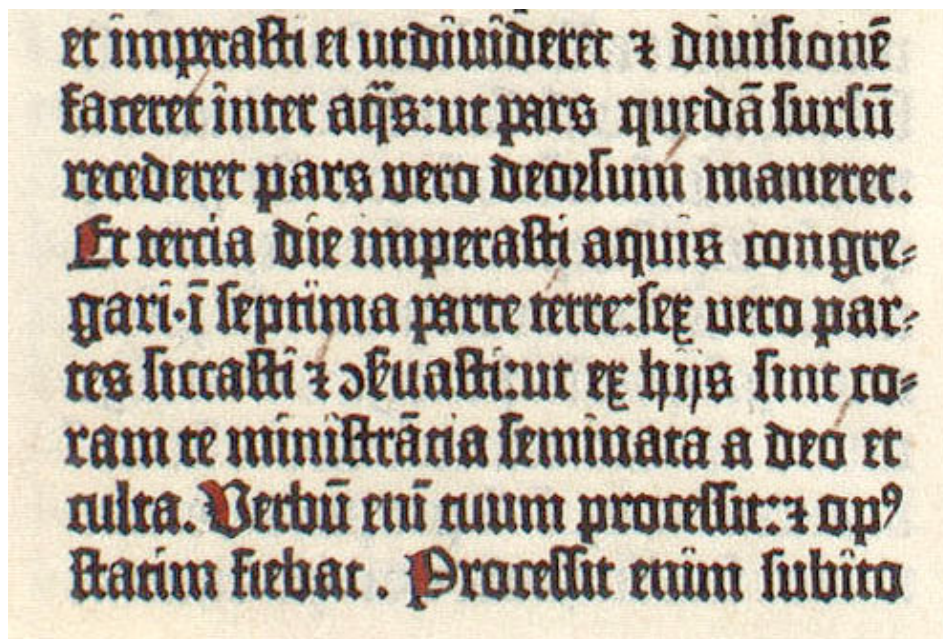
Figure IV.19. (3) I 15rb 42 (2/5r) (Genesis 25:11).





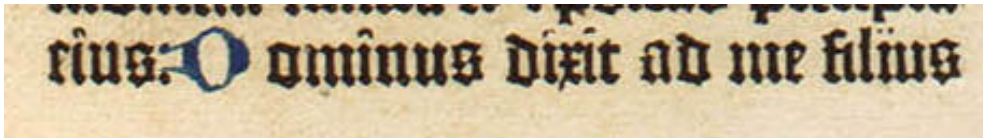


a. P39 (Keio University Library): b34-42



b. V10 (The British Library): b34-42

Figure IV.22. (117) I 251rb36 (26/2r) (4 Esdras 6:41-2)  
(2 Esdras 6:41-2 in the Apocrypha).



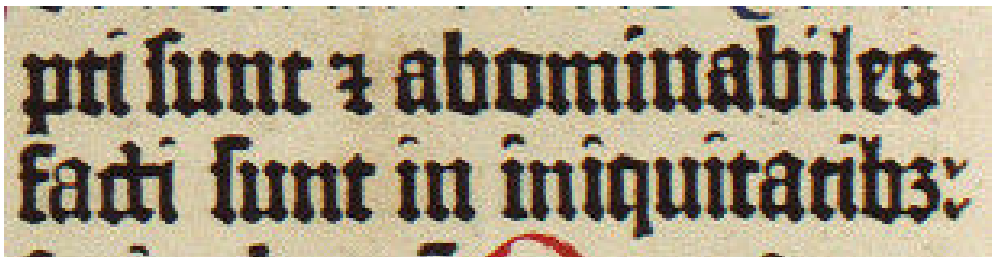
a. P39 (Keio University Library)



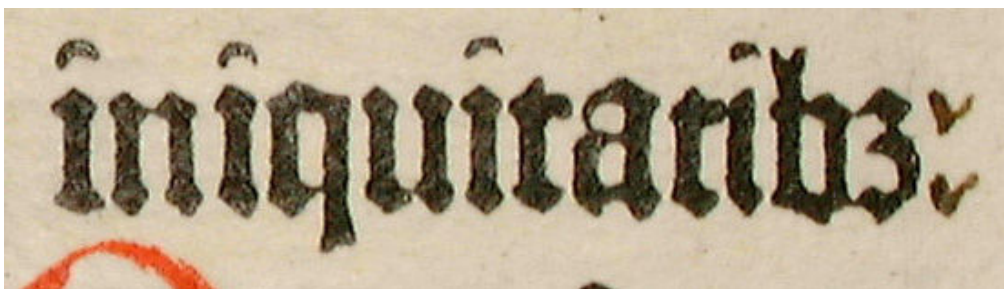
b. P27 (The British Library)

Figure IV.23. (147) I 293ra 42 (30/3r) (Psalms 2:6).

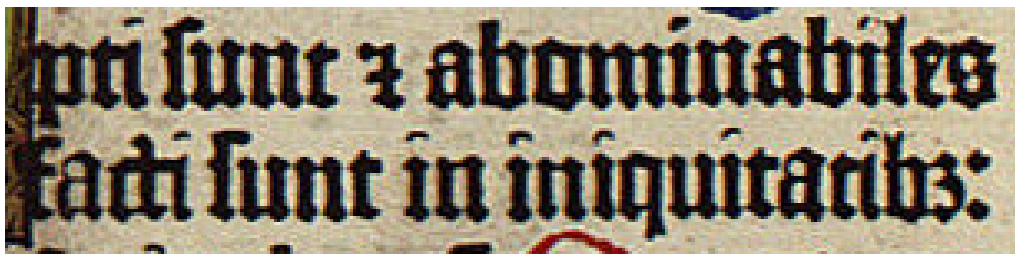




a. P39 (Keio University Library)

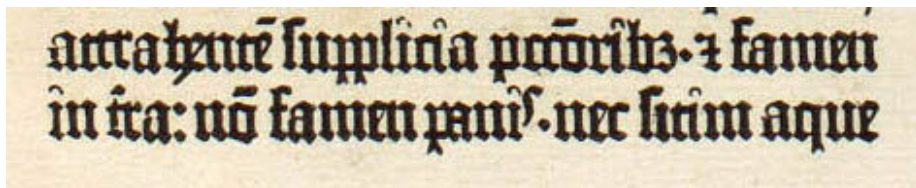


b. P39 (Keio University Library) close-up: with hand correction

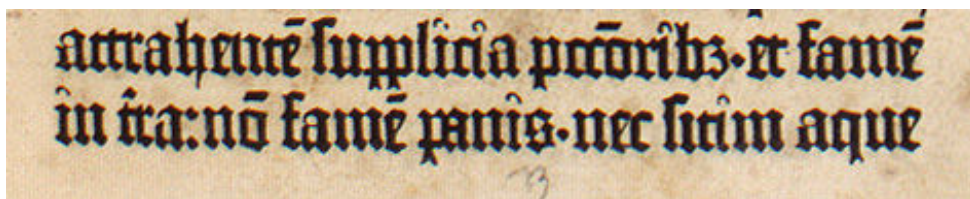


c. P33 (Cambridge University Library)

Figure IV.24. (152) I 303vb 30 (31/3v) (Psalms 52:2).

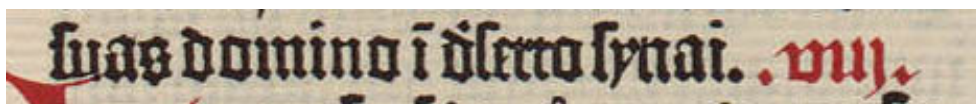


a. P39 (Keio University Library)

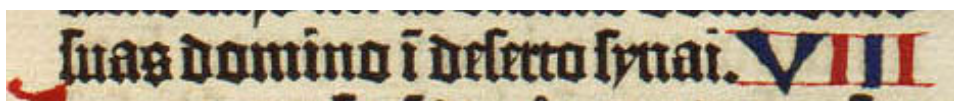


b. P16 (Gutenberg Museum)

Figure IV.25. (2) I 3ra 39-40 (1/3r) (Jerome's Epistle to Paulinus 7).

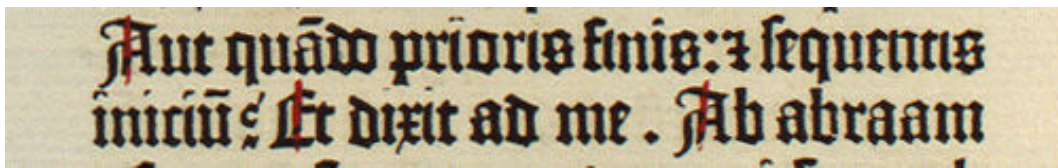


a. P20 (Facsimile of Mazarin Library copy)

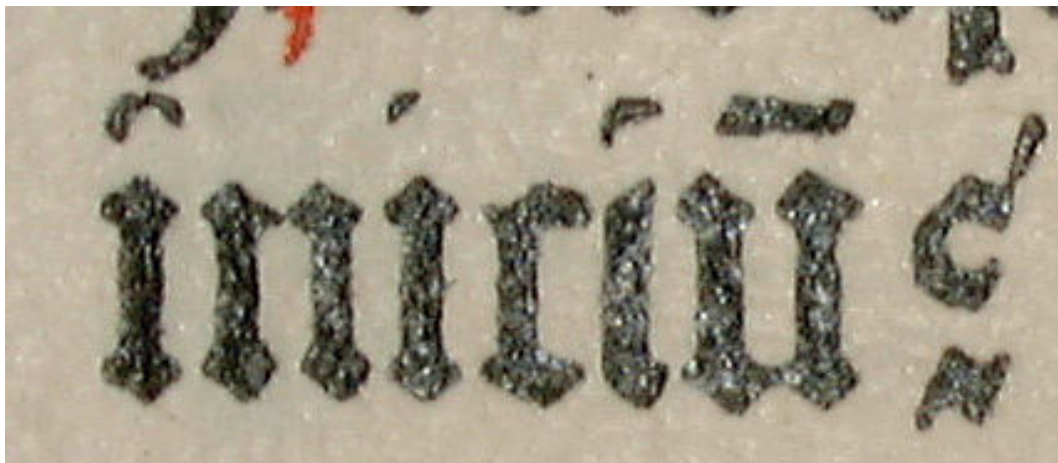


b. P39 (Keio University Library)

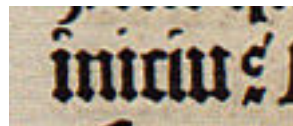
Figure IV.26. (15) I 52ra 38 (6/2r) (Leviticus 7:38).



a. P39 (Keio University Library)

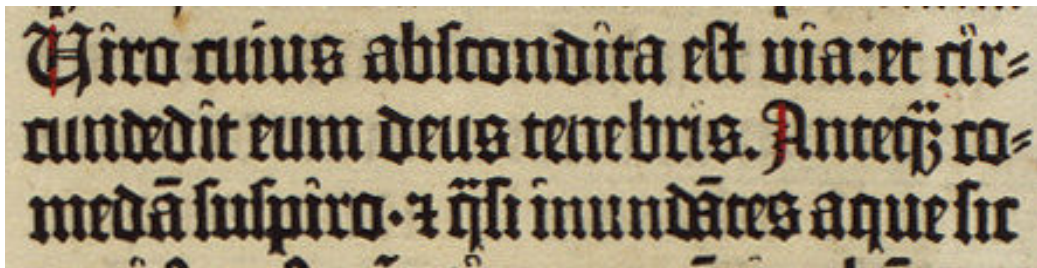


b. P39 (Keio University Library) close-up

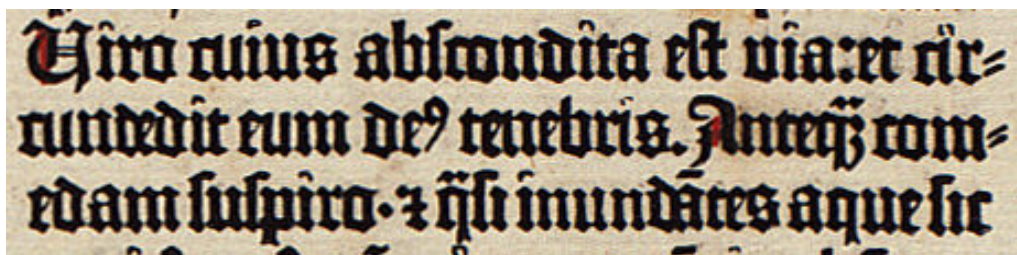


c. P33 (Cambridge University Library)

Figure IV.27. (116) I 250vb 33 (26/1v) (4 Esdras 6:7)  
(2 Esdras 6:7 in the Apocrypha).

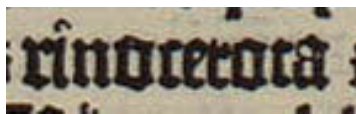


a. P39 (Keio University Library)



b. P33 (Cambridge University Library)

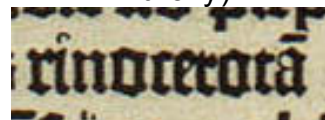
Figure IV.28. (134) I 281rb 8-9 (29/1r) (Job 3:23-4).



a. P20 (Facsimile of Mazarin Library copy)



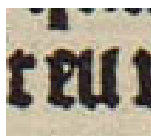
b. V6 (Göttingen University Library)



c. P39 (Keio University Library)

Figure IV.29. (144) I 291va 37 (30/1v) (Job 39:10).



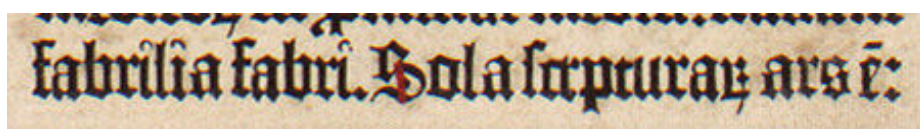


a. P20 (Facsimile of Mazarin Library copy)

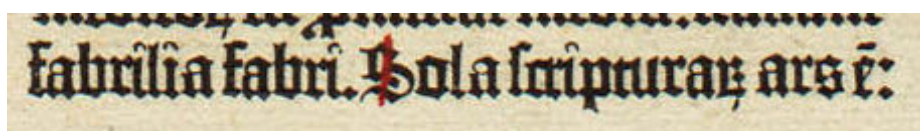


b. P39 (Keio University Library)

Figure IV.30. (145) I 292rb 38 (30/2r) (Job 41:19).



a. P16 (Gutenberg Museum)

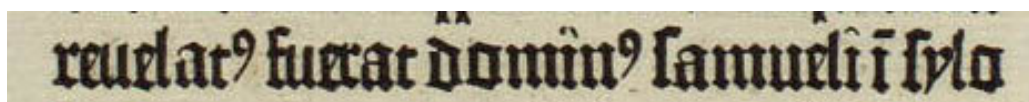


b. P39 (Keio University Library)

Figure IV.31. (1) I 2rb 40 (1/2r) (Jerome's Epistle to Paulinus 6).



a. P16 (Gutenberg Museum)



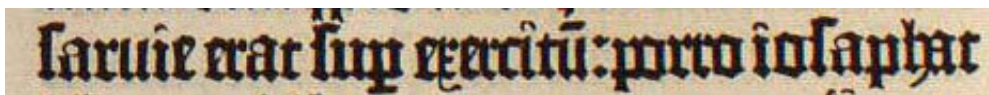
b. P39 (Keio University Library)

Figure IV.32. (45) I 131va 25 (14/3v) (1 Kings 3:21)  
(1 Samuel 3:21 in NRSV).



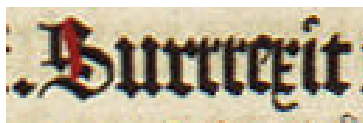


a. P39 (Keio University Library)

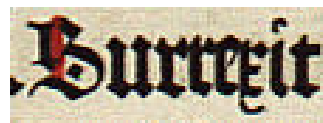


b. P27 (The British Library)

Figure IV.33. (59) I 150vb 40 (16/2v) (2 Kings 8:16)  
(2 Samuel 8:16 in NRSV).



a. P39 (Keio University Library)



b. P33 (Cambridge University Library)

Figure IV.34. (63) I 154ra 37 (16/6r) (2 Kings 14:23)  
(2 Samuel 14:23 in NRSV).

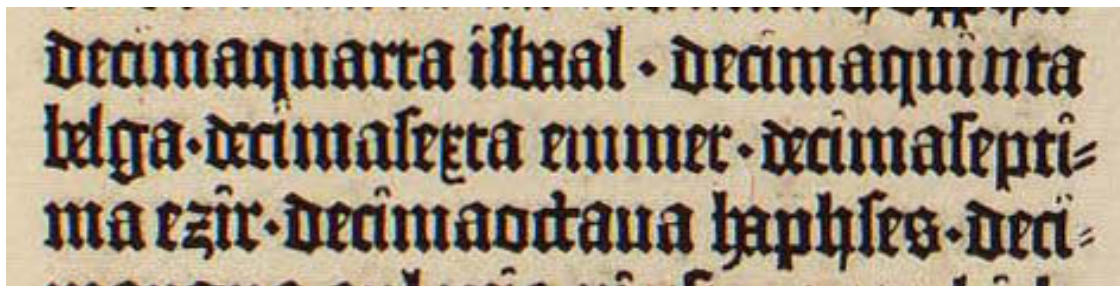
uices suas et ministeriū: inuentiq; sūt  
 mltō plures filiū eleazar ī principibz.  
 uiris quā filiū ythamar. Diuisit autē  
 eis hoc est filijs eleazarī principes sede=  
 cim: ⁊ filijs ythamar p familias et do=

a. P27 (The British Library): a1-5:

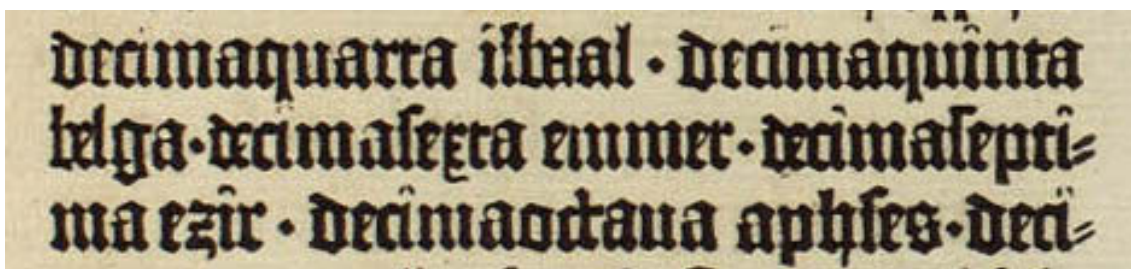
uices suas et ministeriū: inuentiq; sūt  
 mltō plures filiū eleazar ī principibz.  
 uiris quā filiū ythamar. Diuisit autē  
 eis hoc est filijs eleazarī principes sede=  
 cim: ⁊ filijs ythamar p familias et do=

b. P39 (Keio University Library): a1-5

Figure IV.35. (93) I 205ra 4 (21/7r) (1 Chronicles 24:4).



a. P27 (The British Library)



b. P39 (Keio University Library)

Figure IV.36. (95) I 205ra 25 (21/7r) (2 Chronicles 24:15).



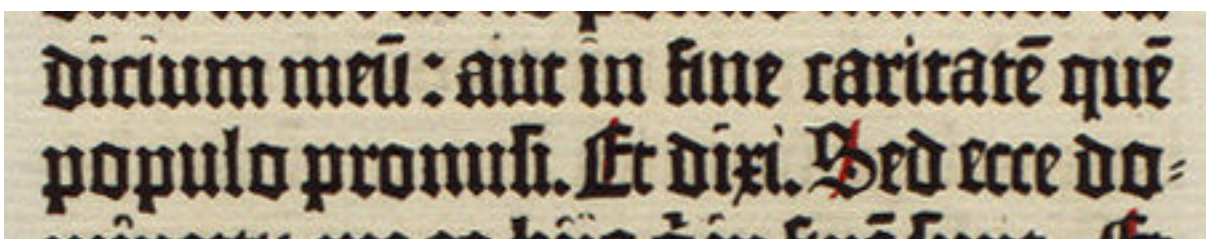
a. P27 (The British Library)



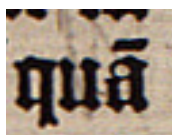
b. P39 (Keio University Library)

Figure IV.37. (101) I 217va 18 (22/9v) (2 Chronicles 21:18).



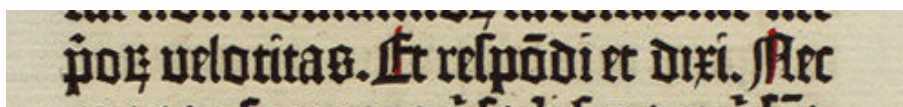


a. P39 (Keio University Library): a7-8



b. P33 (Cambridge University Library)

Figure IV.38. (113) I 250va 7 (26/1v) (4 Esdras 5:40)  
(2 Esdras 5:40 in the Apocrypha).



a. P39 (Keio University Library)

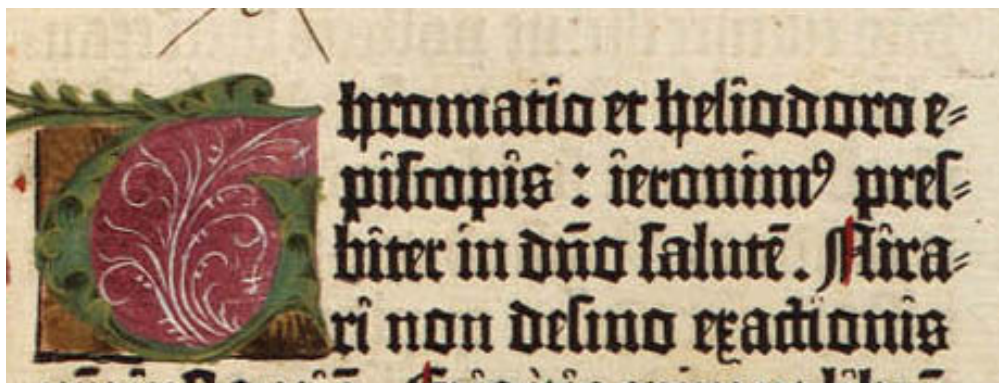


b. P39 (Keio University Library) close-up

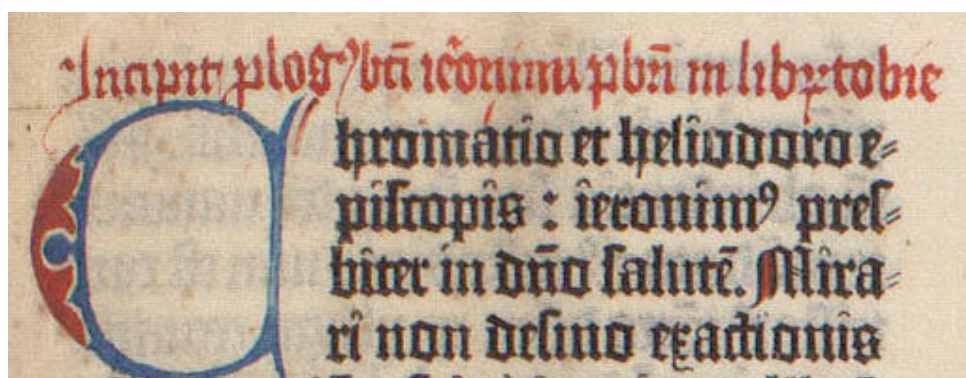


c. P33 (Cambridge University Library)

Figure IV.39. (114) I 250va 14 (26/1v)  
(4 Esdras 5:42) (2 Esdras 5:42 in the Apocrypha).

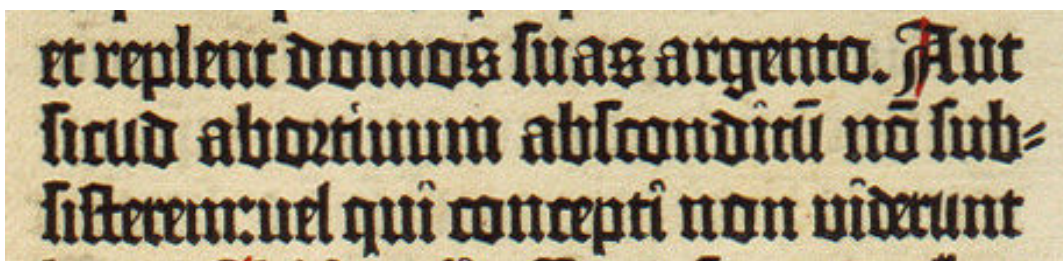


a. P39 (Keio University Library): a1-5 (a1 blank)

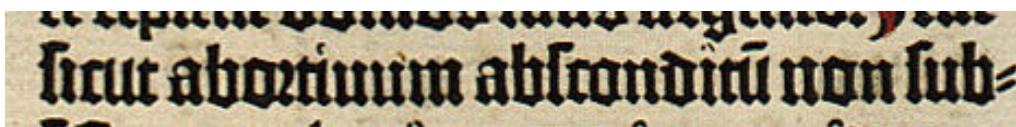


b. V10 (The British Library)

Figure IV.40. (122) I 261ra 4 (27/1r) (Prologue to Tobit).

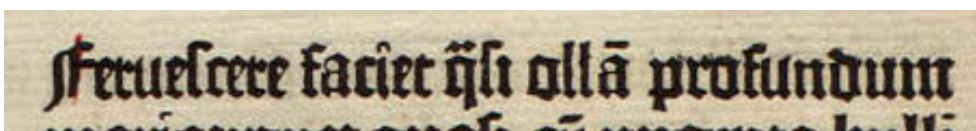


a. P39 (Keio University Library): a36-38



b. P33 (Cambridge University Library)

Figure IV.41. (133) I 281ra 37 (29/1r) (Job 3:16).



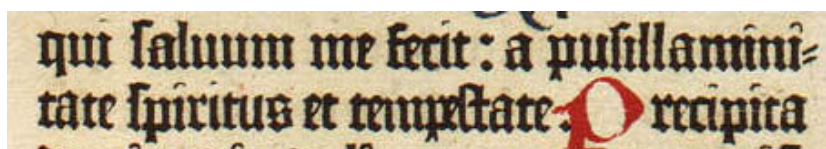
a. P39 (Keio University Library)



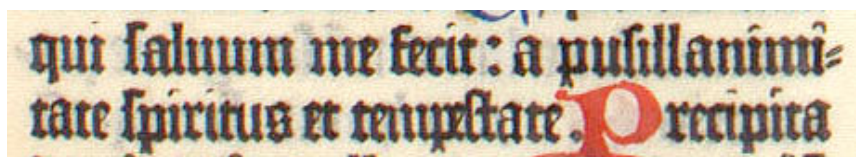
b. V10 (The British Library)

Figure IV.42. (146) I 292va 1 (30/2v) (Job 4:22).





a. P39 (Keio University Library): a40-41



b. V10: a40-41

Figure IV.43. (153) I 304ra 40 (31/4r) (Psalms 54:9).

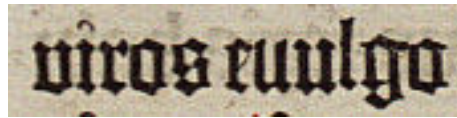


a. P27 (The British Library)

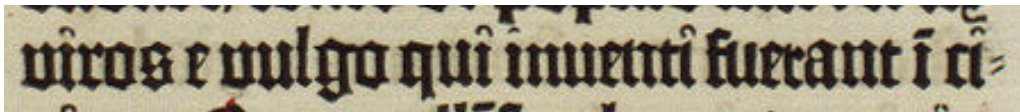


b. P39 (Keio University Library)

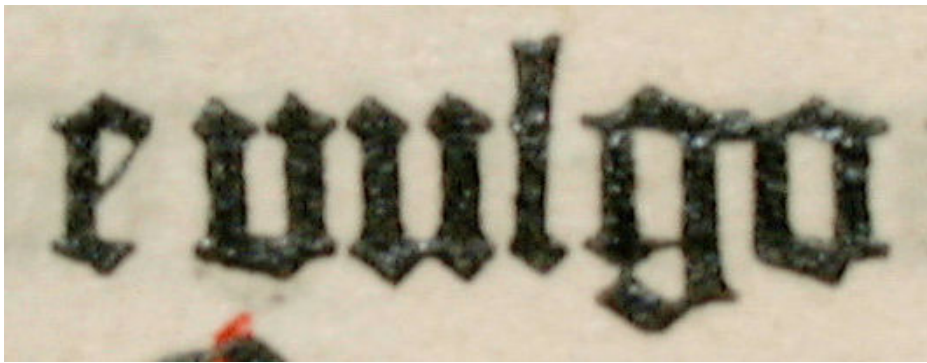
Figure IV.44. (54) I 144vb 2 (15/6v) (1 Kings 26:13)  
(1 Samuel 26:13 in NRSV).



a. P33 (Cambridge University Library)



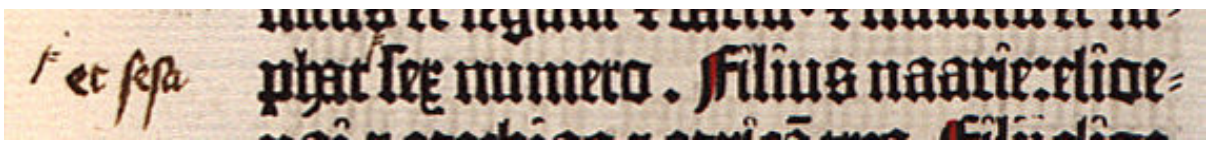
b. P39 (Keio University Library)



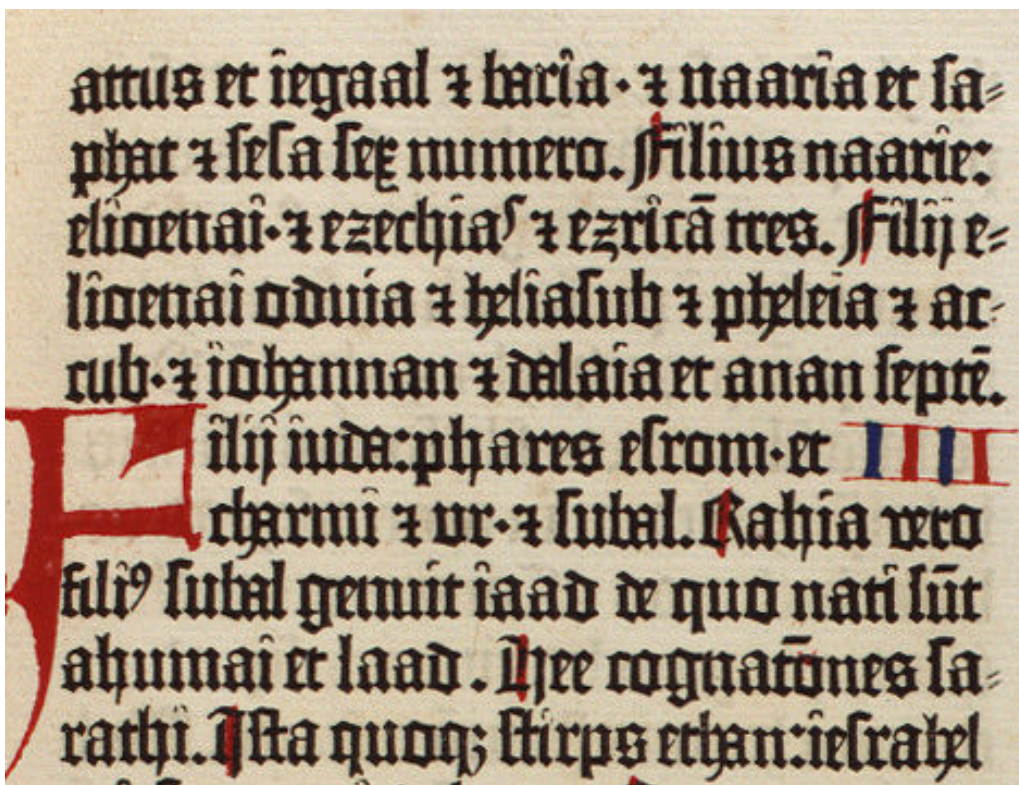
c. P39 (Keio University Library) close-up

Figure IV.45. (85) I 192va 27 (20/4v) (4 Kings 25:19)  
(2 Kings 25:19 in NRSV).



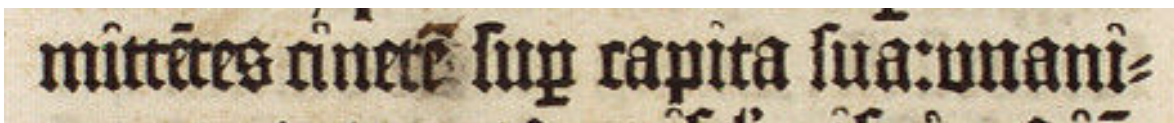


a. P33 (Cambridge University Library)

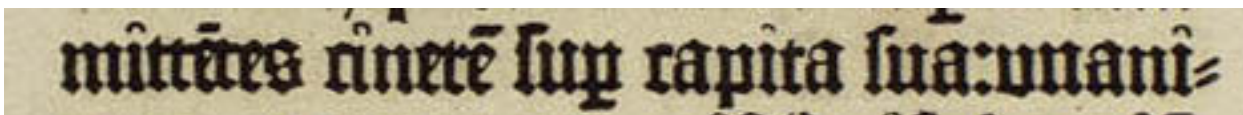


b. P39 (Keio University Library): a1-10

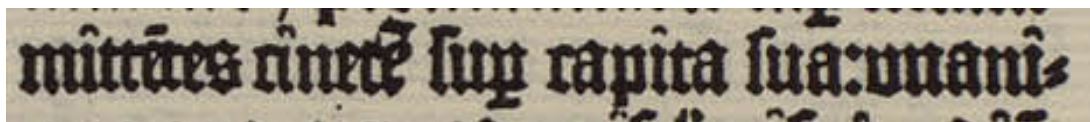
Figure IV.46. (86) I 195ra 2 (20/7r) (1 Chronicles 3:22).



a. P16 (Gutenberg Museum)

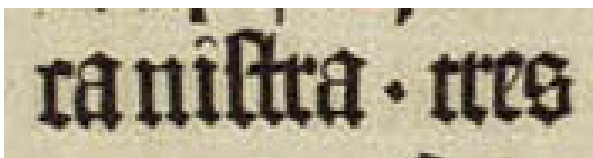


b. P39 (Keio University Library)

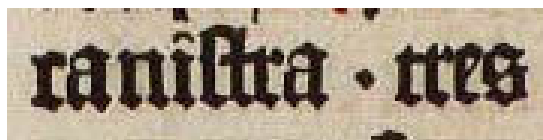


c. P20 (Facsimile of Mazarin Library copy)

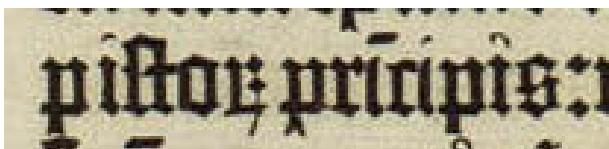
Figure IV.47. (128) I 268va 19 (27/8v) (Judith 7:4).



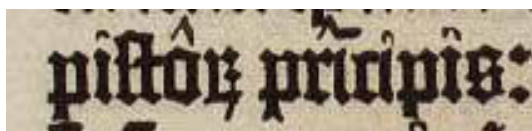
a. (6) I. 23va 19 (3/3v), P39  
(Keio University Library)



b. (6) I. 23va 19 (3/3v), P27  
(The British Library)



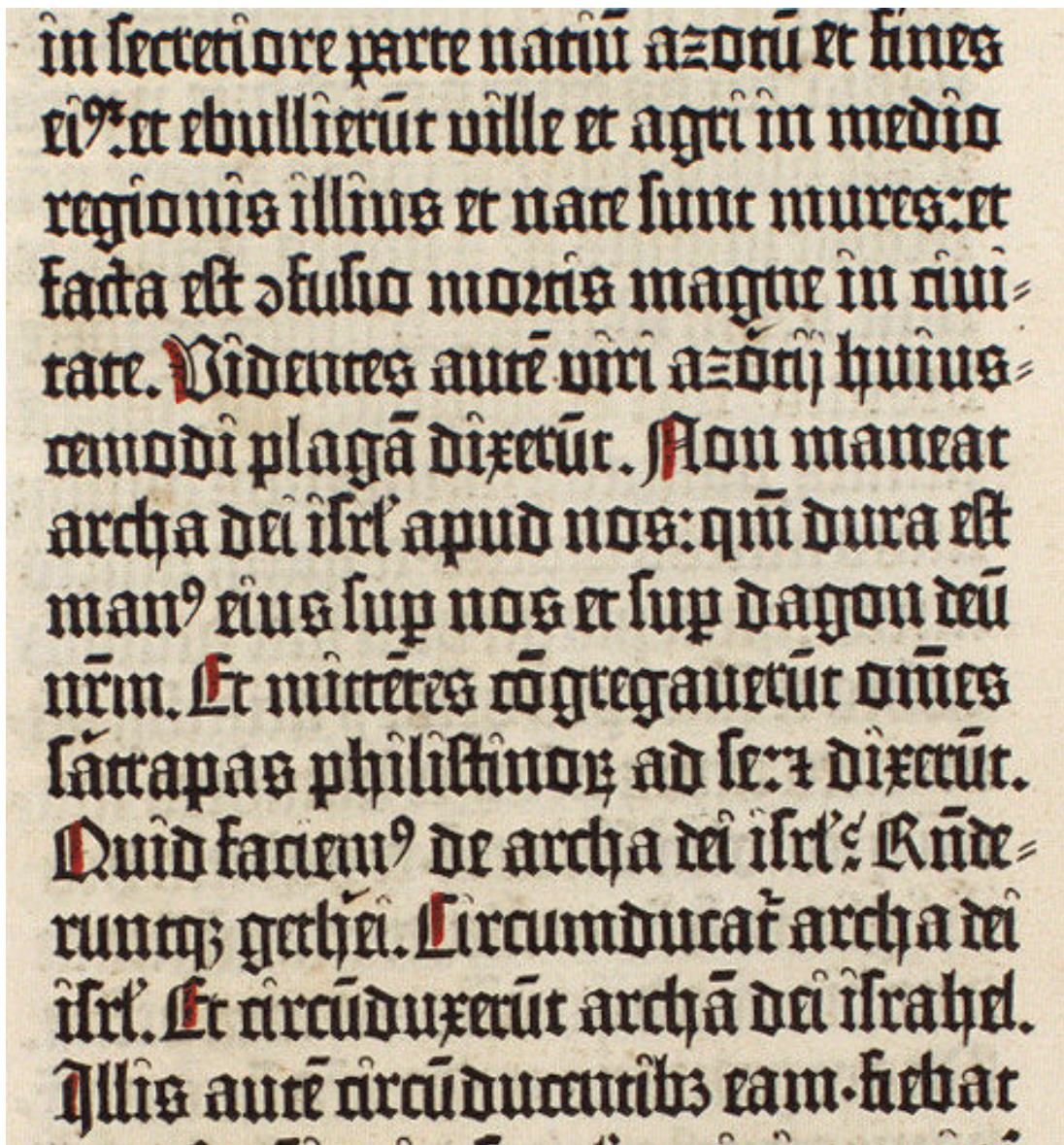
c. (7) 23va 26, P39  
(Keio University Library)



d. (7) 23va 26, P27  
(The British Library)

Figure IV.48. Unnecessary spacing on f. I. 23va 19, 26.





a. P16 (Gutenberg Museum):

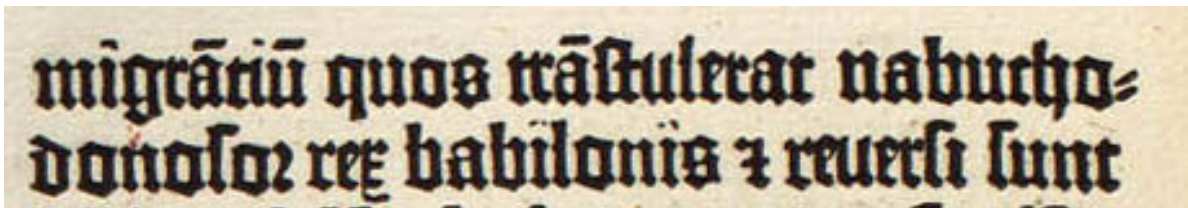
vertical alignment is not good, especially for “e”s, “i”s, and “r”s.



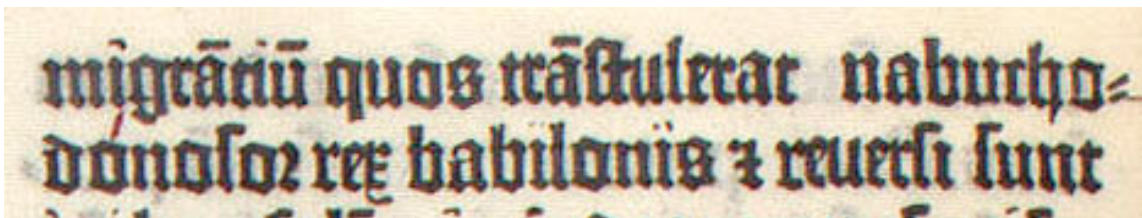
in secretiore parte natū azotū et fines  
 ei⁹: et ebullierūt uille et agri in medio  
 regionis illius et uate sunt mures: et  
 facta est defusio mortis magne in ciui-  
 tate. **V**identes autē uiri azotij huius-  
 modi plagā dixerūt. **N**on maneat  
 archa dei isrl' apud nos: quā dura est  
 man⁹ eius sup nos et sup dagon deū  
 nr̄m. **E**t mittētes cōgregauerūt omnes  
 sacrapas philistinorū ad se: et dixerūt.  
**Q**uid faciem⁹ de archa dei isrl'? **R**nde-  
 runtq; gethei. **C**ircumducat archa dei  
 isrl'. **E**t circūduxerūt archā dei israhel.  
**I**llis autē circūducentibz eam. fiebat

b. P39 (Keio University Library)

Figure IV.49. (46) I. 132rb 6-19 (14/4r) 1 Kings 4:15-6:1  
(1 Samuel 4:15-6:1 in NRSV).

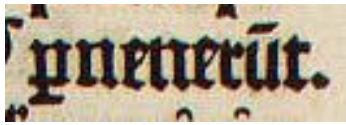


a. P39 (Keio University Library)

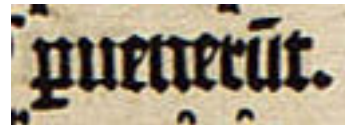


b. V10 (The British Library)

Figure IV.50. No. (110) I 234vb 1 (24/6v) (2 Esdras 7:6)  
(Nehemiah 7:6 in NRSV).

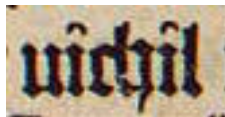


a. P27 (The British Library)



b. P33  
(Cambridge University Library)

Figure IV.51. (23) II 56va 7 (6/6v) (Isaiah 30:4)

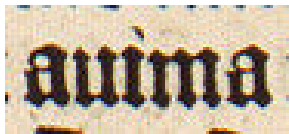


a. P27 (The British Library)

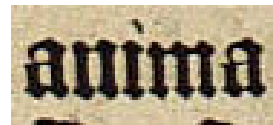


b. P46 (Gutenberg Museum)

Figure IV.52. (51) II 139ra 19 (14/9v) Daniel 10:16)



a. P46 (Gutenberg Museum)

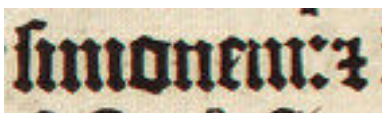


b. P33  
(Cambridge University Library)

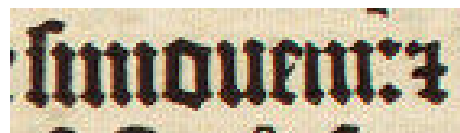


c. P16 (Gutenberg Museum):  
an irregular type

Figure IV.53. (55) II 148va 33 (15/8v) Amos 6:8)



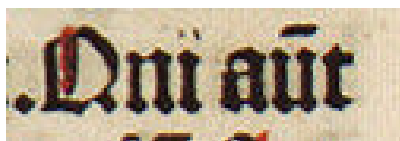
a. P16 (Gutenberg Museum)



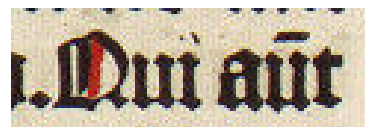
b. P46 (Gutenberg Museum)

Figure IV.54. (66) II 176vb 14 (18/5v) 1 Maccabees 14:46).



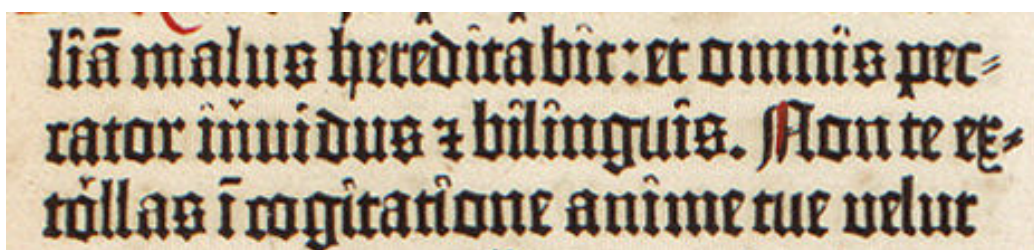


a. P16 (Gutenberg Museum)

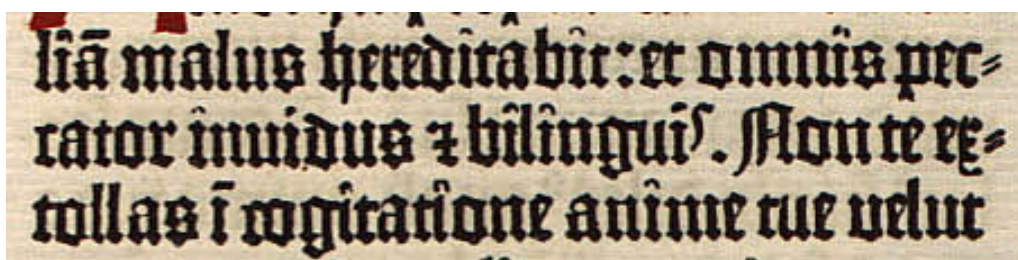


b. P46 (Gutenberg Museum)

Figure IV.55. (85) II 241va 28 (24/10v) John 10:2)



a. P16 (Gutenberg Museum)



b. P33 (Cambridge University Library)

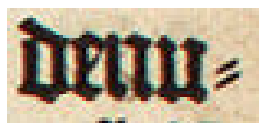
Figure IV.56. (7) II 27ra 6(3/7r) (Ecclesiasticus 6:1)  
(Sirach 6:1 in NRSV)

a. P16 (Gutenberg Museum)

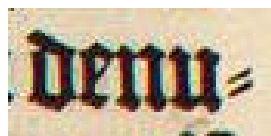


b. P27 (The British Library)

Figure IV.57. (16) II 35va 10 (4/5v)(Ecclesiasticus 27:1)  
(Sirach 27:1 in NRSV).



a. P16 (Gutenberg Museum)

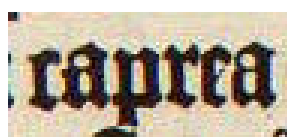


b. P27 (The British Library)

Figure IV.58. (17) II 35vb 5 (4/5v) (Ecclesiasticus 27:19)  
(Sirach 27:19 in NRSV).

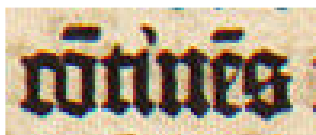


a. P16 (Gutenberg Museum)



b. P27 (The British Library)

Figure IV.59. (18) II 35vb 13 (4/5v) (Ecclesiasticus 27:22)  
(Sirach 27:22 in NRSV).

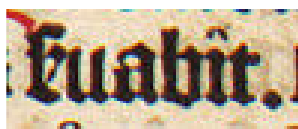


a. P16 (Gutenberg Museum)

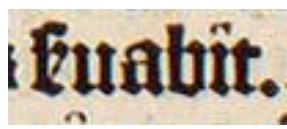


b. P27 (The British Library)

Figure IV.60. (20) II 35vb 38 (4/5v) (Ecclesiasticus 27:33)  
(Sirach 27:33 in NRSV).



a. P16 (Gutenberg Museum)



b. P27 (The British Library)

Figure IV.61. (21) II 35vb 41 (4/5v)(Ecclesiasticus 28:1)  
(Sirach 28:1 in NRSV).



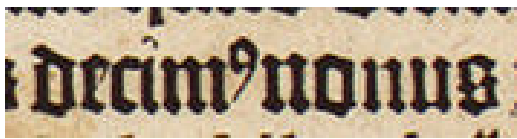


a. P27 (The British Library)

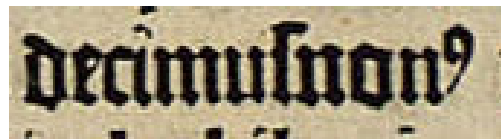


b. P33  
(Cambridge University Library)

Figure IV.62. (25) II 65ra 1 (7/5r) (Isaiah 50:10)



a. P16 (Gutenberg Museum)



b. P33  
(Cambridge University Library)

Figure IV.63. (36) II 98va 25 (10/8v)(Jeremiah 52:12).

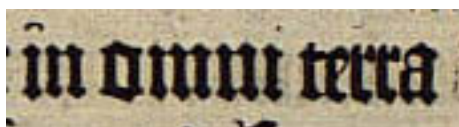


a. P33 (Cambridge University Library): b8-9

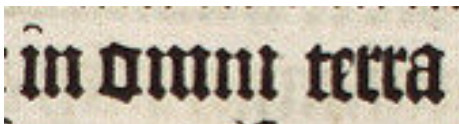


b. P16 (Gutenberg Museum): b8-9

Figure IV.64. (37) II 99vb 8 (10/9v)(Lamentations 2:2).

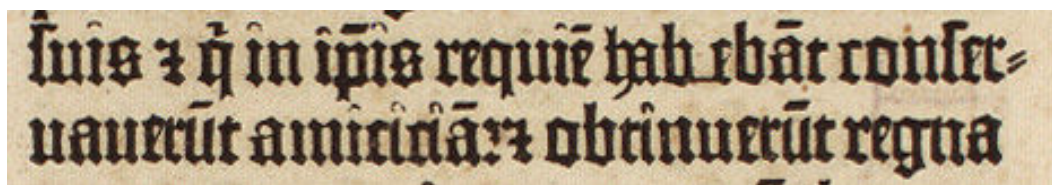


a. P33 (Cambridge University Library)

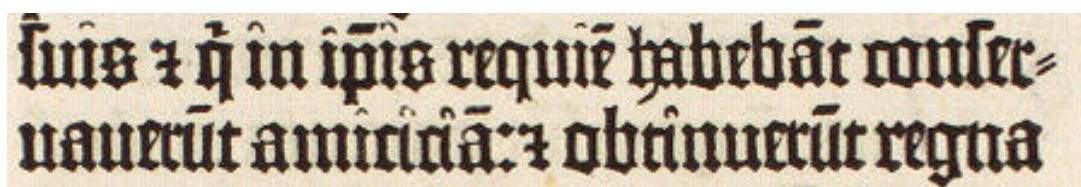


b. P46 (Gutenberg Museum)

Figure IV.65. (57) II 160rb 16 (16/10r) (Zacharias 13:8).



a. P16 (Gutenberg Museum): a14-15

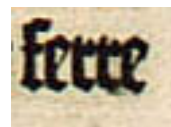


b. P46 (Gutenberg Museum): a14-15

Figure IV.66. (58) II 169va 14 (17/8v) (1 Maccabees 8:12).



a. P27 (The British Library)  
standard "r" – shorter "r"



b. P33 (Cambridge University Library)  
shorter "r" – shorter "r"

Figure IV.67. (68) II 185va 42 (19/4v) (2 Maccabees 11:7).



a. P33 (Cambridge University Library)

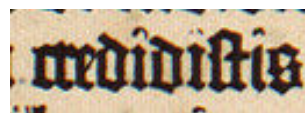


b. P16 (Gutenberg Museum)

Figure IV.68. (70) II 189ra 19 (19/8v) (2 Maccabees 15:24).

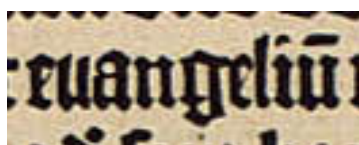


a. P46 (Gutenberg Museum)

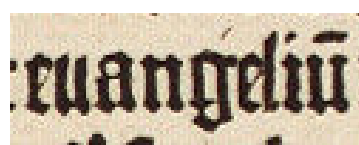


b. P16 (Gutenberg Museum)

Figure IV.69. (75) II 214ra 33 (22/3r) (Mark 11:31).



a. P33 (Cambridge University Library)



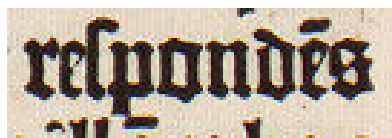
b. P46 (Gutenberg Museum)

Figure IV.70. (77) II 215va 17 (22/4v) (Mark 14:9).

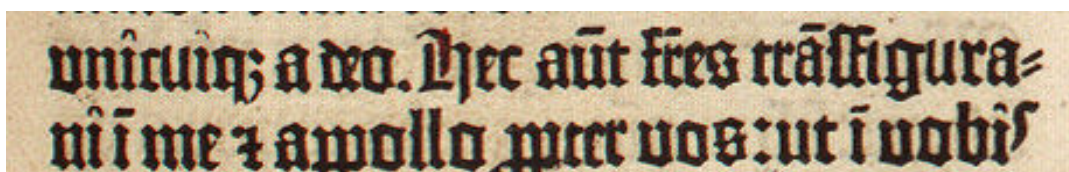
Figure IV.71. (82) II 227va 30 (23/6v) (Luke 13:8).



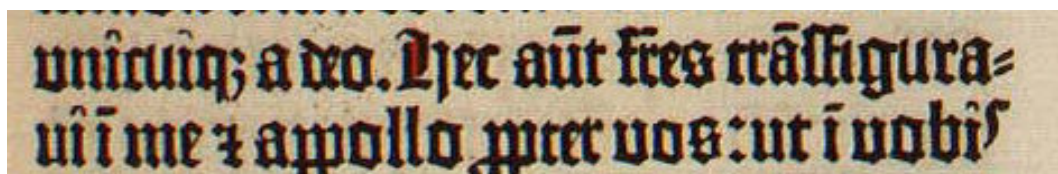
a. P27 (The British Library)



b. P46 (Gutenberg Museum)



a. P16 (Gutenberg Museum):  
a type of an irregular shape



b. P27 (The British Library)

Figure IV.72. (91) II 257ra 36 (26/6r) (1 Corinthians 4:6).



unīcuiq; a deo. Hec autē frēs trāsfīgura=  
 uī ī me ⁊ apollo p̄ter vos: ut ī vobis  
 discatis ne supra quā scriptū est un⁹  
 adūsus alter; infletur p̄ alio. Quis e=  
 nim te discernit? Quid autē habes qđ  
 nō accepisti? Si autē accepisti: qđ glo=  
 riaris q̄si nō acceperis? Jam saturati  
 estis: iā diuītes facti estis. Sine nobis

a. P16 (Gutenberg Museum): a35-a42

unīcuiq; a deo. Hec autē frēs trāsfīgura=  
 uī ī me ⁊ apollo p̄ter vos: ut ī vobis  
 discatis ne supra quā scriptū est un⁹  
 adūsus alter; infletur p̄ alio. Quis e=  
 nim te discernit? Quid autē habes qđ  
 nō accepisti? Si autē accepisti: qđ glo=  
 riaris q̄si nō acceperis? Jam saturati  
 estis: iā diuītes facti estis. Sine nobis

b. P27 (The British Library) : a35-a42

Figure IV.73. (92) II 257ra 39 (26/6r) (2 Corinthians 4:7).

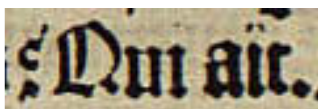


a. P16 (Gutenberg Museum)

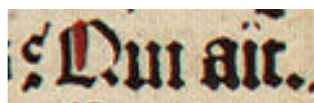


b. P33  
(Cambridge University Library)

Figure IV.74. (95) II 266vb 5 (27/5v) (Galatians 2:7).

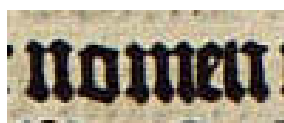


a. P33  
(Cambridge University Library)



b. P16 (Gutenberg Museum)

Figure IV.75. (101) II 289vb 23 (29/5v) (Acts 8:31).

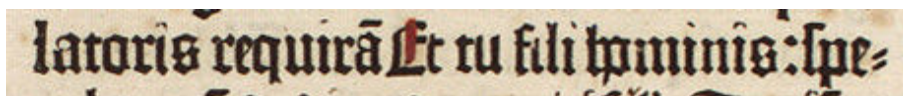


a. P33  
(Cambridge University Library)



b. P16 (Gutenberg Museum)

Figure IV.76. (102) II 290rb 8 (29/6r)(Acts 9:15).

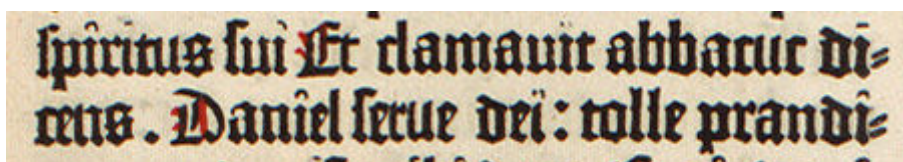


a. P16 (Gutenberg Museum)

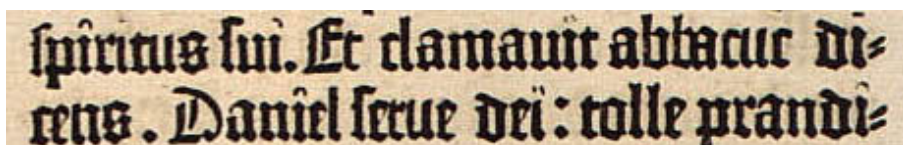


b. V10 (The British Library)

Figure IV.77. (45) II 121va 14 (13/1v) (Ezekiel 33:7).



a. P46 (Gutenberg Museum)



b. P33 (Cambridge University Library)

Figure IV.78. (52) II 142ra 3 (15/2r) (Daniel 14:36).

a. P16 (Gutenberg Museum)

b. P46 (Gutenberg Museum)

Figure IV.79. (89) II 256rb 18 (26/5r) (1 Corinthians 1:12).

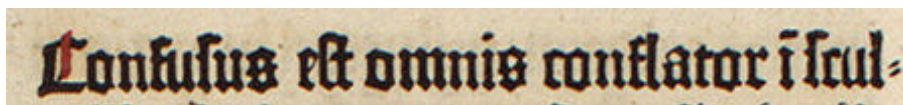
a. P16 (Gutenberg Museum)

b.

b. P33 (Cambridge University Library)

Figure IV.80. (96) II 266vb 21 (27/5v) (Galatians 2:13).

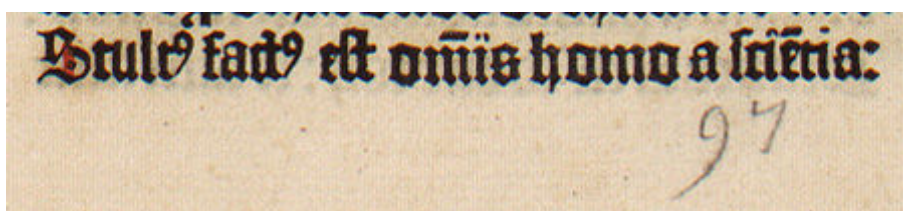




a. P16 (Gutenberg Museum)

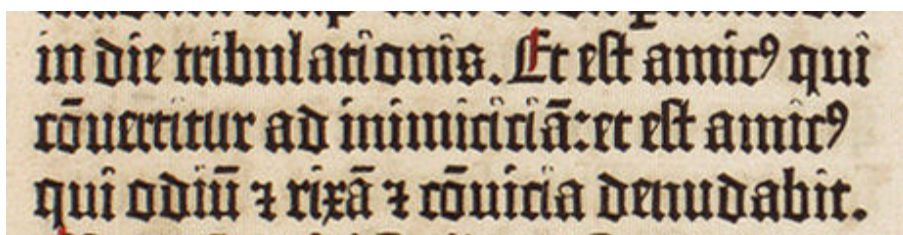


b. P46 (Gutenberg Museum)

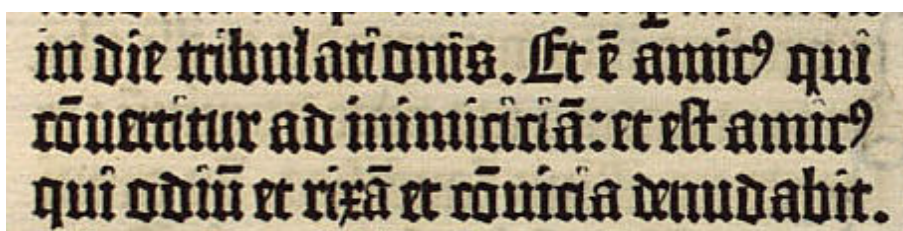


c. P16 (Gutenberg Museum): f. II 97rb 42 (ends with “:”)

Figure IV.81. (35) II 97va 1 (10/7v) (Jeremiah 51:17).

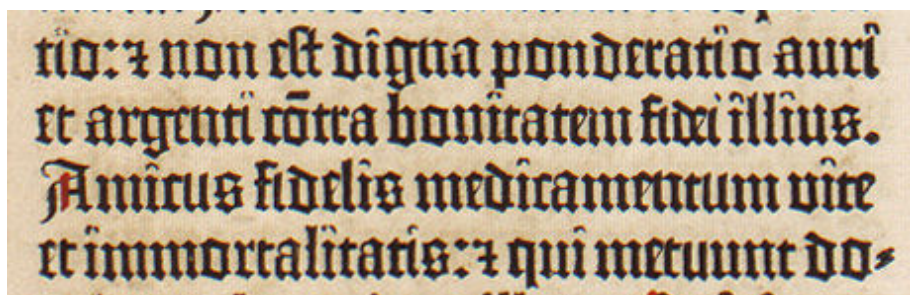


a. P16 (Gutenberg Museum): a22-24

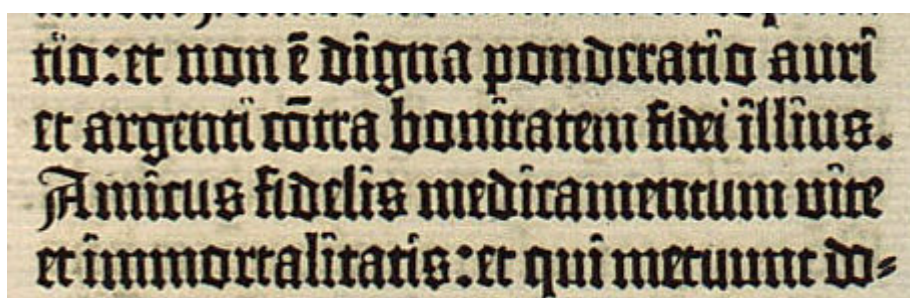


b. P33 (Cambridge University Library): a22-24

Figure IV.82. (9) II 27ra 22(3/7r) (Ecclesiasticus 6:9) (Sirach 6:9)  
 (10) II 27ra 24(3/7r) (Ecclesiasticus 6:9) (Sirach 6:9)



a. P16 (Gutenberg Museum): a36-a39

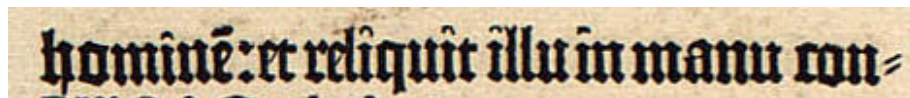


b. P33 (Cambridge University Library): a36-a39

Figure IV.83. (11) II 27ra 36 (3/7r) (Ecclesiasticus 6:15) (Sirach 6:15)  
 (12) II 27ra 39 (3/7r) (Ecclesiasticus 6:16) (Sirach 6:15)



a. P46 (Gutenberg Museum)

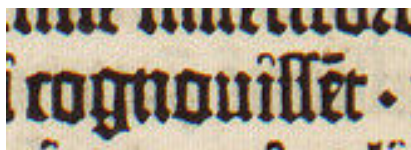


b. P33 (Cambridge University Library)

Figure IV.84. (15) II 30vb 1 (3/10v) (Ecclesiasticus 15:14)  
 (Sirach 15:14).

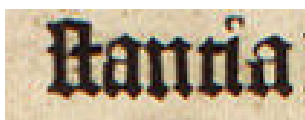


a. P16 (Gutenberg Museum):  
with hand correction



b. P46 (Gutenberg Museum)

Figure IV.85. (86) II 250ra 37 (25/9r) (Romans 1:32).



a. P16 (Gutenberg Museum)



b. P27 (The British Library)

Figure IV.86. (1) II 4rb 5 (1/4r) (Proverbs 10:15).



a. P16 (Gutenberg Museum)



b. P27 (The British Library)

Figure IV.87. (19) II 35vb 32 (4/5v) (Ecclesiasticus 27:30)  
(Sirach 27:30)



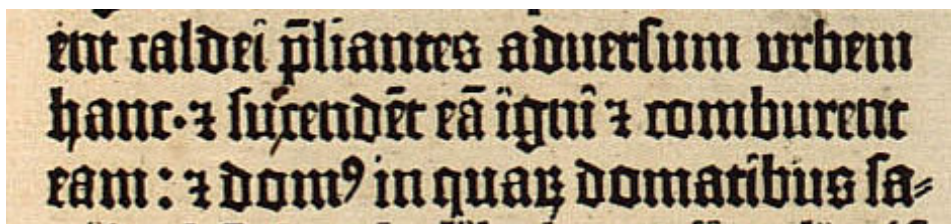
a. P27 (The British Library)



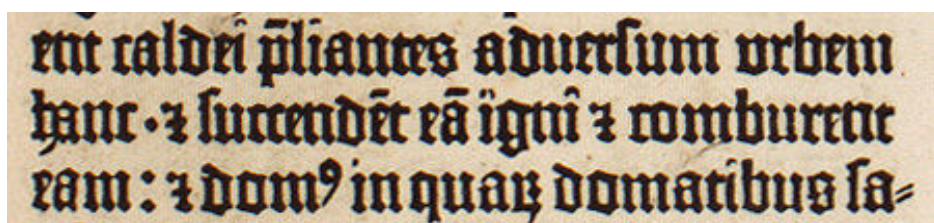
b. P33  
(Cambridge University Library)

Figure IV.88. (22) II 53vb27 (6/3v) (Isaiah 23:2).



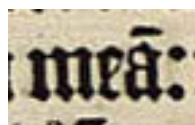


a. P33 (Cambridge University Library):  
with hand correction

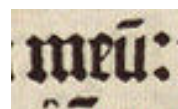


b. P16 (Gutenberg Museum)

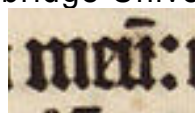
Figure IV.89. (33) II 87ra 31 (9/7r) (Jeremiah 32:29).



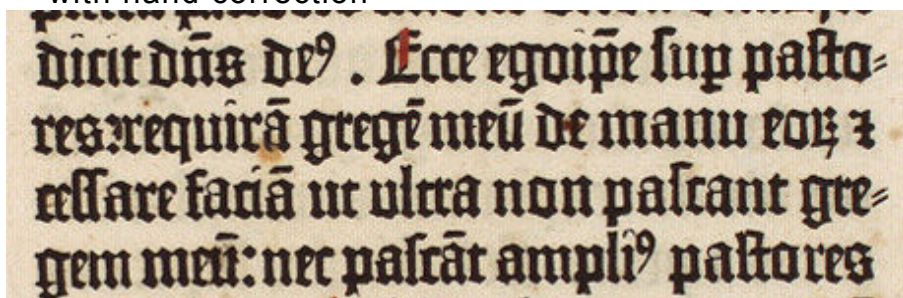
a. P33 (Cambridge University Library)



c. P46 (Gutenberg Museum)

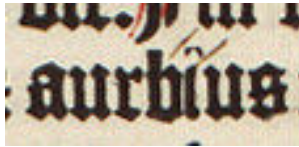


b. P16 (Gutenberg Museum):  
with hand correction



d. P16 (Gutenberg Museum): b17-20

Figure IV.90. (46) II 122rb 20 (13/2r) (Ezekiel 34:10).



a. P46 (Gutenberg Museum):  
with hand correction



c. P33  
d. (Cambridge University Library)

Figure IV.91. (47) II 125va 10 (13/5v) (Ezekiel 40:4).

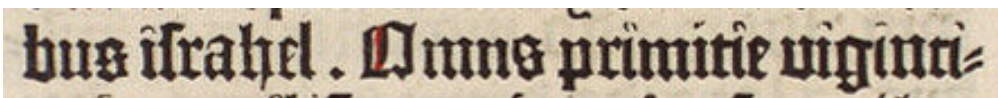


a. P46 (Gutenberg Museum)

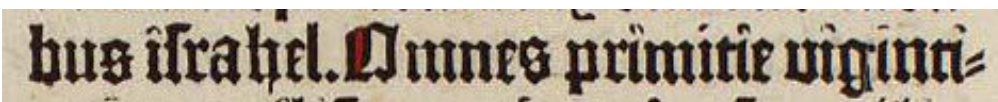


b. P33  
(Cambridge University Library)

Figure IV.92. (48) II 127vb 15 (13/7v) (Ezekiel 43:18).



a. P46 (Gutenberg Museum)



b. P27 (The British Library)

Figure IV.93. (50) II 130va 19 (13/10v) (Ezekiel 48:20).



a. P46 (Gutenberg Museum)



b. P33  
(Cambridge University Library)

Figure IV.94. (53) II 142rb 24 (15/2r) (Prologue to Hosea 1:7).



a. P27 (The British Library)

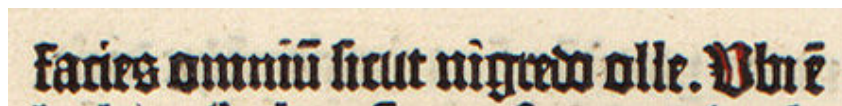


b. P33  
(Cambridge University Library)

Figure IV.95. (54) II 147vb 30 (15/7v) (Amos 4:5).



a. P33 (Cambridge University Library)



b. P46 (Gutenberg Museum)

Figure IV.96. (56) II 153va 1 (16/3v) (Nahum 2:10).



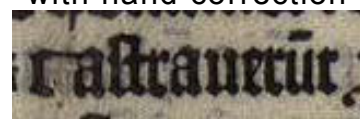
a. P33 (Cambridge University Library)



b. P16 (Gutenberg Museum):  
with hand correction

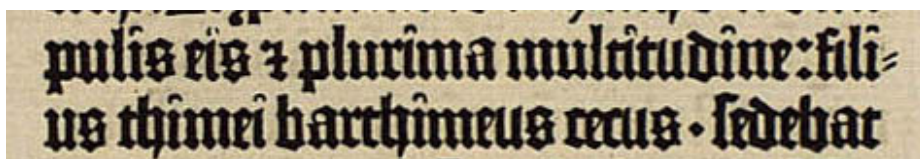


c. P46 (Gutenberg Museum):  
with hand correction

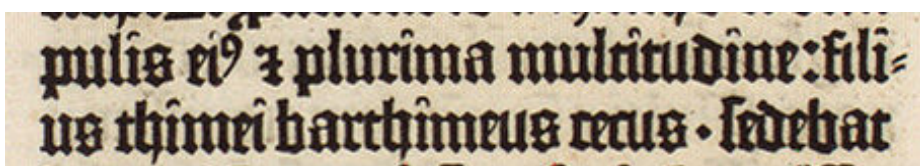


d. V10 (The British Library):  
with hand correction

Figure IV.97. (71) II 200va 32 (20/9v) (Matthew 19:12).



a. P33 (Cambridge University Library)



b. P16 (Gutenberg Museum)

Figure IV.98. (72) II 213va 22 (22/2v) (Mark 10:46).





a. P46 (Gutenberg Museum)



b. P16 (Gutenberg Museum)

Figure IV.99. (74) II 214ra 19 (22/3r) (Mark 11:26).



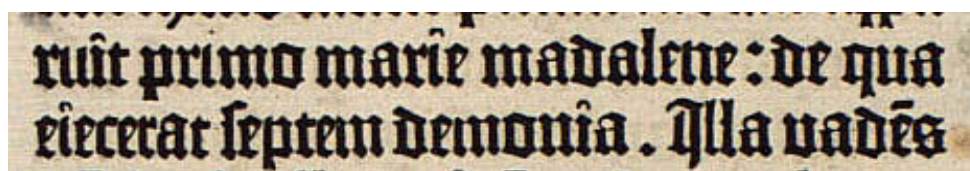
a. P33

(Cambridge University Library)

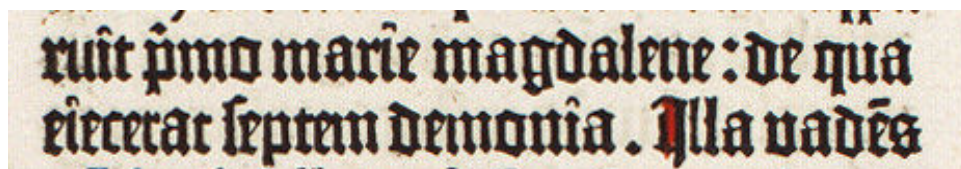


b. P46 (Gutenberg Museum)

Figure IV.100. (76) II 215va 6 (22/4v) (Mark 14:4).



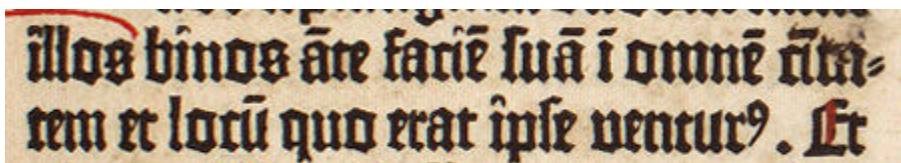
a. P33 (Cambridge University Library): b10-11



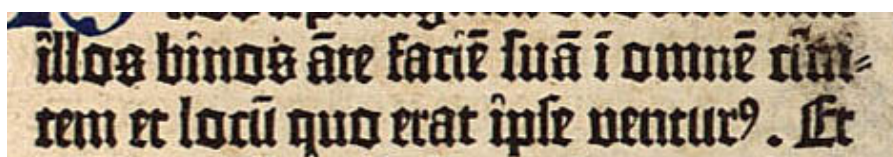
b. P46 (Gutenberg Museum): b10-11

Figure IV.101. (79) II 217rb 10 (22/6r) (Mark 16:9).

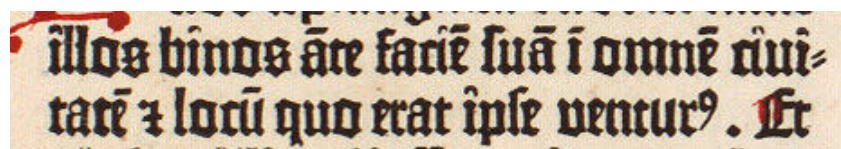




a. P16 (Gutenberg Museum): a22-23  
with hand correction



b. P33 (Cambridge University Library): a22-23  
with hand correction

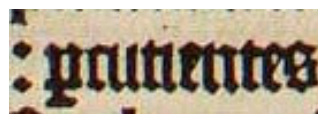


c. P46 (Gutenberg Museum): a22-23  
correctly printed

Figure IV.102. (80) II 225ra 22 (23/4r) (Luke 10:1).

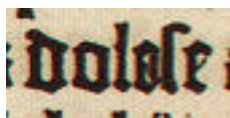


a. P46 (Gutenberg Museum)



b. P27 (The British Library)

Figure IV.103. (84) II 234ra 41 (24/3r) (Luke 23:48).

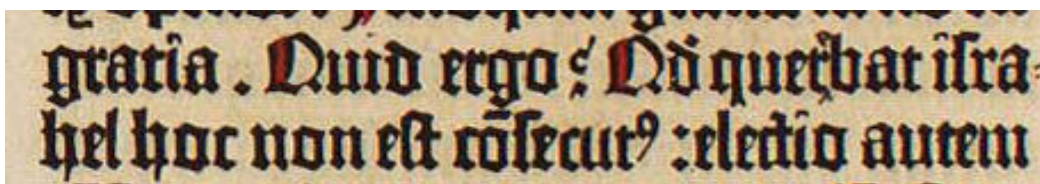


a. P16 (Gutenberg Museum):  
with hand correction

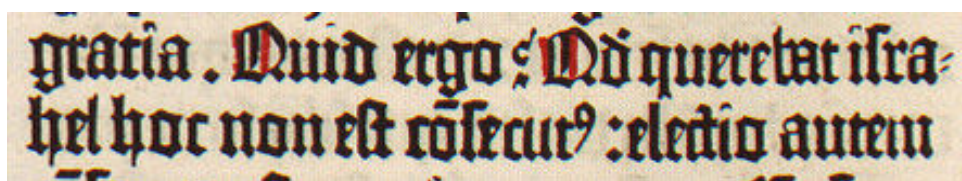


b. V10 (The British Library)

Figure IV.104. (87) II 250vb 14 (25/9v) (Romans 3:13).

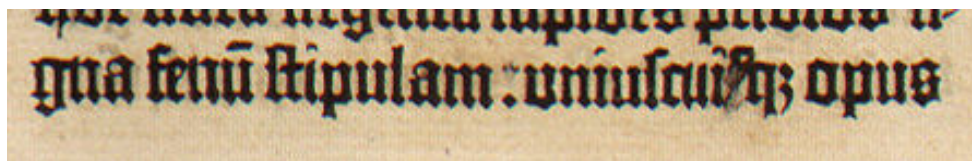


a. P27 (The British Library):  
with hand correction

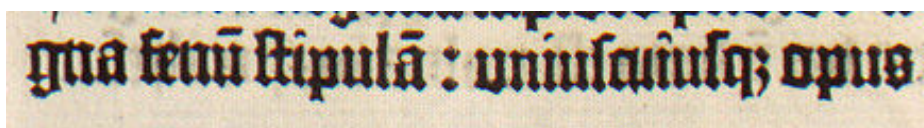


b. P46 (Gutenberg Museum)

Figure IV.105. (88) II 253vb 35 (26/2v) (Romans 11:7).

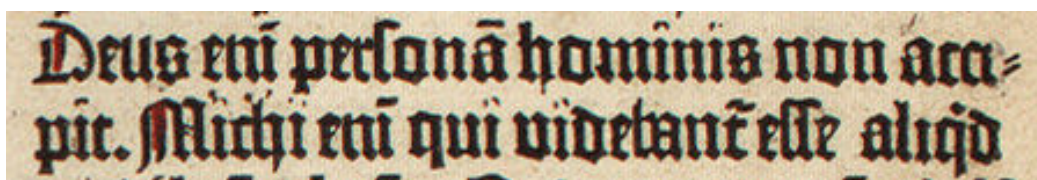


a. P16 (Gutenberg Museum):  
with hand correction

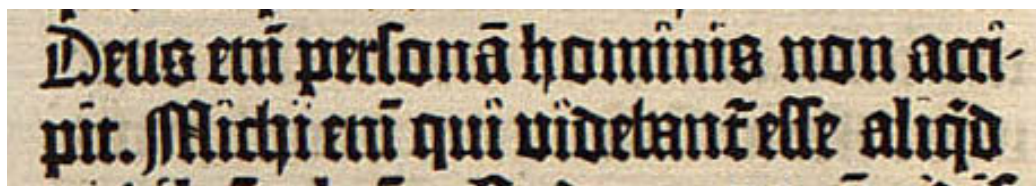


b. P46 (Gutenberg Museum)

Figure IV.106. (90) II 256vb 42 (26/5v) (1 Corinthians 3:12-13).



a. P16 (Gutenberg Museum)



b. P33 (Cambridge University Library)

Figure IV.107. (94) II 266vb 2 (27/5v) (Galatians 2:6).

prophete a samuhel ⁊ deinceps qui locu-  
ti sunt ānunciauerūt dies istos. Vos

a. P33 (Cambridge University Library):  
with hand correction

prophete a samuhel ⁊ deinceps q̄ locu-  
ti sunt ānunciauerūt dies istos. Vos

b. P16 (Gutenberg Museum)

Figure IV.108. (99) II 286vb 18 (29/2v) (Acts 3:24).

eres: tradēs ī custodiā. Agit̄ qui disper-  
si erant p̄transibāt euāgelizātes ūbū

a. P46 (Gutenberg Museum)

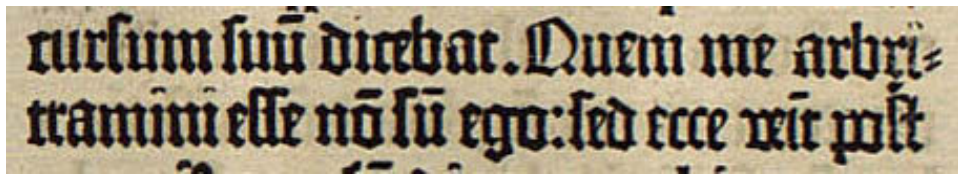
b.

eres: tradebat ī custodiā. Agit̄ q̄ disper-  
si erant p̄transibāt euāgelizātes ūbū

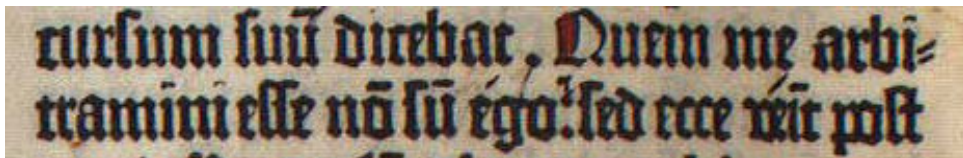
b. P16 (Gutenberg Museum)

Figure IV.109. (100) II 289rb 40 (29/5r) (Acts 8:3-4).



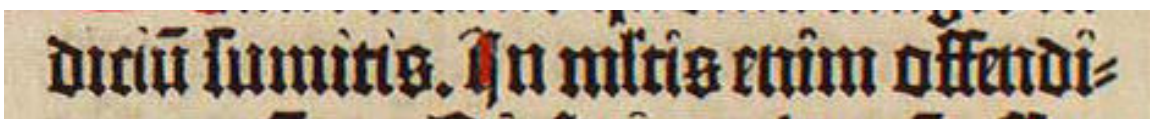


a. P33 (Cambridge University Library)

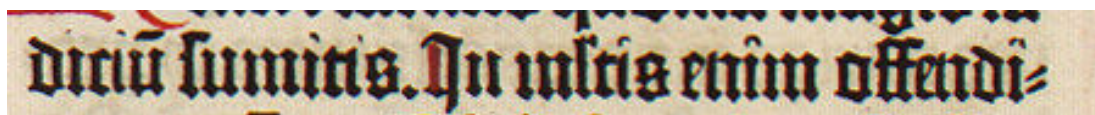


b. V10 (The British Library)

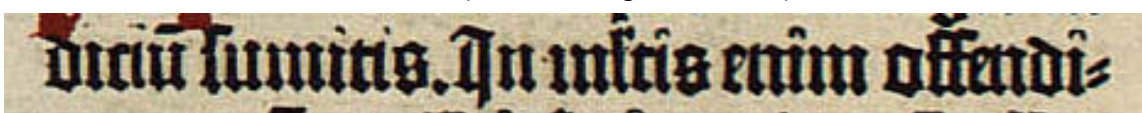
Figure IV.110. (105) II 292vb 14 (29/8v) (Acts 13:25).



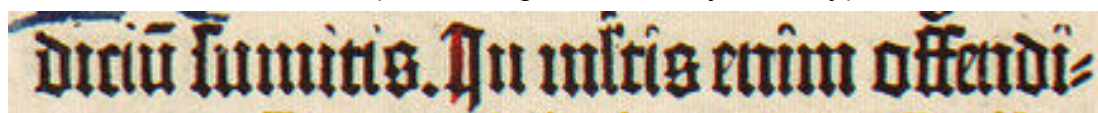
a. P27 (The British Library)



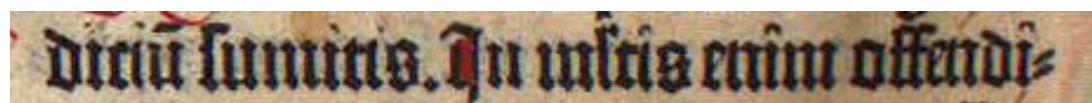
b. P16 (Gutenberg Museum)



c. P33 (Cambridge University Library)

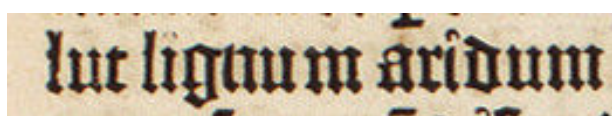


d. P46 (Gutenberg Museum)

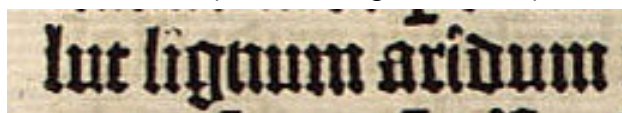


e. V10 (The British Library)

Figure IV.111. (108) II 302vb 32 (30/8v) (James 3:2).



a. P16 (Gutenberg Museum)

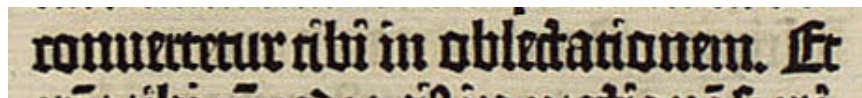


b. P33 (Cambridge University Library)

Figure IV.112. (8) II 27ra 11 (3/7r) (Ecclesiasticus 6:3) (Sirach 6:3).



a. P16 (Gutenberg Museum)



b. P33 (Cambridge University Library)

Figure IV.113. (13) II 27rb 26 (3/7r) (Ecclesiasticus 6:29) (Sirach 6:29).

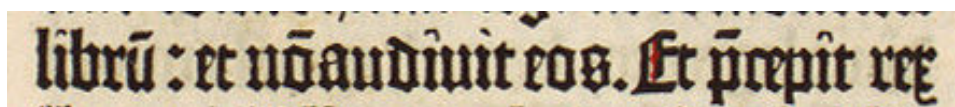


a. P27 (The British Library)

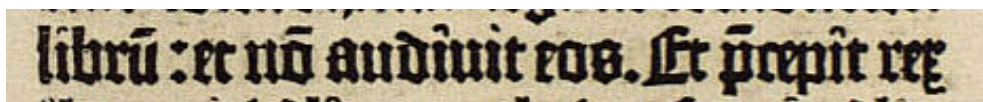


b. V10 (The British Library)

Figure IV.114. (27) II 68rb 30 (7/8r) (Isaiah 60:19).



a. P46 (Gutenberg Museum)



b. P33 (Cambridge University Library)

Figure IV.115. (34) II 89va 25 (9/9v) (Jeremiah 36:25).



a. P16 (Gutenberg Museum)

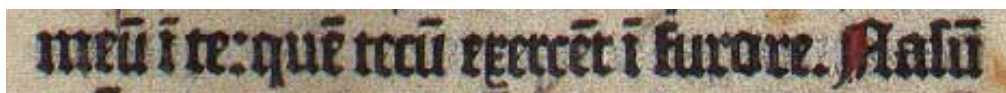


b. P33 (Cambridge University Library)

Figure IV.116. (39) II 102rb 25 (11/2r) (Baruch 2:15).



a. P16 (Gutenberg Museum)



b. V10 (The British Library)

Figure IV.117. (44) II 116rb 39 (12/6 r ) (Ezekiel 23:25).





rat maria magdalete. et maria iaco-  
bi minoris. ⁊ ioseph mater. ⁊ salome:

This image shows a snippet of a medieval manuscript in Gothic script. The text is arranged in two lines. The first line reads 'rat maria magdalete. et maria iaco-' and the second line reads 'bi minoris. ⁊ ioseph mater. ⁊ salome:'. The script is dense and black on a light-colored parchment background.

a. P33 (Cambridge University Library)



rat maria magdalete. et maria iaco-  
bi minoris. ⁊ ioseph mater. ⁊ salome:

This image shows a second snippet of the same text from a different manuscript. The text is arranged in two lines: 'rat maria magdalete. et maria iaco-' on the first line and 'bi minoris. ⁊ ioseph mater. ⁊ salome:' on the second line. The script is consistent with the first snippet.

b. P46 (Gutenberg Museum)

Figure IV.118. (78) II 217ra 9 (22/6r) (Mark 15:40).



ne forte temptauerit uos is q̄ tēptat: et

This image shows a snippet of a medieval manuscript in Gothic script. The text is on a single line: 'ne forte temptauerit uos is q̄ tēptat: et'. The script is dense and black on a light-colored parchment background.

a. P16 (Gutenberg Museum)



ne forte temptauerit uos is q̄ tēptat: et

This image shows a second snippet of the same text from a different manuscript. The text is on a single line: 'ne forte temptauerit uos is q̄ tēptat: et'. The script is consistent with the first snippet.

b. V10 (The British Library)

Figure IV.119. (98) II 274va 31 (28/1v) (1 Thessalonians 3:5).

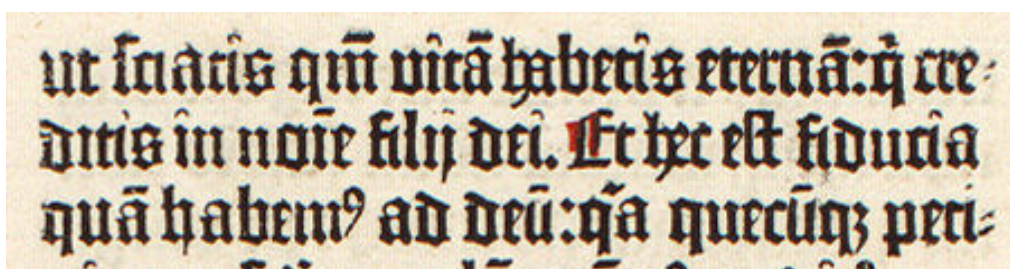
iniquitates eorū. Ego autem dedi tibi  
 annos iniquitatis eorū numero dierū  
 trecentos ⁊ nonaginta dies: et porta-  
 bis iniquitatē dom⁹ israhel. Et cum

a. P27 (The British Library): b1-b4

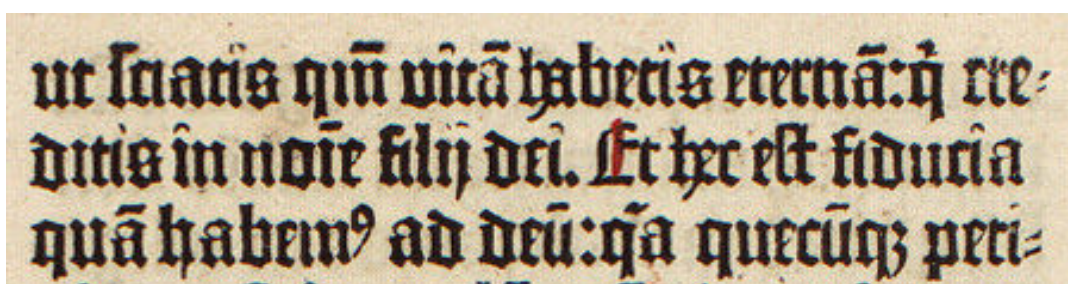
iniquitates eorū. Ego autem dedi tibi  
 annos iniquitatis eorū numero dierū  
 trecentos ⁊ nonaginta dies: et porta-

b. V10 (The British Library): b1-b3

Figure IV.120. 106vb 1 (11/6v) (Ezekiel 4:4).

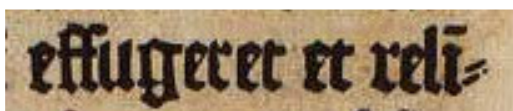


a. P46 (Gutenberg Museum)

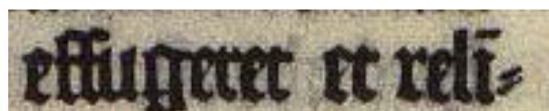


b. P16 (Gutenberg Museum)

Figure IV.121. (109) II 308rb 1 (31/3+1r) (1 John 5:18)



a. P27 (The British Library)



b. V10 (The British Library)

Figure IV.122. (38) 100rb 14 (10/10r) (Lamentations 2:22).

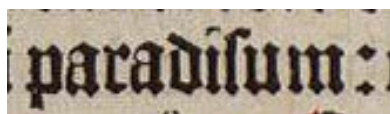


a. P27 (The British Library)



b. V10 (The British Library)

Figure IV.123. (3) I 3rb 2 (1/3r) (Jerome's Epistle to Paulinus 7).

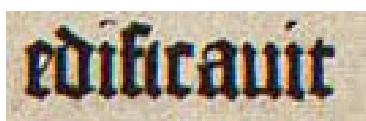


a. P27 (The British Library)



b. V10 (The British Library)

Figure IV.124. (4) I 5va 28 (1/5v) (Genesis 2:10)



a. P27 (The British Library)



b. V10 (The British Library)

Figure IV.125. (5) I 5vb 15 (1/5v) (Genesis 2:22).



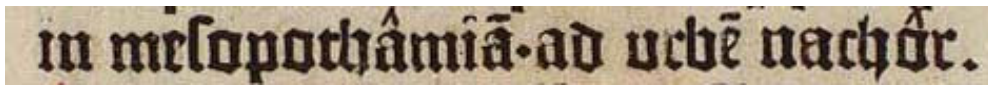
a. P27 (The British Library)



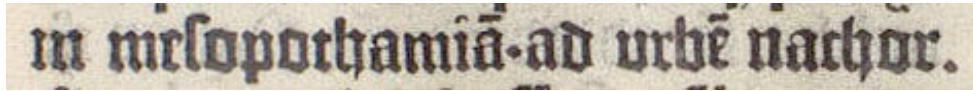
b. V10 (The British Library)

Figure IV.126. (6) I 5vb 23 (1/5v) (Genesis 2:25).





a. P27 (The British Library)



b. V10 (The British Library)

Figure IV.127. (7) I 14rb 22 (2/4r) (Genesis 24:10).

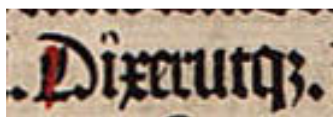


a. P33  
(Cambridge University Library)



b. V10 (The British Library)

Figure IV.128. (10) I 132rb 42 (14/4r) (1 Kings 5:4)  
(1 Samuel 5:4 in NRSV).

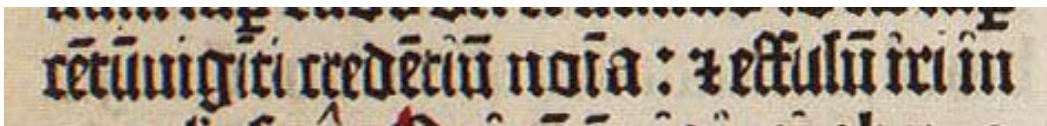


a. P33  
(Cambridge University Library)

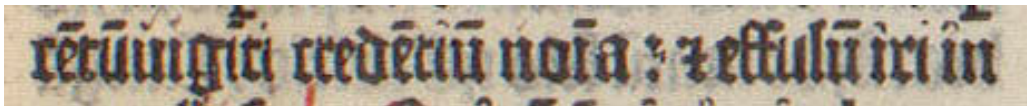


b. V10 (The British Library)

Figure IV.129. (12) I 138ra 10 (14/10r) (1 Kings 16:4)  
(1 Samuel 16:4 in NRSV).

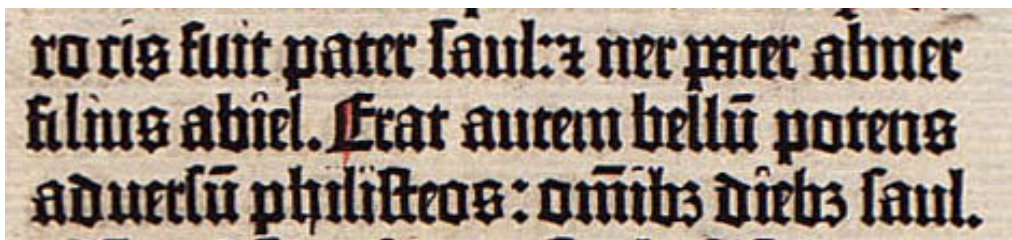


a. P27 (The British Library)

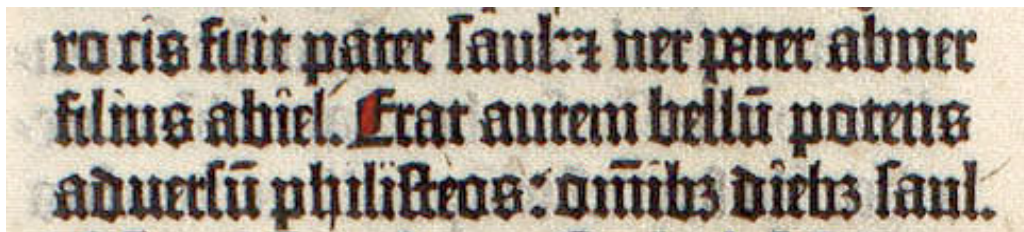


b. V10 (The British Library)

Figure IV.130. (2) I 3ra 25 (1/3r) (Jerome's Epistle to Paulinus 7).



a. P33 (Cambridge University Library)



b. V10 (The British Library)

Figure IV.131. (11) I 137rb 3 (14/9r) (1 Kings 14:51)  
(1 Samuel 5:4 in NRSV)

Table IV.7 Stop-press Variants in the Second Setting

No.	Category	Folio (quire)	1st state	1st state copies	2nd state	2nd state copies
1	A	2va 28 (1/2v)	[et] virgo (narrower spacing)	P27	[et] virgo (wider spacing)	V6, V10
2	A	3ra 25 (1/3r)	ce[n]tu[m]uigiti crede[n]tiu[m] (narrower spacing; letters are overlapped)	P27	ce[n]tu[m]uigiti crede[n]tiu[m] (wider spacing; letters are overlapped)	V6, V10
3	C	3rb 2 (1/3r)	the first "e" in "interpret[ur]" is of the primary form	P27	"e" is of the abutting form	V6, V10
4	C	5va 28 (1/5v)	the first "a" in "paradisum" is of the abutting form	P27	the first "a" in "paradisum" is of the primary form	V6, V10
5	C	5vb 15 (1/5v)	"a" in "edificauit" is of the primary form	P27	"a" in "edificauit" is of the abutting form	V6, V10
6	C	5vb 23 (1/5v)	"q[ue]" in "vterq[ue]" is of the primary form	P27	"q[ue]" in "vterq[ue]" is of the abutting form	V6, V10
7	C	14rb 22 (2/4r)	"a" in "nachor" is of the abutting form, and the period is within the column	P27	"a" in "nachor" is of the primary form, and the period protrudes outside the column	V6, V10
8	A	21rb 28 (3/1r)	au tem (unnecessary spacing)	P33	autem	V10
9	A	30ra 1 (3/10r)	shifted to left	P33	shifted to right and better justified	V10
10	C?	132ra 42 (14/4r)	the first "r" in "rema[n]serat" looks damaged	P33	the first "r" in "rema[n]serat" looks normal	V6, V10
11	A	137rb 3 (14/9r)	the first word protrudes	P33	smooth line beginning (space between "Erat" and "autem" is narrower)	V6, V10
12	F?	138ra 10 (14/10r)	Dixerutq[ue]	P33	Dixeru[n]tq[ue] (suspension mark might have been added by hand)	V10

## V. Analysis

### A. Two States of Variant

As a result of the present collation, 117 variants were detected on 88 pages of the first setting out of the total of 1,282 printed pages, which had previously been assumed to be identical. There are 54 simple typographical improvements and 63 corrections/changes which could affect the meaning. The number increases if category A variants are counted: 277 variants on 216 pages (for the full list, see appendices 2 and 3). There are 78 pages with only category B to I variants, 10 pages with variants of all categories, and 128 pages with only category A variants. Therefore, the stop-press corrections were made for a purpose, rather than simply to adjust the spaces.

These stop-press variants conclusively prove that press-correction (or in-press correction) was already being carried out in the first printing shop in Europe. The total number of variants is not very large, but it is not so small as to suggest they were purely accidental; rather stop-press variants seem to occur more or less on a regular basis. These variants make it possible to shed some new light on the nature and procedure of stop-press correction employed in the B42 printing shop. This chapter analyzes the results, mainly focusing on the variants of categories B to I.

Tables IV.2 and IV.5 in the previous chapter clearly show that on the pages in question there are only two states of variant, as far as the deliberate changes (categories B to I variants) are concerned. All the copies agree either with the control copy or the first copy which shows a difference. In other words, there are only the first state copies and second state copies, and no new third state has been found.

Even the pages that have more than one variant demonstrate only two states. Table V.1 lists the pages which have more than one variant, from which category A variants are excluded except when they appear on these pages. As shown in table V.1, in the first volume, six pages have more than one variant; two variants were found on f. I 144v, three on f. I 205r (one category A), five on f. I 217v (two category A), four on f. I 250v, three on f. I 281r, and three on f. I 308r. In the second volume, eight pages show more than one variant; eight variants were found on f. II 27r (one category A), six on f. II



35v, two on f. II 142r, three on f. II 214r (one category A), two on f. II 215v, two on f. II 217r, two on f. II 257r, and four on f. II 266v (one category A). In every case, there are only two states. In other words, there are only two kinds of pages: (a) the pages in which all the variants represent the earlier state and (b) the pages in which all the variants represent the later corrected state. No copy shows a mixed state. Therefore, changes are assumed to have been made only once per page.

As shown in tables IV.2 and IV.5, in most cases there are fewer copies of the first state than those of the second, corrected, state: 79 pages out of the total of 88 pages. Therefore, it is assumed that the stop-press variants were basically made at an early stage in the print run of each page, and only once.

Exceptions are found on nine pages: in the first volume, nos. 117 (category D, but a probably correction of an accidental shift of the types) and 122 (G) – and 146 (G), has the same number of pre- and post-correction copies; in the second volume, nos., 16-21 (five Cs and G), 27 (H), 44 (H), 57 (C) and 98 (H) – and 105 (G) has the same number of pre- and post-correction copies. They tend to show textual corrections which could affect the meaning.

On the other hand, there are only 22 cases where there is only one copy which shows a unique uncorrected state. In the first volume, one copy each of P16, P20, P27, P33 and P39 shows the unique earlier state on folios 15r, 52r, 150v, 154r, 192v, 195r, 217v, 281r, 292r and 293r; in the second volume, each of P16, P27, P33 and P46 shows the unique earlier state on folios 30v, 53v, 87r, 98v, 147v, 169v, 185v, 214r, 256r, 266v, 289r and 289v. If a stop-press correction was made only by a specially appointed corrector or under a direction for a corrector, the number of the unique state page would have been much larger. In addition, only two of them, namely, f. I 195r of P33 (no. 86; the addition of words; see figure IV.46) and f. II 87r (no. 33; correction of misspelling; see figure IV.89) shows a hand correction on each page, which might have been a direction of correction. This leads to two conclusions. First, even these pages showing the unique uncorrected states are unlikely to be a proof pull.<sup>1</sup> Second, most of the stop-press variants are assumed to have been made by each press-crew, possibly without reference to an exemplar.

These changes do not always serve for better reading. Variants (34), (116), (143), (144) in the first volume, and (15), (71) and (108) in the second volume are probably

examples of miscorrection, that is, false corrections contrary to the corrector's intention. Among them, nos. (34) and (143) are exchanges of "n" for "u"; they were possibly pulled out during either inking or printing and put back upside down. No. (116), a change from "iniciū?" to "iniciu?" might have evidenced an incomplete attempt to expand it, considering that this line has enough space for the change (figure IV.27). No. (15), a change from "illu[m] in" (correct) into "illu in" (wrong) might have been a similar incomplete attempt, or miscorrection caused by misunderstanding of the next word "in" for "m"; and the intention of a "corrector" was to change "illu[m] m" to "illum" by deleting a "superfluous m," although it was in fact "illu[m] in" in the original state.

Even a simple typographical mistake such as an omission of a period and an inversion of a letter tends to be left uncorrected, even when it appears on the same page as a corrected mistake. For example, f. II 122r has a correction from "mea[m]" to "meu[m]" (no. 46). Three lines above, there is an uncorrected mistake; although it is printed ". Ecce egoip[s]e" (in two words), it is obviously a misprint of ". Ecce ego ip[s]e." (in three words). Although there is a plenty of space around a period, this incorrect word division is not corrected in any copy examined in the present study. Another example is found on f. II 257r, which shows two variants on a36 and a39, and both concern with an "u" or "n." There is one more typographical mistake on this page: in fact, between these corrections. On line a37, "supra" is misprinted as "snpra" – "u" is inverted (see the third line of figure IV.73). However, no copy shows a correction of this mistake.

## B. Vellum Copies

Leaves of these two states seem to be irregularly distributed among the copies examined. There may be a vague tendency for earlier sheets to be bound together into a copy, as also later sheets. Considering that there are generally fewer copies of the first state, it is striking that P39 represents the earlier state on 21 pages out of the 35 pages showing variants in the first volume, five of which are unique to P39. P27 also shows the earlier state on 17 pages in the first volume, one of which is a unique state; P16 has 14 earlier pages, two of which are unique. In the second volume, the same tendency can be observed. P16 has 27 earlier pages among 54 pages with variants, four of which are unique; P27 shows 23 earlier pages, three of which are unique; P33 has 25 earlier pages, two of which are unique; P46 shows 19 earlier pages, three of which are unique. Although

it would be premature to draw any conclusion, this vague tendency may suggest that the earlier sheets tend to have been added to the top or bottom of the stack of printed sheets.

In the case of the vellum copies, however, their distribution is not a matter of chance. They always represent the second, corrected, state, except for one stop-press variant. The results of this collation provide strong bibliographical evidence that each vellum page was printed after the corresponding paper page.<sup>2</sup>

The only exception was found on f. I 2rb 40 (no. 1). The five paper copies and two vellum (V4 and V8) have an erroneous setting of “scrptura[rum]” while five paper and one vellum (V7) copies have the correct reading of “scriptura[rum]”; there are two states of vellum copies. Considering that this is the recto side of the second folio of the first quire, that is, the third page to be printed, it may be possible to explain this deviance by positing that the order of printing (paper first, vellum second) was not established yet at the very beginning of the B42 printing, or that the type “i” was by accident pulled out after several pages had been correctly printed (the paper copies with the correct reading), and after the remaining paper and several vellum pages (copies with the wrong reading including V4 and V8) were printed, the accident was noticed and then “i” was put back (V7).

## C. Uneven Dispersion

### 1. Quires

The total number of variants is not very large, although it is not so small as to suggest that they were accidental: 88 pages out of the total of 1,282 printed pages.<sup>3</sup> On the other hand, a lot of mistakes still remain uncorrected; even some obvious mistakes such as inverted letters, an omitted period and duplicated words are left untouched. For example, an omission of a period can be found at the end of f. I 132rb 39 (1st setting). Duplicated words were found in the first volume: the final words on f. I 321vb 42 (“Omnia quecu[m]que”) are repeated at the beginning of the next page (I 322ra 1). Schwenke pointed out inverted “i”s and “m” in V7: its first volume has an inverted “i” on I 27ra 25 and I 27vb 41 (both belong to the second setting), an inverted “m” on each of I 22ra 35 (the second setting) and I 247va 34 (the first setting), and an inverted “o” on I 261ra 34.<sup>4</sup> In conjunction with these observations, it is interesting that variants were not evenly distributed.

Out of the total of sixty-five quires, twenty-two quires have more than one page showing variants – quires I 1, 16, 20, 22, 26, 29, 30 and 31; II 2, 6, 7, 9, 10, 13, 15, 16, 22, 23, 24, 25, 26 and 29 – while nineteen quires have no variant. As shown in section A, thirteen pages have more than one variant: they are found in the quires I 15, 21, 22, 26, 29, 30 and 31; II 2, 4, 15, 22, 26 and 27.

It is also worth noting that stop-press variants are found on the same side of three conjugate leaves. Variants (85) on f. I 192v and (86) on I 195r are on the conjugate leaves (I 20/4v.7r). The former is the correction of a word division, and the latter is the addition of words. One of the other conjugate leaves, I 303v and I 308r (I 31/3v.8r), shows rather simple typographical improvements; on I 303v a colon is inserted and pre-corrected pages were amended by hand – no.152 – and I 308r has three typographical corrections - nos. 156, 157, and 158. The last examples are variant nos. 90 and 91 found on f. II 256v and II 257r (II 25/5v.6r); in addition, the other side of this sheet also shows a variant (no. 89 on f. II 256r). In the first volume, f. I 292 (30/2) also shows a correction on the both sides of the folio.

## 2. Text Units

The concentration of variants can be demonstrated more clearly in relation to the text units. Table V.2 shows the number of stop-press variants according to categories in each of the major four text units (A to D) and their subdivisions. The “Unit” column shows each subdivision. The columns “Vol” “Quire” “Folio” shows quire numbers allocated to these units; because the number of quires in each unit is different, the total number of the quires are indicated in parentheses. The “Category” column shows where each stop-press variant is found. “The TOTAL” column shows the total number of the stop-press variants, and the “PAGES” column shows the number of pages showing them. For example, sixteen variants are found on twelve pages which belong to unit B1.

This table expressly shows that the variants appear sporadically in unit A: only seven variants in thirteen quires (folios 1 to 128). On the other hand, other units, especially B1, C1 and D1, show variants much more frequently. Since each text unit was presumably allocated to different compositors, this might have something to do with each press/press-crew – such as skills, carefulness, literacy and familiarity with gothic script.

Units C1, D1 and B1 show various categories of variants: seven, six, and six,

respectively. Nine category H variants out of ten were found in these three units, and also eighteen category C variants out of twenty-eight. Admittedly, they are major units and consist of a larger number of quires than the rest; together they make 34 quires, about half of the whole. Still, they may reflect some tendency of the press-crew.

Category C is concerned with a compositional rule of the B42, certainly modeled on the manuscript tradition. The basic rule was concerned with the use of primary and abutting forms of letters; after c, e, f, g, r, t, x, and y, the secondary form is used.<sup>5</sup> In three cases, a replacement of an irregular type “n” or “u” is also detected: nos. (55), (91) and (92) in the second volume (see figures IV.53, 72, and 72, respectively).

On the other hand, the detection of a replacement of a shorter abutting “r” suggests that there is at least one more rule about this type, the use of which has not been studied in detail. More examples are necessary to pursue the rule concerning the use of the abutting shorter “r” because even the four examples detected in the present collation (nos. 121, 135 and 136 in the first volume: no. 68 in the second volume) do not agree with each other. In every case, it concerns an “r” preceded by “e”; the known composition rule is to use an abutting-form “r” after an “e” to establish the visual rhythm of writing by equalizing spaces between vertical minim strokes.<sup>6</sup> One case, (136) is a correction required by this rule; a non-abutting “r” is used after “e” and replaced by an abutting and shorter “r” (see figure IV.17). In the other three cases, this rule is observed in the original state, but a variant occurs nevertheless. An abutting “r” of standard height is changed into an abutting and shorter “r,” or vice versa. Each of (121), (135) in the first volume and (68) in the second volume shows a change of an “r” used in double “rr”; (121) shows a change from “shorter r – standard r” into “standard r – standard r” — it is worth noting that although several examples of “rr” occur on the same page, no other shorter “r” is found; (135) “standard r - standard r” into “standard r- shorter r”; (68) “standard r – shorter r” into “shorter r – shorter r”. These examples are found in different text units; B1, B3, and D1, respectively; it might have reflected the preference of the press-crew, although even on the same page the use of shorter “r” does not seem to be perfectly standardized.

On other pages, even a cursory look revealed that this short “r” is sometimes used as the first “r” in “rr”, and sometime as the second, and sometimes singly after “e”, and also after “c”. However, it is not a single piece of type because several shorter “r”s are found on a page in some cases. For example, f. II 190r, the first page of the New

Testament, has in total twelve shorter abutting “r”s, nine of which appears after “e,” one after “c,” one as the first “r” in “rr,” and one as the second “r” in “rr”. On this page, “rr” appears four times and there is a variety of the patterns: “standard r –standard r” used in “corrige” on a21, “standard-standard” on a35 (“corrigimu[s]”), “standard-shorter” on b25 (“correctis”), “shorter-standard” on b34 (“error”). No similar example of the shorter “r” is found in the fifteenth-century Vulgate Bible manuscripts examined in chapter II.

Category B can be divided into two groups. One is a correction of an inverted “i,” a simple typographical correction. The other is a correction of an inverted “n” or “u”; the inversion could have been noticed thanks to an uneven vertical alignment – for example, nos. (100), (102), (156) in the first volume (see figures IV.4, 5, 9, respectively) –, but it can be an example of a correction of misspelling, which requires Latin literacy. The latter case of category B and categories F, G, H and I are assumed to need a higher level of Latin literacy and familiarity with gothic script, considering that the confusing “minim” stroke is well detected.

These misprints of “n” and “u” might have occurred either during the composition or the distribution of set type; a compositor might misread an exemplar; or a type got inverted as it was set; or when the set type was distributed, a piece of type might be put back into the wrong box in the type case. There is no evidence to decide whether a B42 type had a nick on the body or not. Not a single piece of the types of the fifteenth century survived, but it will be useful to mention to a few accidents which show the shape of the types. Even in the B42 itself, there is one example. As shown in figure V.2, in the lower margin of f. I 46r of the Pelplin copy of the B42 (referred to as P25 in the present study), there is a smudge of a rectangular shape, and it is said to be an outline of the B42 type. Unfortunately, however, it shows only a part of the shape, and it does not give an evidence of the nick or the equivalent. M. Madden found the impression of a type on a page of the book printed by Conrad Hamborch of Cologne in 1476 (figure V.2.b). The type had no nick on the body, but it had a circular mark on its side, which had presumably guided a compositor. In the midst of an illustration in a book printed in 1498, outline of a type, which has nick, is clearly left (figure V.2.c). Considering that a relatively few inverted letters are found in the B42, and these early examples of types, the types of the B42 are likely to have had something to guide a compositor.

### 3. Chronological Changes

Figure V.1 illustrates a rough chronological overview, based on the text units and the result of ink analysis by Schwab et al. Each cell represents a quire and the time runs from left to right. However, this chart is different from those of Schwenke and Schwab et al. in one point, that it does not try to allocate quires to press (or presses), or try to decide the very precise position in the time-line. The purpose of this chart is to visualize a chronological change in tendencies of the appearance of the stop-press variants, if any.

Lines in pink show where a stop-press variant was detected. Figure V.1 shows that these stop-press variants are scattered all over the printing process. It also shows, however, that more stop-press correction tended to appear at a later stage of printing. It is assumed that the procedure of stop-press correction was gradually established as the printing progressed, except in unit A, which does not show any chronological difference. It is not so surprising, taking into account the estimation that the printing of the B42 would have taken more than two years.

#### D. Differences in Spacing

Table V.3 lists the pages on which category A variant appears with a variant of other categories.<sup>7</sup> The table indicates that the pages with stop-press variants of categories B to I sometimes, but not very often, show differences in spacing at different parts of the same page. The examples were found on ten pages: folios I 23v, I 106r, I 150v, I 205r, I 217v; II 27r, II 169v, II 214r, II 227v and II 266v. Compared to the total number of the pages with category A variants, it is a very low figure: 127 to 10. Conversely, most of the pages with category A variants do not show a stop-press variant of other categories.

The overall tendency found in table V.3 basically agrees with other tables of the results; there are only two states of copies even on the pages with more than one variant. However, an irregular pattern appears in regard to the two states of copies. When category A variants are included, there are three irregular pages on which the first state copies and the second state copies are not perfectly separated: on I 23v, P35 shows both states, on I 106r, P33 shows both states, and on I 205r, the spacing is a little different from copy to copy – they are marked in red. As will be discussed below, this is assumed to be caused by shifting types, which is worth examination.

Tables IV.3 and IV.6 in the previous chapter show that there are fewer copies of

the earlier state as in the other categories, although it is not always easy to determine the order. Among the detected differences in spacing, there are a number of shifted lines, crooked letters and drifted letters, which are presumably accidental, in addition to the deliberate changes in spacing for improvement in justification and in alignment. They suggest that the pages of the B42 tended to be rather loosely set.

It is helpful here to mention previous studies about shifted types and resulting variants. Greg discussed the probable origin of the six type shiftings found in the First Quarto of Shakespeare's *King Lear*.<sup>8</sup> These six classifications are: (I) Shifted type(s) cause by the dropping of a space at the end of the word; (II) Crooked letter(s) caused by the dropping of a space; (III) Shifted type(s) caused by the dropping of a space at the time of stop-press correction or soon after; (IV) Shifting up of the dropped point because there was a slight gap between the type and the furniture; (V) Shifting up of the type due to a slight gap between the type and furniture, which was most likely caused by the loosening of the type in unlocking the forme; (VI) Shifted upwards type(s), due the accidental dropping of a type from the line above. He demonstrated that the shift of types tended to occur at the time of correction. W.M. Blayney in studying the same work argued concerning the pulled type that “[t]he continuous operation of the press often loosens the quoins, and when a forme is press-corrected the unlocking and re-locking *on the press itself* sometimes leaves a few lines sufficiently loose to permit accidental pulling” [italic original].<sup>9</sup> In these arguments, it was premised that the forme was not loose at the very beginning. It is natural because the forme was normally firmly locked in a chase, tied up, and carried to a press in the hand-press period;<sup>10</sup> if the forme was loose, the types of a part or a whole of the page would remain on the imposing stone at that point.


In the B42, however, this premise does not seem to work perfectly, and the difference between a play text and a prose work is not a sole reason. Only a few examples can be explained by the loosening of the type at the time of correction: for example, a drifting word found on f. I 205ra 23 (no. 94),<sup>11</sup> crooked letters in the corrected state of nos. (88) and (89) in the second volume. The fact that tables IV.4 and IV.6 (tables of spacing variants), show the same tendency with tables IV.2 and IV.5 (tables of primary variants), leads to a hypothesis that the changes in spacing are supposed to have been made at the early stage of printing. In other words, the set type tended to be rather loose when the printing began. If the forme was carried to the press for printing as in the later



period, the loose types would have been likely to come apart. Therefore, it is most likely that the each page in the B42 was set in a kind of tray with a bottom, and that tray was carried to the press for printing. If the lines were not fully spaced, it was not difficult for the letters to get drifted, shifted, or crooked.

In three examples, there is a two-line space reserved for a chapter initial on the same line, but a slight difference is detected only on one line in two cases; nos. (29) and (124) in the first volume. This suggests that these initial spaces were created by spaces of various widths of one-line height, rather than by large one piece of two-line height. In one case (no. 24 in the first volume), both lines seem to be shifted, but it could have been due to the slipping up of a “furniture,” because they are the bottom lines of the page.

There are six examples of shifted types on the first or the final line of the page, which as a result protrudes from the column beginning or its ending: in the first volume, nos. (24), (30), (72), (110); in the second volume, nos. (41) and (109). These examples may suggest that a piece of furniture (or its predecessor) was used, but sometimes slipped up or down and permitted the first or the final letters to drift. On the other hand, the first words of the right column tend to protrude, even if they are not on the first or the second line: in the first volume, (31) and (118), and in the second volume, nos. (4), (5) and (6). These shifts may suggest that, instead of a piece of long furniture, various widths of spaces were used to fill a gap between the two columns.

There is an interesting witness of some accident to be mentioned here. On f. I 254rb 25 (26/5r) of all the paper copies examined — P16, P29, P27, P29, P33, P39, —, an ink smudge which looks like “” is printed between “quid” and “doles” (see figure V.3). It consists of two straight short bars, the lower of which is about one and half times longer than the upper one. In the vellum copies, namely, V6, V10 and V11 do not show this smudge. Considering that this line shows a difference in spacing, it is tempting to imagine that this smudge is a space with the nick, pulled by the ink-ball at the very beginning of the actual print run, although it may be too short.<sup>12</sup>

### E. Hand Corrections in the Printing Shop

The present result shows that pages of the corrected and uncorrected states of the B42 were used without any distinction; this custom had been common during the hand-press period. Uncorrected states were usually just left as they were, unless an owner of each

copy made corrections by hand, and thus these manual corrections are naturally unique to each copy. Some copies (for example, P39) have virtually no corrections, while others (for example, P14 and V6) have a lot of hand corrections including additions and deletions of words; in heavily corrected copies such as V6, corrections are often made not only to the uncorrected state of stop-press variant, but also to other parts of the texts. Figure IV.90 shows a typical example. In P33 (figure IV.90.a), the printed word “mea[m]” received no amendment, while it was corrected by hand in P16 (figure IV.90.b). However, ten exceptions were found in relation to the stop-press variants during the present collation, which deserve attention.

The first example is a stop-press variant detected on f. I 303vb 30 (31/3v) (no. 152). In the corrected state of this page, a colon should be printed after the final word “iniquitatib[us]” which is omitted in P14, P17, P27, P28, P29, P35, P38, P39 and P44. In all the pre-correction pages, a colon ( ) is added by hand, exactly in the same manner as P39 – apparently the same shape, size and colour (see figure IV.24). It is highly likely that this word was corrected by hand at the B42’s printing shop.

Another example of hand correction of textual significance in the first volume had been found by Needham; he suggested that the addition of two words “et sesa” on f. I 195ra 2 (20/7r) of P33 was probably done in the B42’s printing shop at a very early stage of printing of this page, because P33 is the only known copy to show this state (no. 86; see figure IV.46).<sup>13</sup>

In the second volume, the pre-corrected state of f. II 153va 1 (16/3v) is “facies omne[m] sicut nigredo” (no. 56), which is corrected to “facies omniu[m] sicut nigre(do)”; a change from “omnē” to “omniū” is the main purpose of the correction. All the four copies which have an uncorrected page — P20, P29, P30 and P33 — demonstrate a manual correction executed in the same manner; the latter half of “ē” is scratched out to make it “ī” (see figure IV.96). This hand correction led Needham to notice this stop-press variant as in the example above.<sup>14</sup>

F. II 250vb 14 (25/9v) (no. 87) presents another example in the second volume. Here the correct word is “dolose” and is so printed in P13, P14, P15, P20, P25, P29, P35, V6, V7, V8, V10, V11 and V12. In the seven other copies examined, namely, P16, P17, P22, P27, P30, P33 and P46, this word is by mistake printed “dolese” and it is always corrected by hand; the wrong “e” is overwritten by “o” in the same manner so that it reads

“dolose” (see figure IV.104).

Another example is found on f. II 225ra 22 (23/4r) (no. 80). The five copies represent the earlier state: it reads “i[n] omne[m] ciui= / tem et locum” in the six paper copies – P14, P15, P16, P25, P33 and P35. The first word on a23 is changed to make it “ciui= / tate[m] [et] locum” in the ten other copies: P20, P27, P29, P30, P46, V6, V7, V8, V10 and V11. In all the earlier state copies, with no exception, the final word on a22 “ciui” is manually corrected into “cīta [i.e. ciuita]” in exactly the same clever way; by adding a suspension mark above the first “i,” changing the first stroke of “u” into “t,” combining the second stroke of “u” and the final “i” to make “a,” and scratching out the upper bow of “i” (see figure IV.102) It is unlikely that five persons independently happened to take such a complicated process. Powitz pointed out this stop-press variant and manual correction in P14, P15 and P16; he also suggested that this could have been done in the printing shop.<sup>15</sup> The present result strongly supports his argument.

F. II 286vb 18 (29/2v) (no. 99) provides another example. In the six paper copies examined, P20, P27, P29, P30, P33 and P35, the final two words are printed “qui lo=” and continued to “ti” on the next line; “cu” is missing from the word “locuti” and it does not make sense. Therefore, these two letters are added by creating a space for it by contracting “qui” so that the text is correctly printed “q[ui] locu= / ti” in the other copies (see figure IV.108). Each of the six copies which represent the earlier state demonstrates the same hand correction; “=” is scratched out and “cu=” is clearly written in the space.

A hand correction of slightly different kind was found on f. II 200va 32 (20/9v) (no. 71); a word “castraveru[n]t” is printed in P15, P22, P25, P27, P29, P30, P33 and P33, which is presumed to represent the earlier state; “r” is added to this word and it is printed “crastraveru[n]t” in P13, P14, P16, P17, P20, P35, P46, V6, V7, V8, V10 and V11. However, this is an example of miscorrection. In P13, P14, P16, P17, P20, P46, V7, V8 and V11, this unnecessary “r” is marked off in the same manner: two pairs of a small sign which looks like “//” are written both above and below of “r” (see figure IV.97). In V6 and V10, the same hand correction is assumed to have been made, although the existence of this hand correction cannot be confirmed any more, because this “r” is scratched out in them; the upper stroke of the preceding “c” is extended towards the right to fill the gap created.

F. II 250ra 37 (25/9r) (no. 86), where a correction of contraction (or correction of

spelling) is detected, shows a hand correction in pre-corrected pages. In the eleven paper copies (P13, P14, P15, P16, P17, P22, P25, P27, P29, P30 and P33), a suspension mark is missing from the third word and reads “cognouisset.” In the other copies, “e” is changed to “ē” with the suspension mark to print “cognouisse[n]t” correctly (see figure IV.85). In all the eleven pre-correction pages, a thick suspension mark is added by hand in a brown ink. P20, of which a photographic facsimile is consulted, has this mark at much lower position compared to the other copies showing a printed mark. Therefore, P20 is presumed to show the earlier state, to which a hand correction was made; the examination of the original will verify this.

In addition, there are two more hand corrections, which do not directly attest a stop-press variant at present. The first one was by chance found on f. II 232rb 19 (24/1r) (Luke 21:20). On this page, the third word shows a hand correction in the same style, although no copy was found corrected at press among the present copies examined. The word in question reads “a(pp)ropuinquauit” in every copy: P13, P14, P15, P16, P17, P20, P25, P27, P29, P30, P33, P35, P46, V6, V7, V8, V10 and V11. A closer look, however, reveals that the third “p” is not printed; rather it is written over a different letter printed in all of them (see figure V.4). The originally printed letter is assumed to have been “q,” judging from the vestige in several copies (P25, V8 and V11). It could be a sign of the existence of a stop-press variant yet to be found.

The second one is found in the first volume: f. I 268va 19 (27/8v) (no. 128). In the three copies – P16, P20, P35 –, the space between “mitte[n]tes” and “cinere[m]” is narrower than in the other copies examined. It can be an example of shifting types and so categorized in the present study. It could be, however, a witness of another stop-press variant, because in these three copies, the final letter “ē” of the second word (“cinerē”) seems to be written by hand (see figure IV.47).

These hand corrections were presumably executed in the B42 printing shop. To answer what kinds of mistakes were corrected by hand, while others were left uncorrected, requires further analysis; textual mistakes in the B42 have not been fully studied yet. The pattern of their appearance in each text unit is not evident or conclusive, but still interesting.

Figure V.5. shows where each hand correction was detected, using the same chronological chart as figure V.1. Each blue line with the sign “x” indicates where each

hand correction appeared. There are none in the units A1, A2, B2 (consisting of two quires only), C1, D3 (one quire), or D5 (one quire); one in each of B1, C2, D2 and D4; one in B3; five in D1. It is clear that all of these nine hand corrections appear in the latter half of the printing procedure of the B42. Although these hand corrections seem to be sporadic rather than systematic, they are new pieces of evidence of the careful concern paid to the printed pages of the B42.

## Notes

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1 For an early example of proof corrections, see Hellinga, "Proof-reading."

2 It is worth noting that there are other early cases: *Catholicon* and the 1462 Bible. Boghardt and Needham came to the same conclusion about the first printing of the 1460 *Catholicon*. Needham wrote "It strongly suggests, as Dr. Boghardt noted (p.161), that the paper sheets were printed first, and the vellum second." See Martin Boghardt, "Die bibliographische Erforschung der ersten 'Catholicon': Ausgabe (2)," *Wolfenbütteler Notizen zur Buchgeschichte* 8, no.2 (1988), 161; Paul Needham, "The *Catholicon* Press of Johann Gutenberg: A Hidden Chapter in the Invention of Printing," *Wolfenbütteler Notizen zur Buchgeschichte* 8, no.2 (1988), 208. For the 1462 Bible (GW4204), see William Scheide and Mina R. Bryan, "A Stemma of Matthew 22,1 in Latin Incunabula Bibles," in *Gutenberg Jahrbuch* 37 (1962): 117-121.

3 The textual criticism is the beyond scope of the present study, but heavily amended copies such as P14, P30, and V6 suggest there are a lot of mistakes in the text of the B42 as a whole. See Powitz, *Gutenberg-Bibel*.

4 Schwenke, *Untersuchungen*, 23, 25. Examination of P16, P20, P27, P33, P39, V6 and V10 (the first setting) confirms that the inversion of "m" on I 247va 34 is not corrected; neither an inversion is corrected on I 22r of P33 and V10.

5 Schwenke, *Untersuchungen*, 18-22.

6 Schwenke, *Untersuchungen*; see also Needham, "Division of Copy," 414-415.

7 In analyzing the spacing variants, I am indebted to Professor Brian Donaghey, Professor James Mosley, Professor Nobukazu Mushakoji, and Professor Toshiyuki Takamiya.

8 Greg, *First Quarto*, 36-38.

9 W.M. Blayney, *The Texts of King Lear and their Origins* (Cambridge: Cambridge University Press, 1982), 206.

10 For a much later example of a slipped type, see Browning.

11 See above, p. 144-145.

12 Early examples of a type with nick, see *Bibliography of Printing and Marks in Books* (figure V.2.a-c.).

13 Needham, "Printer's Copy," 59-60.

14 Needham, "Printer's Copy," 59-60.

15 Powitz, *Gutenberg-Bibel*, 78-79.

Table V.1 Pages with More than One Variant

Folio (quire)	No.	Category	Folio	1st state	2nd state	1st state copies	2nd state copies	Folio (quire)
I 144v (15/6v)	53	C	144va7	aute[m] (bar above "e" is higher; or added by hand?)	aute[m] (bar above "e" is printed at the lower, normal)	P15, P20, P27, P42	P13, P14, P16, P17, P39, V4, V6	I 144v (15/6v)
				de longe [et]	delonge et	P15, P20, P27, P42	P13, P14, P16, P17, P39, V4, V6	
I 205r (21/7r)	93	G	205ra 4	eis hoc est filiis eleazar ("hoc" is inclined) ("qu" above is also inclined)	eis hoc est filiis eleazar (types are vertical)	P20, P27	P13, P14, P15, P16, P17, P29, P33, P39, P42, V4, V6, V10	I 205r (21/7r)
				isbaal · decimaquinta (narrower space; "n" is not vertical)	isbaal · decimaquinta (wider space; "n" is vertical)	P20, P27	P39 ("n" is vertical, but spacing is a little different with: P16, P29, P33, V6, V10; P13, P14, P15, P17, P35, P42, V4, V11)	
I 205ra 25	95	G	205ra 25	decimaoctaua (ha)phses	decimaoctaua aphses	P20, P27	P13, P14, P15, P16, P17, P29, P33, P39, P42, V4, V6, V10	I 205r (21/7r)
				insanabuli .	insanabuli .	P27	P13, P14, P15, P16, P17, P20, P29, P33, P39, P42, V4, V6, V10	
I 217v (22/9v)	101	G	217va 18	iu ("u" is slightly higher)	in	P27	P13, P14, P15, P16, P17, P20, P29, P33, P39, P42, V4, V6, V10	I 217v (22/9v)
				(amb[u]lla=) uit[ue]	(amb[u]lla=) uit[ue] (left, smooth line beagging)	P27	P13, P14, P15, P16, P17, P20, P29, P33, P39, P42, V4, V6, V10	
I 217vb 13	102	B	217vb 3	inda	iuda	P27	P16, P20, P29, P33, P39, V6, V10	I 217v (22/9v)
				(princi=) pes (left, not smooth line beginning)	(princi=) pes (right, smooth line beginning)	P27	P13, P14, P15, P16, P17, P20, P29, P33, P39, P42, V4, V6, V10	
I 217vb 21	103	A	217vb 6	inda	iuda	P27	P16, P20, P29, P33, P39, V6, V10	I 217v (22/9v)
				(princi=) pes (left, not smooth line beginning)	(princi=) pes (right, smooth line beginning)	P27	P13, P14, P15, P16, P17, P20, P29, P33, P39, P42, V4, V6, V10	
I 217vb 21	104	B	217vb 13	inda	iuda	P27	P16, P20, P29, P33, P39, V6, V10	I 217v (22/9v)
				(princi=) pes (left, not smooth line beginning)	(princi=) pes (right, smooth line beginning)	P27	P13, P14, P15, P16, P17, P20, P29, P33, P39, P42, V4, V6, V10	
I 217vb 21	105	A	217vb 21	inda	iuda	P27	P16, P20, P29, P33, P39, V6, V10	I 217v (22/9v)
				(princi=) pes (left, not smooth line beginning)	(princi=) pes (right, smooth line beginning)	P27	P13, P14, P15, P16, P17, P20, P29, P33, P39, P42, V4, V6, V10	

Table V.1 Pages with More than One Variant (continued)

Folio (quire)	No.	Cate- gory	Folio	1st state	2nd state	1st state copies	2nd state copies	Folio (quire)
I 250v (26/1v)	113	G	250va 7	que[m]	qua[m]	P13, P16, P17, P28, P30, P38, P39	P14, P20, P23, P25, P26, P27, P29, P33, P35, P36, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11	
				velocitas	velocitas	P13, P16, P17, P28, P30, P38, P39	P14, P20, P23, P25, P26, P27, P29, P33, P35, P36, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11	
	114	D	250vb 8	a period is omitted	a period is inserted	P13, P16, P17, P28, P30, P38, P39	P14, P20, P23, P25, P26, P27, P29, P33, P35, P36, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11	(26/1v)
				iniciu[m]?	iniciu?	P13, P16, P17, P28, P30, P38, P39	P14, P20, P23, P25, P26, P27, P29, P33, P35, P36, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11	
I 281r (29/1r)	133	G	281ra 37	sicud .. no[n]	sicut .. non	P39	P13, P14, P15, P16, P17, P20, P23, P25, P26, P27, P28, P30, P33, P35, P36, P38, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11	
				deus tenebris. Anteq[ua]m] co= / meda[m] suspiro	de[us] tenebris. Anteq[ua]m] com= / edam suspiro	P39	P13, P14, P15, P16, P17, P20, P23, P25, P26, P27, P28, P30, P33, P35, P36, P38, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11	
	134	F	281rb 8-9	two "r"s of "r" in "perrita" are of the standard height	the second "r" of "r" is shorter	P39	P13, P14, P15, P16, P17, P20, P23, P25, P26, P27, P28, P30, P33, P35, P36, P38, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11	I 281r (29/1r)
135	C	281rb 39						

Table V.1 Pages with More than One Variant (continued)

Folio (quire)	No.	Category	Folio	1st state	2nd state	1st state copies	2nd state copies	Folio (quire)
I 308r (31/8r)	155	C	308rb 6	the left of the first "t" in "(su=) perextolletur" is not smooth	the left side of the first "t" is smooth	P15, P17, P23, P25, P26, P27, P38, P39	P13, P14, P16, P20, P28, P30, P33, P35, P36, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11	I 308r (31/8r)
	156	B	308rb 11	magnificabuut (second "u" is slightly shorter)	magnificabunt	P15, P17, P23, P25, P26, P27, P38, P39	P13, P14, P16, P20, P28, P30, P33, P35, P36, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11	
	157	B	308rb 13	solns	solus	P15, P17, P23, P25, P26, P27, P38, P39	P13, P14, P16, P20, P28, P30, P33, P35, P36, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11	
II 27r (3/7r)	7	C	27ra 6 (3/7r)	bilinguis. Non (normal "s")	bilinguis. Non ("s" in the shape of 5; better justified)	P16, P27	P29, P33, P46, V6, V10	II 27r (3/7r)
	8	H	27ra 11 (3/7r)	lignu m	lignum	P16, P27	P29, P33, P46, V6, V10	
	9	F	27ra 22 (3/7r)	Et est	Et [est] (better justified)	P16, P27	P29, P33, P46, V6, V10	
	10	F	27ra 24 (3/7r)	[et] rixa[m] [et] co[n]iucia denu	et rixa[m] et co[n]iucia (de)nu	P16, P27	P29, P33, P46, V6, V10	
	11	F	27ra 36 (3/7r)	[et] non est digna	et non [est] digna (better justified)	P16, P27	P29, P33, P46, V6, V10	
	12	F	27ra 39 (3/7r)	[et] qui metuunt do=	et qui metuunt (do)= (better justified)	P16, P27	P29, P33, P46, V6, V10	
	13	H	27rb 26 (3/7r)	inoblectationem . Et	in oblectationem. Et	P16, P27	P29, P33, P46, V6, V10	
	14	A	27r (3/7r)	a8, a16, a19. a20 is not well overlapped				



Table V.1 Pages with More than One Variant (continued)

Folio (quire)	No.	Category	Folio	1st state	2nd state	1st state copies	2nd state copies	Folio (quire)
II 35v (4/5v)	16	C	35va 10 (4/5v)	locupletari (abutting "i")	locupletari (normal "i")	P16, P29, P33, P46	P27, V6, V10	II 35v (4/5v)
	17	C	35vb 5 (4/5v)	denu (abutting "n")	denu (normal "n")	P16, P29, P33, P46	P27, V6, V10	
	18	C	35vb 13 (4/5v)	caprea (first "a" is an abutting	caprea (normal "a")	P16, P29, P33, P46	P27, V6, V10	
	19	G	35vb 32 (4/5v)	vnde	unde	P16, P29, P33, P46	P27, V6, V10	
	20	C	35vb 38 (4/5v)	co[n]tine[n]s (abutting "ō")	co[n]tine[n]s (normal "ō")	P16, P29, P33, P46	P27, V6, V10	
	21	C	35vb 41 (4/5v)	s[er]uabit (abutting "u")	s[er]uabit (normal "u")	P16, P29, P33, P46	P27, V6, V10	
II 142r (15/2r)	51	D	142ra 3 (15/2r)	sui Et...abbacuc (period is omitted)	sui . Et...ab(ba)cuc (period is inserted)	P46	P16, P27, P29, P33, V6, V10	II 142r (15/2r)
	52	G	142rb 24 (15/2r)	dūo	dno ("n" with an upper bar, i.e. d̄omilno)	P46	P16, P27, P29, P33, V6, V10	
II 214r (22/3r)	72	A	214ra 7 (22/3r)	"i(he) sus" is drifting				II 214r (22/3r)
	73	G	214ra 19 (22/3r)	vestr qui in	vester qui i[n]	P46	P16, P27, P29, P33, V6, V10	
	74	C	214ra 33 (22/3r)	credidistis (the first "d" is normal)	credidistis (the first "d" is abutting)	P46	P16, P27, P29, P33, V6, V10	
II 215v (22/4v)	75	G	215va 6 (22/4v)	p[er]dicio	p[er]ditio	P33	P16, P27, P46, V6, V10	II 215v (22/4v)
	76	C	215va 17 (22/4v)	euangeliu[m] (abutting "a")	euangeliu[m] (normal "a")	P33	P16, P27, P46, V6, V10	
II 217r (22/6r)	77	H	217ra 9 (22/6r)	(iaco=) biminoris	(iaco=) bi minoris	P16, P29, P33	P27, P46, V6, V10	II 217r (22/6r)
	78	G	217rb 10 (22/6r)	(appa=) ruit primo marie madalene (+ normal "d")	(appa=) ruit p[ri]mo marie magdalene (+ abutting "d")	P16, P29, P33	P27, P46, V6, V10	

Table V.1 Pages with More than One Variant (continued)

Folio (quire)	No.	Cate- gory	Folio	1st state	2nd state	1st state copies	2nd state copies	Folio (quire)
II 257r (26/6r)	90	B	257ra 36 (26/6r)	(tra[n]sfigura= / ) ni	(tra[n]sfigura= / ) ui	P16, P29, P33, P46	P27, V6, V10	II 257r (26/6r)
	91	B	257ra 39 (26/6r)	(e= / ) uim ("u" of strange shape)	(e= / ) nim	P16, P29, P33, P46	P27, V6, V10	
II 266v (27/5v)	93	G	266vb 2 (27/5v)	acce=	acci- (not "i/", but "i")	P16	P27, P29, P33, P46, V6, V10	II 266v (27/5v)
	94	C	266vb 5 (27/5v)	michi (abbuting "m")	michi (normal "m")	P16	P27, P29, P33, P46, V6, V10	
	95	D	266vb 21 (27/5v)	simula ( / tioni)	simula= ( / tioni)	P16	P27, P29, P33, P46, V6, V10	
	96	A	266v (27/5v)	P16 is not well overlapped with other copies				

Table V.2. Text Units and the Pages Showing Stop-press Variants

Unit	Vol	Quire	Folio	Category								TOTAL	PAGES
				B	C	D	E	F	G	H	I		
A1	I	1-10 (10)	1-101	0	1	1	0	2	1	0	0	5	5
A2	I	11-13 (3)	102-128	1	1	0	0	0	0	0	0	2	2
B1	I	14-24 (11)	129-238	5	1	1	0	0	6	2	1	16	12
B2	I	25-26 (2)	239-260	0	2	2	0	1	2	0	0	7	4
B3	I	27-33 (7)	261-324	4	3	2	0	3	4	0	0	16	12
C1	II	1-13 (13)	1-130	1	9	1	1	5	8	6	0	31	20
C2	II	14-16 (3)	131-161	2	1	1	0	0	3	0	0	7	6
D1	II	17-26 (10)	162-261	2	8	1	0	1	10	1	0	23	19
D2	II	27 (1)	262-273	0	1	1	0	0	1	0	0	3	1
D3	II	28 (1)	274-284	0	0	0	0	0	0	1	0	1	1
D4	II	29-31 (3)	285-309	0	2	0	0	0	4	0	0	6	6
D5	II	32 (1)	310-317	0	0	0	0	0	0	0	0	0	0
TOTAL				15	29	10	1	12	39	10	1	117	88

- Category B. Inversion of a type  
 C. Different shapes of the same letter  
 D. Correction of punctuation  
 E. Change of upper/lower case  
 F. Use of contraction  
 G. Misspelling  
 H. Word division  
 I. Addition of words

Table V.3 Pages with Category A Variants

Folio (quire)	No.	Cate-gory	Folio	1st state	2nd state	1st state copies	2nd state copies	Folio (quire)
I 23v (3/3v)	4	A	23va 1	pro(pa)gines·tres (narrower spacing)	pro(pa)gines ·tres (wider spacing)	P20, <b>P35?</b> P39	P16, P27, V6	I 23v (3/3v)
	5	C	23va 6	"e" of "fuerit" is smaller	"e" of "fuerit" is larger	P20, P39	P16, P27, P35, V6	
	6	A	23va 19	ca nistra · (unnecessary spacing)	canistra ·	P20, P39	P16, P27, P35, V6	
	7	A	23va 26	p isto[rum] (unnecessary spacing)	pisto[rum]	P20, P39	P16, P27, V6	
I 106r (11/5r)	34	B	106ra 25	(homi= / ) num	(homi= / ) uum (first "u" is shorter)	P14, P16, P17, P27, P42	P13, P15, P20, P29, P33, P35, P39, V4, V6, V10	I 106r (11/5r)
	35	A	106rb 13	sicut preceperat (narrower space)	sicut preceperat (wider space: justified)	P14, P16, P17, P27, <b>P33</b> , P42	P13, P15, P20, P29, P39, V4, V6, V10	
I 150v (16/2v)	56	A	150vb 7	seruien s su b (unnecessary spacing)	seruiens sub	P39	P13, P14, P15, P16, P17, P20, P27, P33, P42, V4, V6	I 150v (16/2v)
	57	A	150vb 16	au te[m] (unnecessary spacing)	aute[m]	P39	P13, P14, P15, P16, P17, P20, P27, P33, P42, V4, V6	
	58	A	150vb 31	"siria" is left, line beginning not smooth	"siria" is right, line beginning smooth	P39	P13, P14, P15, P16, P17, P20, P27, P33, P42, V4, V6	
	59	G	150vb 40	sarme	saruie	P39	P13, P14, P15, P16, P17, P20, P27, P33, P42, V4, V6	

Table V.3 Pages with Category A Variants

Folio (quire)	No.	Cate- gory	Folio	1st state	2nd state	1st state copies	2nd state copies	Folio (quire)
I 205r (217r)	93	G	205ra 4	eis hoc est filiis eleazar ("hoc" is inclined) ("qu" above is also inclined)	eis hoc est filiis eleazar (types are vertical)	P20, P27	P13, P14, P15, P16, P17, P29, P33, P39, P42, V4, V6, V10	I 205r (217r)
	94	A	205ra 23	isbaal - decimaquinta (narrower space; "n" is not vertical)	isbaal - decimaquinta (wider space; "n" is vertical)	P20, P27	P39 ("n" is vertical, but spacing is a little different with: P16, P29, P33, V6, V10; P13, P14, P15, P17, P35, P42, V4, V11)	
	95	G	205ra 25	decimaoctaua (ha)phses	decimaoctaua aphses	P20, P27	P13, P14, P15, P16, P17, P29, P33, P39, P42, V4, V6, V10	
I 217v (22/9v)	101	G	217va 18	insanabuli .	insanabili .	P27	P13, P14, P15, P16, P17, P20, P29, P33, P39, P42, V4, V6, V10	I 217v (22/9v)
	102	B	217vb 3	iu ("u" is slightly higher)	in	P27	P13, P14, P15, P16, P17, P20, P29, P33, P39, P42, V4, V6, V10	
	103	A	217vb 6	(amb[u]l)a= uit[ue]	(amb[u]l)a= uit[ue] (left, smooth line begging)	P27	P16, P20, P29, P33, P39, V6, V10	
	104	B	217vb 13	inda	iuda	P27	P13, P14, P15, P16, P17, P20, P29, P33, P39, P42, V4, V6, V10	
	105	A	217vb 21	(princi)= pes (left, not smooth line beginning)	(princi)= pes (right, smooth line begging)	P27	P16, P20, P29, P33, P39, V6, V10	

Table V.3 Pages with Category A Variants

Folio (quire)	No.	Cate-gory	Folio	1st state	2nd state	1st state copies	2nd state copies	Folio (quire)	
II 27r (3/7r)	7	C	27ra 6 (3/7r)	bilinguis. Non (normal "s")	bilinguis. Non ("s" in the shape of 5; better justified)	P16, P27	P29, P33, P46, V6, V10	II 27r (3/7r)	
	8	H	27ra 11 (3/7r)	lignu m	lignum	P16, P27	P29, P33, P46, V6, V10		
	9	F	27ra 22 (3/7r)	Et est	Et [est] (better justified)	P16, P27	P29, P33, P46, V6, V10		
	10	F	27ra 24 (3/7r)	[et] rixa[m] [et] co[n]juicia denu	et rixa[m] et co[n]juicia (de)nu	P16, P27	P29, P33, P46, V6, V10		
	11	F	27ra 36 (3/7r)	[et] non est digna	et non [est] digna (better justified)	P16, P27	P29, P33, P46, V6, V10		
	12	F	27ra 39 (3/7r)	[et] qui metuunt do=	et qui metuunt (do)= (better justified)	P16, P27	P29, P33, P46, V6, V10		
	13	H	27rb 26 (3/7r)	inoblectationem . Et	in oblectationem. Et	P16, P27	P29, P33, P46, V6, V10		
	14	A	27r (3/7r)	a8, a16, a19. a20 is not well overlapped					
	II 169v (17/8v)	57	C	169va 14 (17/8v)	(ha)b eba[n]t conser= (/ vaveru[n]t)	(ha)beba[n]t (co)nser= (/ vaveru[n]t) (better justified)	P16		P27, P29, P33, P46, V6, V10
		58	A	169vb 3 (17/8v)	miserun t (unnecessary spacing)	miserunt	P16		P27, P29, P33, P46, V6, V10
		59	A	169vb 6 (17/8v)	t[er]ra (shifted to right)	t[er]ra (shifted to left)	P16		P27, P29, P33, P46, V6, V10

Table V.3 Pages with Category A Variants

Folio (quire)	No.	Cate-gory	Folio	1st state	2nd state	1st state copies	2nd state copies	Folio (quire)
II 214r (22/3r)	72	A	214ra 7 (22/3r)	"(he) sus" is drifting				II 214r (22/3r)
	73	G	214ra 19 (22/3r)	vestr qui in	vester qui i[n]	P46	P16, P27, P29, P33, V6, V10	
	74	C	214ra 33 (22/3r)	credidistis (the first "d" is normal)	credidistis (the first "d" is abutting)	P46	P16, P27, P29, P33, V6, V10	
II 227v (23/6v)	80	A	227va 4 (23/6v)	"i" in "liberari" is drifted up	"i" is at lower position	P27	P16, P29, P33, P46, V6, V10	II 227v (23/6v)
	81	C	227va 30 (23/6v)	responde[n]s (abutting "o")	responde[n]s (normal "o")	P27, P29	P16, P33, P46, V6, V10	
	82	A	227va 33 (23/6v)	"ec" in "fecerit" is drifted				
II 266v (27/5v)	93	G	266vb 2 (27/5v)	acce=	acci- (not "i", but "i")	P16	P27, P29, P33, P46, V6, V10	II 266v (27/5v)
	94	C	266vb 5 (27/5v)	michi (abutting "m")	michi (normal "m")	P16	P27, P29, P33, P46, V6, V10	
	95	D	266vb 21 (27/5v)	simula (/ tioni)	simula= (/ tioni)	P16	P27, P29, P33, P46, V6, V10	
	96	A	266v (27/5v)	P16 is not well overlapped with other copies				

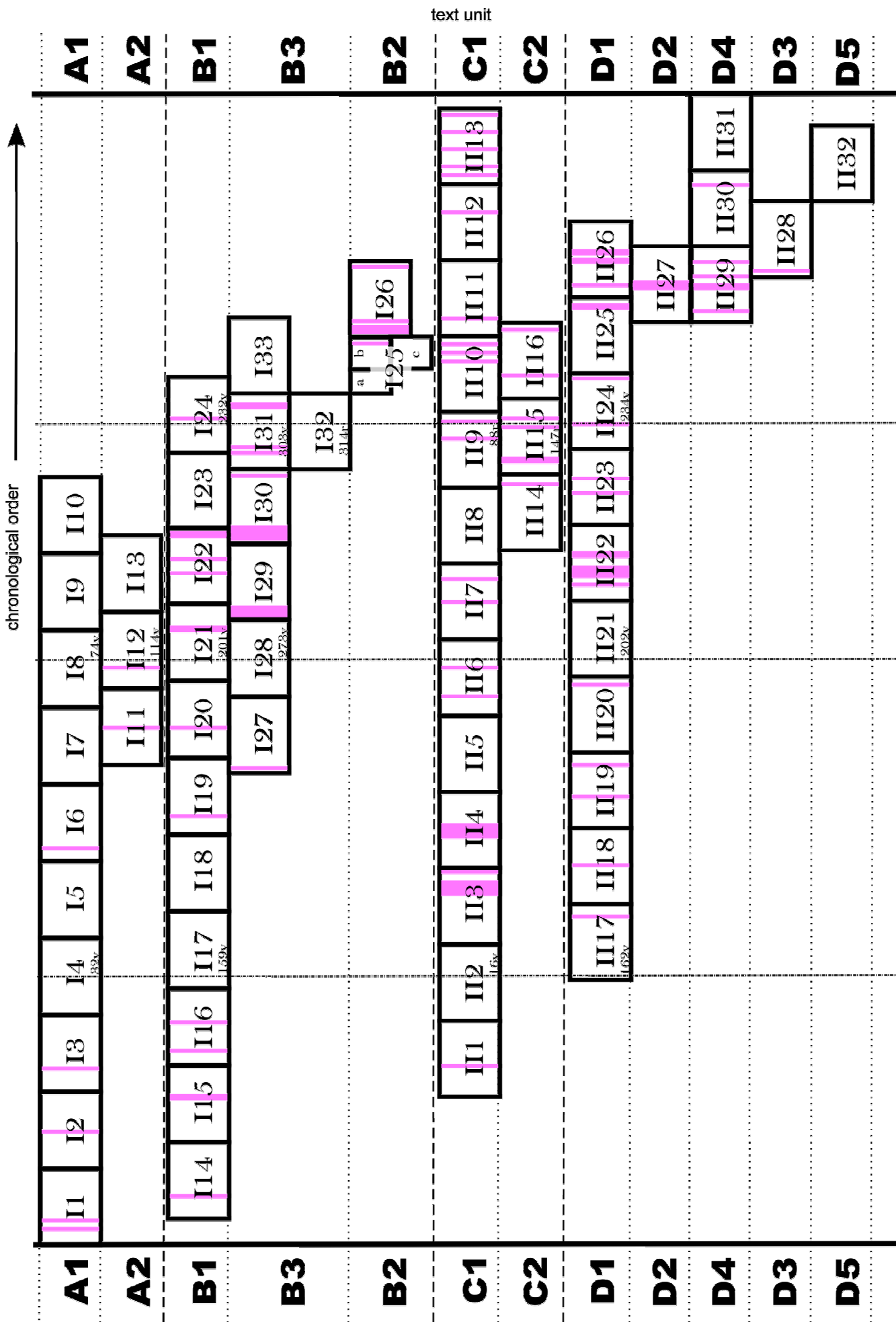


Figure V.1 Chronological Changes



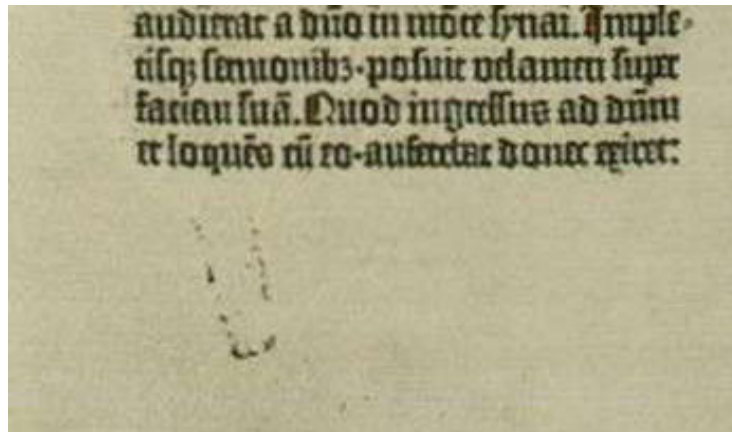


Figure V.2.a. Type in the Pelplin copy of the B42 (P25), I 46r (Exodus).

Reprinted from Polska Biblioteka Internetowa, Biblia Gutenberga. T.1,  
<http://www.pbi.edu.pl/index.html> (accessed 2006-02-22).

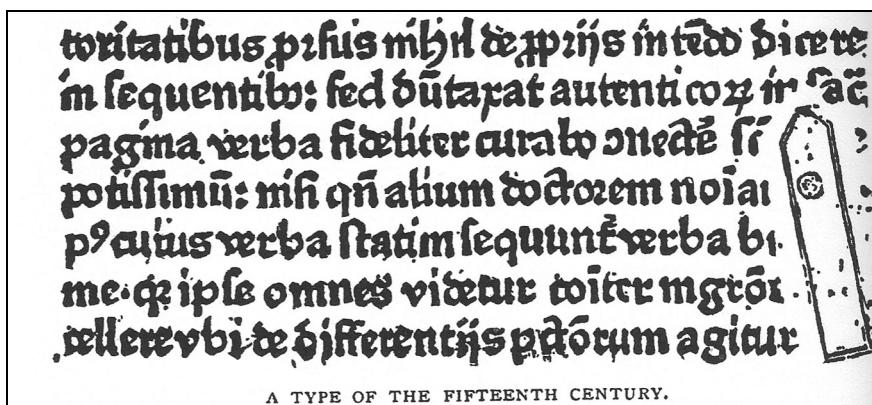


Figure V.2.b. Type in the book printed in Cologne, 1476  
 (with a circular mark).

Reproduced from F. C. Bigmore and C. W. H. Wyman, comps. *A Bibliography of Printing: With Notes and Illustrations*. 3rd ed, 1880-1886. Reprint, New Castle, DE: Oak Knoll Press; London: British Library, 2001, 2, 10.

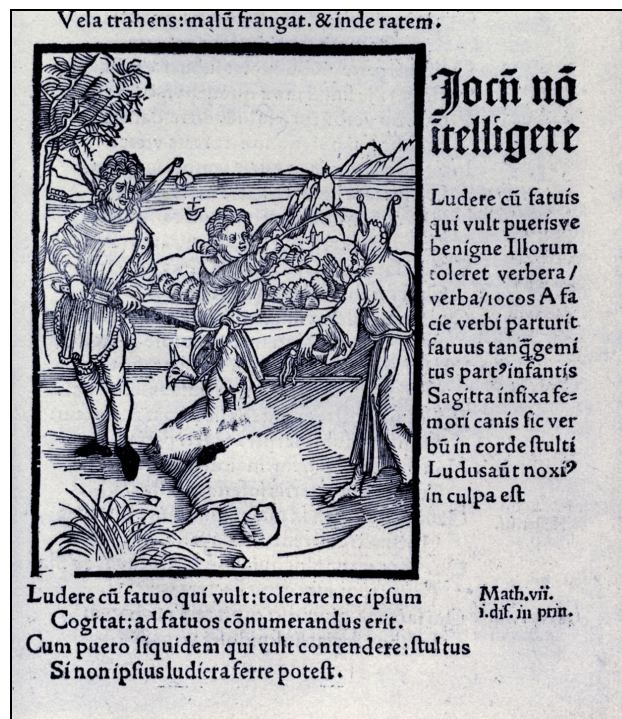


Figure V.2.c. Type in the book printed in Basel, 1498  
(nick at the upper left).

Reprinted from *Marks in Books, Illustrated and Explained* (Cambridge, Mass.: Houghton Library, Harvard University, 1985), 7.

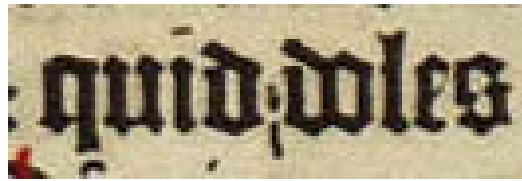
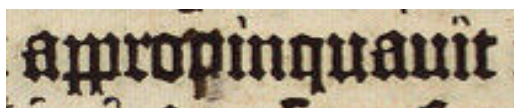


Figure V.3 (118) I 254rb 25 (26/5r) (2 Esdras 9:40)  
P39 (Keio University Library).



a. P16 (Gutenberg Museum)



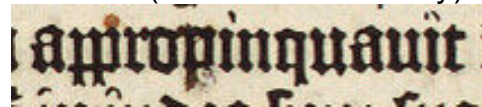
c. P33  
(Cambridge University Library)



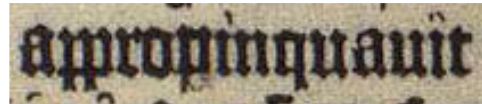
e. V6  
(Göttingen University Library)



b. P27 (The British Library)



d. P46 (Gutenberg Museum)



f. V10 (The British Library)

Figure V.4  
Examples of hand correction in the B42  
II 232rb 19 (24/1r) (Luke 21:20).

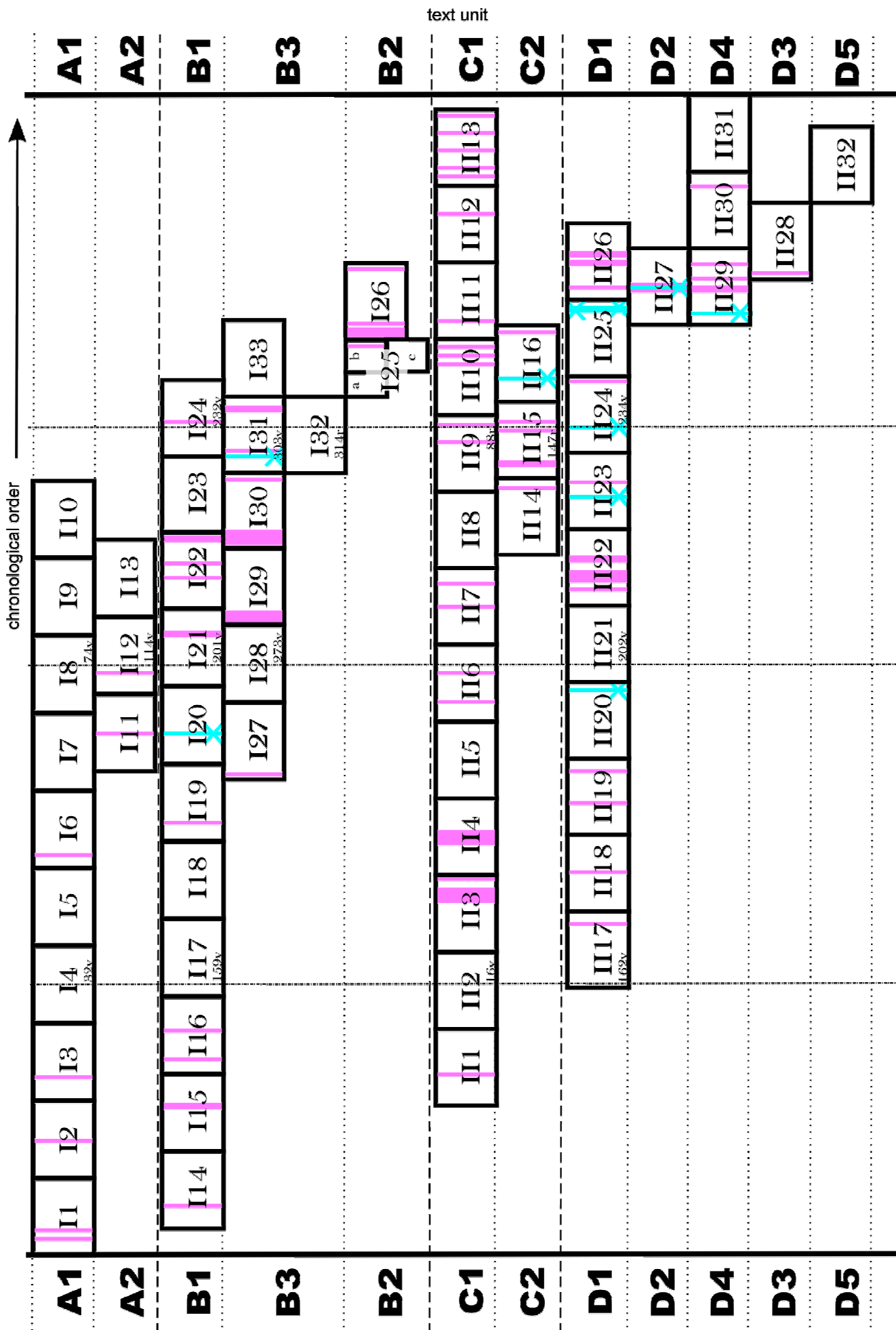


Figure V.5 Hand Corrections

## Conclusion

A review of such extensive studies of the B42 reveals that there still remains at least one important area of investigation: a systematic and precise collation. Although the necessity for collation has been recognized, the difficulty of access and the limitations of the method have prevented researchers from such collation. To answer the pressing need to make a collation of the B42 and to make good use of the possibilities offered by the recent advancement of digital technology, the present study proposed two methods of collation and performed a precise collation using digital images to reveal stop-press variants. They can serve as important clues to reconstruct the practice of the B42 printing shop, about which what we know for sure is that the B42 was printed with movable metal type, and each page was sequentially printed on a single-pull press.

The results of the present study prove the usefulness of applying digital technology to the B42 studies, especially as regards the detection of these subtle stop-press variants. The superimposition of digital images proposed in chapter III makes it possible to perform a precise and systematic collation of a thick book of a large format, without an undesirable risk of damaging the original materials. At present, this is the most effective and realistic approach towards collating the early printed books.

The results of the collation given in chapter IV conclusively show that stop-press correction was already being executed in the first printing shop in Europe. Although there are many mistakes left uncorrected, the number of variants is large enough to suppose they are not accidentally but intentionally made, although not very systematically: 117 variants on 88 pages out of the total of 1,282 pages (or 277 variants on 216 pages including the changes in spacing). 54 of them can be considered to be simple typographical improvements such as correction of inverted letters and change of letter shape to abide by the strict composition rule of the B42. 64 of the variants are more textual corrections, such as correction of misspelling and change of contraction. On the other hand, there is only one example of addition of words and no insertion or exchange of words is observed.

There are only two states of variants even for the pages showing more than one

variant, and there are in general fewer copies of the first, uncorrected, state than the later, corrected, state. The results strongly support the hypotheses that the stop-press variants were made at an early stage in the print run of each page, and only once; and that the vellum pages were printed after the corresponding paper pages.

These stop-press variants do not appear at very regular intervals. Rather, there are several interesting tendencies to be seen in their distribution. That is, they scarcely appear in the text units A1 and A2, while they occur more frequently in other units. As for a chronological change, the stop-press variants more frequently appear in the latter half of the printing. In addition, there are nine examples of careful hand correction presumably executed in the B42 printing shop, which also appear on the pages produced in the latter half of the stage of printing. The existence of the hand corrections shows that earlier uncorrected sheets were not necessarily used without any distinction with the corrected sheets. These pieces of evidence suggest that most of these stop-press corrections were made by each press crew rather than a “corrector” in charge of all the printed sheets, and the procedure of stop-press correction was gradually established over time.

160 differences in spacing including drifting letters and crooked letters suggest that the pages of the B42 tend to have been rather loosely set. Therefore, the types of the each page of the B42 are assumed to have been set on a kind of tray with a bottom and directly carried to the press; this is different from the traditional process of the early printing shops from the sixteenth centuries onwards, where the forme was firmly locked in a chase and carried to the press for printing. It will be worth examining the subsequent early printed books on this matter.

In addition, a discovery of a hitherto unknown type of the upper letter “E” on f. II 189ra 19 suggests that it is necessary to revise the B42 type synopsis established by the painstaking studies of the early German scholars. These early studies also revealed the strict composition rules, and the category C variants detected in the present collation show how carefully these rules are observed; they express such a great care paid to the look of the page. On the other hand, interesting examples of the use of the shorter abutting “r” are newly detected, which cannot be explained by these rules. A further analysis of the use of different shapes of letters may reveal another rule of setting types. For these kinds of analysis, digital technology will be indispensable. As several ongoing projects promise, a new device such as automatic type identification will be realized in the near future, which

will be of immense help in advancing the study of printing history.

This study succeeds in throwing some new light on the printing process of the B42. Not only new pieces of knowledge but also new questions arise from the present collation. An accumulation of examples of stop-press variants and analysis of it in conjunction with preceding studies, new technologies and practical knowledge of printing could give further clues to a reconstruction of the practices in the B42 printing house.

## APPENDIX 1: FULL DESCRIPTION OF THE MANUSCRIPTS

**(1) University of London Library, MS 292. *Biblia***

## A Latin Bible in 4 volumes of the Fifteenth Century

Contents. The Psalms is omitted, and the rest of books are almost in the usual order, except that Ecclesiasticus ends with the Prayer of Solomon, and 1-2 Maccabees follows Job. Vol.1: Genesis - Ruth. Vol.2: 1-4 Kings, 1-2 Chronicles, 1 Ezra, Nehemiah, 'Esdras II' (i.e. 3 Ezra), Tobit, Judith, Esther, Job, 1-2 Maccabees. Vol.3: Proverbs, Ecclesiastes, Song of Songs (ends with a stichometric note), Wisdom of Solomon, Ecclesiasticus (with the Prayer of Solomon at the end), Isaiah, Jeremiah, Lamentations, Baruch (with Jeremiah's epistle at the end), Ezekiel, Daniel, Minor Prophets (Hosea, Joel, Amos, Obadiah, Jonah, Micah, Nahum, Habakkuk, Zephaniah, Haggai, Zechariah, and Malachi). Vol. 4: Gospels (Matthew, Mark, Luke, and John), Pauline Epistles (Romans, 1-2 Corinthians, Galatians, Ephesians, Philippians, Colossians, 1-2 Thessalonians, 1-2 Timothy, Titus, Philemon, and Hebrews), Acts, Catholic Epistles (James, 1-2 Peter, 1-3 John, and Jude), Apocalypse; and *Interpretationes Nominum Hebraicorum* (IV: 108r-154v). Leaf 155 is blank.

The prologues are 40 of the common set of 64, and 5 others shown here by \*: Stegmüller nos. 284, 285, 311, 323, 328, 330, 332, 335, 341+343, 344, 551, 457, 468, 26\*, 482, 487, 29\*, 491, 492, 494, 500, 595\* (the general prologue to the Gospels), 590, 607, 620, 49\*, 624, 670\*, 677, 685, 699, 707, 715, 728, 736, 747, 752, 765, 772, 780, 783, 793, 640, 809.

Vol.1: v + 114 + iv (fol. v is a medieval (?) parchment leaf); Vol.2: iv + 151 + v; Vol.3: v + 135 + iv (fol. v is a medieval (?) parchment leaf); Vol.4: iv + 155 + iv. Parchment. 339 x 250mm. Written space: 238 x 172 mm. Double columns of 47 lines. Outer margins were trimmed off and there was no visible pricking. Single frame lines were ruled in black ink, and horizontal guidelines in faint pencil were visible on some pages (ex. I: 144r, III: 9v, IV: 155rv). Collation: 70 quires in eight leaves, except 14<sup>10</sup>, 33<sup>8</sup> (wants 8, probably blank), 38<sup>6</sup> (III: fols. 33-38), 50<sup>8</sup> +1 (III: fol. 135), 64<sup>4</sup> (wants 4, blank leaf after fol. 107). I: quire 1-14, II: quire 15-33, III: quire 34-50, IV: quire 51-70. However, this manuscript was apparently once bound in two volumes, because their weights are recorded in two places (in the sixteenth century hand?): I: 1, 'wacht 12 1/8; III: 1, 'wacht 13. Ander (?) wacht 12 1/8. 25 1/8'. Prologues to 1 Kings (II: 1r), Proverbs (III: 1r), Isaiah (III: 39r), and Matthew (IV: 1r) begin on a new quire or on a new volume. Uniform brown bindings of the eighteenth century. Four book plates in each volume: (1) anonymous, showing storks, one on the nest, the other bringing food, with motto 'Tutissima virtus pietas homini' (continental, the eighteenth century); (2) armorial of R. Dyneley, the nineteenth century; (3) armorial of Sir Edwin Durning-Lawrence; (4) armorial of University of London (given by a widow of Durning-Lawrence



in 1929). Some catchwords are visible on the right bottom of the last verso of a quire. Written in hybrida by two scribes probably in the Netherlands. The second scribe wrote from II: 81rb 29 to 151v (the end of the volume 2) and IV: 108r-154v (*Interpretationes Nominum Hebraicorum*) in smaller and neater hand. The two letters of double r, l, and long s (ſ) are usually of the same height. The column has somewhat ragged line endings, but in the first two volumes, it is sometimes justified by line fillers such as ‘n’, ‘no’ (ex. I: 76v), and other words, which are crossed out. In some cases the previous or next word (at the end of a line) is repeated and crossed out, maybe for justification (ex. I: 78v, 80r, 83r, 93r; II: 23r, II. 30r). ‘Evangelista’ is always spelled as ‘ewangelista’. Additions and corrections by the original scribes are written in the outer, inner, or (if long) lower margins. Secundo folio. I: *diem eius et letatus est*; III (original II): *ipse benefac*.

A sixteenth-century reader has noted in the margin of III: fol. 122v, where Joel ends and Amos begins, that ‘in hebreo’ chapter 3 begins at Joel, 2:28 (‘et erit post hec effundam’). There are two other notes in the margins of the same volume (III: fols. 4 and 128v), probably by the same reader, stating that they were due to a ‘corruptor’.

Punctuation mark includes the *punctus flexus*. Other marks are the colon and raised mid-point followed by a small letter, the period by a capital, and the *punctus elevatus* followed by a small letter is used in part of vol.1 and by the second scribe. Two forms of question mark are used; one is followed by a small letter, and the other by a capital. A syllable is often separated into two lines, sometimes into the next column, or into the next page. Syllable separation is indicated by a faint hyphen in single stroke like > and ˇ in the volume 1, and / in other volumes.

General rules of decoration are as follows: (1) Initials of many books: red and blue (often puzzled initial) with white patterns, in 5 to 8 lines or more for initial I. Guide letters are written in faint pencil in the middle of the space. (2) Initials of prologues and some books: red or blue alternately with white patterns, occupying mostly 3 to 6 lines, but sometimes up to 8 lines or more (for initial I). Guide letters are written in faint pencil in the middle of the reserved space. (3) Initials of chapters: red and blue alternately in 2 lines. Guide letters are written in faint pencil in the middle of the space. (4) A space for chapter initial I is usually within the column of writing, except when it appears in the left column. (5) Subdivisions of chapters of the four Gospels are often red and blue alternately in 1 line. (6) Chapter numbers in Roman numerals (in red ink) are usually written at the end of the last line of the previous chapter. (7) Capital letters of each sentence are marked with a red stroke. (8) Running titles to each book are written across the top of each opening. (9) The space for the explicit is sometimes created in the first line of the next book, rather than at the end of the book.

## (2) University College Library, Lat. 22. *Novum Testamentum*

### A Latin New Testament of the Fifteenth Century

Contents. The New Testament in the usual order. Gospels (Matthew, Mark, Luke, and John), Pauline Epistles (Romans, 1-2 Corinthians, Galatians, Ephesians, Philippians, Colossians, 1-2 Thessalonians, 1-2 Timothy, Titus, Philemon, and Hebrews), Acts, Catholic Epistles (James, 1-2 Peter, 1-3 John, and Jude), Apocalypse.

The prologues are 20 of the common set of 22 New Testament prologues, and 11 others shown here by \*: Stegmüller nos. 595\*, 596\*, 581\*, 601\*, 590, 607, 620, 49\*, 624, 670\*, 651\*, 659\*, 674\*, 677, 685, 699, 713\*, 707, 715, 728, 736, 747, 752, 765, 772, 780, 783, 793, 640, 809, 835\*.

ii + 134 + i (fol. ii is a medieval parchment leaf). Parchment, and the second and third sheets (that is, conjugate leaves of 2.7 and 3.6 of each quire) of quire 2 to 10 are paper with a bull's head watermark. 284 x 205 mm. Written space: 210 x 145 mm (205 mm high on 43-line pages, and 215 mm high on 47-line pages). Double columns of 43 to 47 lines. Collation: 1<sup>6-1</sup> 2-16<sup>8</sup> 17<sup>8</sup>+1. Binding of the twentieth century. Book plate of Walter Seton of Abercorn. Some catchwords are visible on the right hand bottom of the last verso leaf of a quire, but their positions vary. Quire numbers appear on the first four leaves of a quire from quire 2 (quire b) onwards. A table of epistle- and gospel-lections for the Temporale and Sanctorale is written in four columns in the first separate quire in the same hand with the text (fols. 1r to 3v), followed by general prologues to the Gospels and prologues to Matthew (fols. 4r to 5v). There are many additions and markings (looks like *signe-de-renvoi*) in the margins. Guides for the incipit and explicit remain at the bottom of some leaves (for example, fols. 68r, 123r, 124r, 126r, and 127r). A parchment tab is attached to the margin of the page at the beginning of the prologue to the Pauline Epistles (fol. 66v). Written by one scribe in a very good hybrida probably in the Netherlands. The latter letter of double **f** and long **s** is slightly longer than the first, or of the same height. Two letters used in double **r** and **l** are of the same height. Sometimes the previous word or (at the line ending) the first word of the next line is repeated and crossed out in black, probably for justification (ex. fols. 4v and 5r). *Secundo folio*: 'tunc hereticorum semina pullularent' (fol. 5r).

Punctuation marks are the *punctus flexus*, colon, *punctus elevatu*, and question mark followed by a small letter, and the period is followed by both a capital and a small letter. A syllable is often separated into two lines, sometimes into the next column, or into the next page. Syllable separation is indicated by a faint short hyphen in single stroke at the bottom of the line ending.

General rules of decoration are as follows: (1) Initials of books are plainly painted in red sometimes with white patterns, in 6 to 8 lines. Guide letters are written in faint pencil in the middle of the space. (2) Initials of prologues and arguments are also coloured in red. Those to the Pauline epistles

occupy 2 lines, and those to the others occupy 3 to 8 lines or more for initial **I**. Some guide letters are visible. (3) Initials of chapters are red in 2 lines, and some guide letters are visible. (4) A space for book initial **I** is within the column of writing except on fols. 96r (Argument to 2 Timothy) and 98r (Argument to Hebrews), while chapter initial **I** is in the margin except on fol. 73vb (Romans, chapter xiii). (5) Chapter numbers in Roman numerals are usually written at the end of the last line of the previous chapter. (6) Capital letters of each sentence are marked with a red stroke, except in the table of epistle- and gospel lections. (7) Running titles to each book are written in red ink either page by page or across the top of each opening.

**(3) British Library, Royal MSS I. C. v, vi. Bible****A Latin Bible in two volumes of 1450-1451**

Contents. The order of the Old Testament varies from the usual arrangement, and the Psalter is omitted.

Vol. 1: Genesis - 2 Chronicles, Prayer of Manasseh, Ezra, 2 Ezra (without incipit), Proverbs - Ecclesiasticus. Vol. 2: Job, Tobit, Judith, Esther, Isaiah-Daniel, Minor Prophets (Hosea, Joel, Amos, Obadiah, Jonah, Micah, Nahum, Habakkuk, Zephaniah, Haggai, Zechariah, and Malachi), 1-2 Maccabees, Gospels (Matthew, Mark, Luke, and John), Pauline Epistles (Romans, 1-2 Corinthians, Galatians, Ephesians, Philippians, Colossians, 1-2 Thessalonians, 1-2 Timothy, Titus, Philemon, and Hebrews), Acts, Catholic Epistles (James, 1-2 Peter, 1-3 John, and Jude), and Apocalypse.

The prologues are 40 of the common set of 64, and 5 others shown here by \*: Stegmüller nos. 284, 285, 311, 323, 328, 330, 457, 468, 26\*, 344, 332, 335, 341+343, 482, 487, 491, 492, 494, 500, 551, 595\* (starting with 'Beatissimo pape damaso'), 601\*, 590, 607, 620, 49\*, 624, 670\*, 677, 685, 699, 707, 715, 728, 736, 747, 752, 765, 772, 780, 783, 793, 640, 809.

Vol. 1: i + ii + 260 + i; Vol. 2: iii + 269 + ii. Parchment. 380 x 270 mm. Written space: 260 x 174 mm. Double columns of 47 lines. Collation: I: 32<sup>8</sup> 33<sup>4</sup>; II: 33<sup>8</sup> 34<sup>6-1</sup>. Modern bindings. The border decoration on I: 4v depicts an English king, apparently Henry VIII with the royal arms. Written by one scribe in *textura* (*textualis rotunda*). The respective colophons states that it was written in the house of Augustinian canons, the Agnietenberg, Zwolle in the Netherlands (*'in domo clericorum Zwollis'* = Brethren of the Common Life, Zwolle), and that the first volume was finished 20 March 1450/1, and the second volume on 19 August 1451. The latter letters of double **r** and **l** are usually of the same height, and those of double **f** and long **s** are slightly higher than the first. The column is well justified, and there are a few instances where a word has been repeated at the end of a line and then crossed out, probably for justification (ex. fol. 214r). Ammonian sections are written by the original scribe in the margin of the Gospels, and the correspondent sentence in the text is indicated with "" above the period. Sometimes accent markings are added, especially in Genesis and the Pauline Epistles; for example, the word 'maria' (meaning 'sea') in the Genesis is marked as 'măria' to prevent it from being pronounced 'marîa' (= Mary). Secundo folio: I: *navit deus ante secula*; II: *ego solus et nutiarem tibi*.

Marks of punctuation are the *punctus elevatus* and *punctus flexus* followed by a small letter, period followed by both a small and capital letter, and question mark. A syllable is often separated into two lines, sometimes into the next column, or into the next page. Syllable separation is indicated by a faint hyphen (/).

General rules of decoration are as follows: (1) Opening pages of some books have large illuminated

borders in the Flemish style, beginning on a new page (I: Genesis on fol. 4v, Joshua on fol. 93r, 1 Kings on fol. 118r, 1 Chronicles on fol. 176v; II: Prologue to Job on fol. 1r, Job on fol. 1v, and Matthew on fol. 158v). Red, blue, pink, green, gold, purple, white and brown are used. (2) Initials of the rest of books are ornamented in red and blue with pen-work of the same colours occupying seven to ten lines (and fifteen lines for initial **I** of the Genesis). Green is also used for those in the second volume. (3) Initials of prologues occupy four to ten lines. Those in the Old Testament are ornamented in the same way as most of the books, and those in the New Testament are ornamented in red or blue with a white pattern and pen-work of green and red. (4) Initials of chapters are coloured red and blue alternately, occupying in two lines in prologues, and three lines in books. Small guide letters in the small letter are visible at the top of the reserved space. (5) Where initial **I** occurs at the beginning of a book, it is usually within the column of writing, except for that on 236va. When it occurs at the beginning of a chapter, **I** is also within the column of writing, except for that appears in the left column of a verso page. (6) Chapter numbers in Roman numerals are coloured in red at the end of the previous or new chapter. (7) Capital letters of each sentence are marked with a red stroke. (8) Running titles to each book are written in red across the top of each opening.

#### (4) British Library, Harley 2789. *Bibliorum Volumen Secundum*

##### A Latin Bible of the Fifteenth Century

Contents. The second part of a Bible. The arrangement of the surviving part of the Old Testament is in the usual order, but that of the New Testament varies from the usual order. Proverbs, Ecclesiastes, Song of Songs, Wisdom of Solomon, Ecclesiasticus, Isaiah, Jeremiah, Lamentations, Baruch (with Jeremiah's epistle at the end), Ezekiel, Daniel, Minor Prophets (Hosea, Joel, Amos, Obadiah, Jonah, Micah, Nahum, Habakkuk, Zephaniah, Haggai, Zechariah, and Malachi), Gospels (Matthew, Mark, Luke, and John), Catholic Epistles (James, 1-2 Peter, 1-3 John, and Jude), Acts, Apocalypse, Pauline Epistles (Romans, 1-2 Corinthians, Galatians, Ephesians, Philippians, Colossians, 1-2 Thessalonians, 1-2 Timothy, Titus, Philemon, and Hebrews).

The prologues are 40 of the common set of 64, and 38 others shown here by \*: Stegmüller nos. 457, 468, 26\*, 482, 487, 491, 492, 494, 500, 504\*, 510, 515, 512, 519+517, 516\*, 987\*, 522\*, 526, 525\*, 528, 527\*, 531, 529\*, 534, 532\*, 538, 535\*, 539, 540\*, 544\*, 543, 551, 590, 601\*, 607, 620, 624, 809, 806\*, 816\*, 822\*, 823\*, 824\*, 825\*, 640, 631\*, 835\*, 829\*, 651\*, 670\*, 654\*, 674\*, 677, 690\*, 685, 697\*, 700\*, 709\*, 707, 716\*, 715, 733\*, 728, 741\*, 736, 743\*, 747, 759\*, 753\*, 761\*, 765, 771\*, 772, 775\*, 780, 783, 793. Numbered lists of capitula precede Proverbs, Ecclesiastes, Wisdom, Ecclesiasticus, Acts, Apocalypse, and each of the Pauline Epistles.

iii + 362 + iii. Parchment. 330 x 337 mm. Written space: 235 x 160 mm. Single column of 34 lines. Collation. 1-21<sup>10</sup> 22<sup>6</sup> 23-24<sup>12</sup> 25-35<sup>10</sup> 36<sup>12</sup>. This manuscript lacks the first four quires, since the original foliation in Arabic numerals for every leaf starts from 41. Catchwords are written in the lower margin of the last verso of a quire. Ruled in hard point for every line and also for catchwords. The contrast of the colour of the flesh and hair sides of parchment is vivid, and the flesh side always faces to the flesh side. Written by one scribe in a neat humanist book script. Two letters in double **r** and **p** are of the same height, while the latter is slightly higher in double **l** and long **s**. The column is well justified. In the outer margin, a word 'notus' is often written by the same scribe. Numbers corresponding to the numbers in the lists of capitula are written in red ink in the left hand margin of the text. In the margins of Proverb, many additions are written in apparently the same hand. Secundo folio: *Parabole Salomonis filii david*.

The punctuation marks used are the *punctus elevatus* and colon followed by a small letter, and period followed by a small or capital letter. The *virgula*, or a single hyphen (/), is sometimes used to mark the pause in the sentence. The end of each chapter is indicated by a mark (. ~), and the *positura* proceeds explicit. A syllable is sometimes separated into two lines or into the next page; syllable separation is indicated by a single hyphen (-).

General rules of decoration are as follows: (1) Initials of books are illuminated in gold with typical

white vine-scroll ornaments in purple and white, framed in blue and green, and occupy three lines. Guide letters are written in the left margin. (2) Initials of prologues are painted in blue in two lines, except for that of Matthew in six lines. (3) Chapter initials are set in the margin and often unfilled. Some are coloured in blue occupying two lines, and others are in black ink occupying one line. Guide letters for two-line initials remain in the left margin in black ink. (3) Initial **I** is always in the margin like other initials. (4) Chapter numbers in roman numerals are coloured in red at the very end of the line. (5) Capital letters of each sentence have no red stroke. (6) Running titles to each book are written in red ink just above the first line of each opening.

**(5) British Library, Harley 2836 & 2837. Biblia****A Latin Bible in two volumes of the Fifteenth Century**

Contents. The order of books varies considerably from the usual Vulgate arrangement. The Psalter, Song of Songs, Baruch, the Gospels, and 2 Timothy are omitted. Vol. 1: Genesis-2 Chronicles, Prayer of Manasseh, Ezra, 2 Ezra (i.e. Nehemiah), 3 Ezra, Pauline Epistles (Timothy follows Thessalonians, and is followed by 2 Thessalonians: Romans, 1-2 Corinthians, Galatians, Ephesians, Philippians, Colossians, 1 Thessalonians, 1 Timothy, 2 Thessalonians, Titus, Philemon, and Hebrews). Volume 2: Proverbs, Ecclesiastes, Wisdom, Ecclesiasticus, Job, Tobit, Judith, Esther, 1-2 Maccabees, Ezekiel, Daniel, Minor Prophets (Hosea, Joel, Amos, Obadiah, Jonah, Micah, Nahum, Habakkuk, Zephaniah, Haggai, Zechariah, and Malachi), Isaiah, Jeremiah, Acts, Catholic Epistles (James, 1-2 Peter, 1-3 John, and Jude), and Apocalypse.

The prologues are 20 of the common set of 64, and one other shown here by \*: Stegmüller nos. 285, 311, 323, 328, 330, 670\*, 457, 344, 332, 335, 341+343, 492, 494, 500, 482, 487, 640, 809.

Vol. 1: iv + 337 + iii (fol. iv is a medieval document on parchment); Vol. 2: iv + 298 + iii (fol. iv is a medieval parchment). Parchment. 480 x 340 mm. Written space: 340 x 230 mm. Double columns. I: 36 lines; II: 35 lines. Collation: I: 1-11<sup>10</sup> 12<sup>10+1</sup> 13-33<sup>10</sup> 34<sup>8-2</sup>; II: 1-29<sup>10</sup> 30<sup>2</sup> 31<sup>6</sup>. The modern folio numbers are written in pencil at the right upper corner of every rectos, starting from fol. iv of each volume (that is, the first text leaf is numbered as folio 2). Catchwords are written at the bottom left of the last verso of the quire, often with quire signatures in the bottom centre. Only on I: 29/10v (I: 292v) is catchword omitted, where 3 Ezra ends and the Catholic Epistles begin on the next page. Pricking occurs in the inner margin as well as in the outer margin of each leaf, which means every leaf was pricked rather than every bifolium; every line was pricked from I: 2r to II: 51v; every three lines from II: 52r to 71v; every four lines from II: 72r to 101v; every six lines from II: 102r to 224v, 229r to 261v, 272r to 299v; every two lines from II: 225r to 228v; every five and six lines from II: 262r to 271v. The Pauline Epistles appear at the end of the first volume after 3 Ezra, and this arrangement is assumed to have been the original intention, judging from the fact it is written in the same number of lines per page with the same method of pricking as the rest of volume 1 rather than volume 2. Guide letters for incipit and explicit remain at the far bottom of the lower margin, but often half-cropped. Written in textura (textualis rotunda) apparently by one scribe in a Carthusian monastery, as stated in a note with the table of contents on I: 338r ('Iste liber est fratrum carthusiensium'). The table of contents does not reflect the actual arrangement of the Pauline Epistles in this manuscript. The latter letter of double long s is slightly longer than the first, but in case of double **r**, **l**, **f**, and ligatured **p**, they are of the same height. Secundo folio: vol. 1: *hanne: quo*; vol. 2: *custodiet te et prudentia*.

Lecture reading guides are written in red at the bottom of the first page of some books and



prologues (for example, ‘Dominica secunda quadragesime’ on fol. 97r, Deuteronomy; ‘Iste liber totus legitur in refectorio...’ on fol. 266r, Prologue to Ezra). The latter example means this copy belonging to a Carthusian monastery was read aloud at mealtimes, as in a Benedictine monastery. Some words are crossed out in red ink with black dots (expunctuation). Accent markings, corrections, and additions are heavily made throughout both volumes; in the margins of Jerome’s General Prologue, abbreviations and contractions are expanded in black ink. In the General Prologue, chapter divisions are often omitted and marked by inserted paragraph marks in red or blue ink. In the margins of books, chapters are subdivided into seven subsections, marked by the letters A to H either in the capital letter (in red ink) or the small letter (in black ink), and corresponding places in the text are underlined in red ink. Their purpose was probably to help the reader to find the appropriate passage of the *lectura divina*. Parchment tabs, often dyed red, are attached to the margins of the page at the beginning of each book and prologue except for 1 and 2 Ezra. In Ezra, chapter 7 appears twice; on the second occasion, the text varies from the standard text (starting with ‘Post hec autem verba in regno arthaxersis regis persarum ... in regno arthaxersis esdre sacerdoti scribe erudito in sermonibus...’) and is deleted by writing ‘vacat’ in the margin (I: 270v-271r).

The period and raised mid-point are followed by a small or capital letter; question mark followed by a capital letter, and *punctus elevatus* and *punctus flexus* followed by a small letter. Periods are sometimes changed into *punctus elevatus*, and *punctus elevatus* into *flexus* by later hand. Sometimes a double hyphen is added at the beginning of the line. A syllable is often separated into two lines, sometimes into the next column, or into the next page. Syllable separation across columns or pages is always indicated by a faint single or double hyphen (/ or //), but syllable separation into two lines is not always indicated.

General rules of decoration are as follows: (1) Initials of books are ornamented in red and blue with white pattern and pen-work, occupying four to nine lines. For those to the Pauline and Catholic Epistles, green is also used. (2) Initials of prologues occupy two to six lines in the same but simpler style. (3) Initials of chapters are coloured in red with blue pen-work or blue with red pen-work alternately, occupying two lines. Guide letters are visible in the margin. (4) Initial **I** is painted in the margin with two exceptions (Book initials on I: 148r and II: 187v). (5) Chapter numbers in Roman numerals are coloured in red and blue. (6) Capital letters of each sentence are marked with a red stroke. (7) Running titles to each book are written in blue and red across the top of each opening, with guide letters above.

**(6) British Library, Harley 2839 & 2840. *Biblia*****A Latin Bible in two volumes of the Fifteenth Century**

Contents. The arrangement varies from the usual order, and Nehemiah is not included. Vol. 1: Genesis-2 Chronicles, 1 Ezra, 'Esdre 2' (i.e. 3 Ezra), Esther, Judith, Tobit, Job, Psalms; Vol. 2: Proverbs-Ecclesiasticus, Isaiah, Jeremiah, Lamentations, Ezekiel, Baruch, Daniel, Minor Prophets (Hosea, Joel, Amos, Obadiah, Jonah, Micah, Nahum, Habakkuk, Zephaniah, Haggai, Zechariah, and Malachi), 1-2 Maccabees, Gospels (Matthew, Mark, Luke, and John), Acts, Catholic Epistles (James, 1-2 Peter, 1-3 John, and Jude), Pauline Epistles (Romans, 1-2 Corinthians, Galatians, Ephesians, Philippians, Colossians, 1-2 Thessalonians, 1-2 Timothy, Titus, Philemon, and Hebrews), Apocalypse.

The prologues are 47 of the common set of 64, and 15 others shown here by \*: Stegmüller nos. 284, 285, 311, 323, 328, 330, 341+343, 335, 332, 344, 457, 455\*, 26\*, 482, 487, 492, 491, 494, 507, 511, 515, 519+517, 524, 526, 528, 531, 534, 539 (the usual prologue to Zechariah is used here for Haggai), 540\*, 543, Prologue to 1 Maccabees (starting with 'Reverendissimo et omnis caritatis officio dignissimo'), 7598 (Sedulius Scotus' epistle, starting with 'Eusebius carpriarno fratri in domino salutem')\*, 590, 607, 620, 624, 809\*, 812\*, 818\*, 822\*, 823\*, 824\*, 825\*, 670\*, 674\*, 685, 699, 707, 715, 728, 736, 747, 752, 765, 772, 780, 783, 793, 835\*. A list of capitula in double columns of 38 lines precede 1-4 Kings.

Vol. 1: iii + 317 + ii; Vol. 2: iii + 374 + ii. Parchment. I: 445 x 335 mm; II: 440 x 335 mm. Written space: 298 x 210 mm. Double columns. I: 35 lines (fol. 1r to 138v), 38 lines (fol. 139r to 150v), 36 lines (fol. 151r to 317v); II: 35 lines (fol. 1r to 7v), 33 lines (fol. 8r to 374v). Collation. I: 1<sup>4</sup> 2-13<sup>12</sup> 14-15<sup>10</sup> 16-27<sup>12</sup> 28<sup>5</sup>; II: 1<sup>7</sup> 2-4<sup>12</sup> 5<sup>11</sup> 6-22<sup>12</sup> 23-26<sup>10</sup> 27-30<sup>12</sup> 31-33<sup>8</sup> 34<sup>4</sup>. Catchwords are written at the right bottom corner of the last verso of a quire; a catchword on fol. 174v reads 'abdie. Incipit liber abdie', but these words are written at the end of the same page. Ruled in ink, and pricked for every line. The Genesis is not divided into chapters until chapter twenty-three. The text is written by several scribes in textura (textualis rotunda). Changes in hand occur on fols. 5r (Genesis) and 139r. Two letters in double **r**, **l**, ligatured long **s**, **p**, **f** are of the same height, although the latter is slightly narrower (**rr** only) or broader. The first scribe use round **s** at the end of a line, while the second scribe use long **s**, except if the line ends with 'es'. The second scribe always uses non-contracted 'et'. The title is written on the fore-edge of each volume ('Bibliæ 1/2 pars'). There is virtually no annotation or correction, except for two interlinear glosses on fol. 55r and a doodle on the opening of fols. 176v to 177r. In the second volume, the space for the incipit and explicit is often larger than required. Secundo folio: I: *odochlatu duabilies dei*; II: *et relinquit ducem pulextatis*.

The punctuation marks used are the *punctus elevatus* and the *punctus flexus* followed by a small

letter, the raised mid-point and the question mark followed by a capital letter. A syllable is often separated into two lines, sometimes into the next column, or into the next page. Syllable separation is indicated by a faint single hyphen (/).

General rules of decoration are as follows: (1) Miniatures prefixed to each book are elaborately painted in archaic style with small animals or birds, using red, blue, green, white, and gold, and often with small white dots (·· or ··). Miniatures occupy eight to fifteen lines (and more for initial **I**). Seven subsections of Psalms also have miniatures in eight to ten lines (fols. 290r, 293v, 296v, 299v, 303v, 307r, 310v). (2) Initials of prologues are ornamented in the same colours with interlaced animal motifs and occupy two to fourteen lines (and more for initial **I**). (3) Initials of chapters are coloured in red with blue pen-work or blue with red pen-work alternately, occupying two lines. However, they occupy only one line from fols. 140vb to 149v and new chapters do not begin a new line. Guide letters for chapter initials and numbers are clearly written in the margin. (3) Chapter initial **I** is painted in the margin, while book initial **I** is often in the column of writing: that for Ruth (fol. 135r), 1 Ezra (fol. 229v), Zechariah (fol. 186v), Mark (fol. 246r), John (fol. 280r), Jude (fol. 322r), Prologue to Apocalypse (fol. 365v). (4) Chapter numbers in roman numerals are coloured in blue and red. (5) Capital letters of each sentence are ornamental, but have no red stroke, except for those appear from fols. 139v to 142r. In the Psalms, each capital letters are inserted in blue and red alternately. (6) Running titles to each book are written in blue and ink red across the top of each opening, but the Psalms lacks the running title.

**(7) British Library, Add. MS 15254-15258. *Biblia Sacra*****A Latin Bible in 5 volumes of the Fifteenth Century**

Contents. The arrangement differs from the usual order, and Nehemiah is omitted. Vol.1: Genesis-Ruth; Vol. 2: 1-4 Kings, 1-2 Chronicles, 1 Ezra, 2 Ezra; Vol. 3: Ezekiel, Daniel, Minor Prophets (Hosea, Joel, Amos, Obadiah, Jonah, Micah, Nahum, Habakkuk, Zephaniah, Haggai, Zechariah, and Malachi), Isaiah, Jeremiah, Lamentation, Baruch (with Jeremiah's epistle at the end); Vol. 4: Proverbs, Ecclesiastes, Song of Songs, Wisdom of Solomon, Ecclesiasticus, Job, Tobit, Judith, Esther, 1-2 Maccabees; Vol. 5: Gospels (Matthew, Mark, Luke, and John), Acts, Catholic Epistles (James, 1-2 Peter, 1-3 John, and Jude), Apocalypse, Pauline Epistles (Romans, 1-2 Corinthians, Galatians, Ephesians, Philippians, Colossians, 1-2 Thessalonians, 1-2 Timothy, Titus, Philemon, and Hebrews).

The prologues are 49 of the common set of 64, and 12 others shown here by \*: Stegmüller nos. 284, 285, 311, 323, 328, Prologue to 1 Ezra (starting with 'Iungat epistola quos iungit sacerdotium'), 330, 492, 500, 482, 487, 491, 457, 26\*, 344, 332, 335, 341+343, Prologues to 1 Maccabees (starting with 'Domino excellentissimo et in cultu' and 'Reverendissimo et omni caritatis officio dignissimo'), 551, 589, 590, 607, 620, 49\*, 624, 637\*, 631\*, 809, 807\*, 835\*, 651\*, 670\*, 674\*, 699, 707, 715, 728, 736, 747, 752, 765, 772, 780, 783, 793, 640. Numbered lists of capitula precede Genesis, Exodus, Leviticus, Numbers, Deuteronomy, Joshua, Judges, Proverbs, Ecclesiastes, Wisdom, Ecclesiasticus, Job, and 2 Maccabees.

Vol. 1: vi + 287 + iii (f. vi is a medieval (?) parchment leaf); Vol. 2: iv + 260 + iii; Vol. 3: iv + 247 + iii; Vol. 4: iv + 228 + iii; Vol. 5: iv + 201 + iii. Parchment. 505 x 365 mm. Written space: 340 x 217 mm. Double columns of 33 lines. Collation: I: 1-35<sup>8</sup>, 36<sup>8-1</sup>; II: 1-17<sup>8</sup> 18<sup>6</sup> 19-32<sup>8</sup> 33<sup>6</sup>; III: 30<sup>8</sup> 31<sup>8-1</sup>; IV: 1-12<sup>8</sup> 13<sup>6</sup> 14-28<sup>8</sup> 29<sup>6</sup>; V: 1-35<sup>8</sup> 36<sup>8-1</sup>. Uniform brown binding of the seventeenth century, and a note at the beginning of each volume state they were repaired in the time of Ægidius Briamont, abbot of the Benedictine Abbey of St. Jacques, Liège, in 1657. On the back of I: vi is the lection reading guides for the entire Bible (for example, 'Post pascha nostrum: legis actus apostolorum'), probably written by the first scribe. Therefore, this manuscript probably belonged to the same abbey already in the fifteenth century. Catchwords are found under the right column (in the first half of volume 2) or at the corner on the last verso of some quires. Modern foliation in pencil starts on the previous leaf of the first text page; the first text page is numbered 2 in the second to fifth volumes, and 3 in the first volume. Written by two scribes in textura (textualis quadrata) in Flanders. The second scribe wrote from III: 177r onwards in a more rigid hand. The second letter of double long **s** (ſ) and **f** is sometimes slightly longer than the first, but they are always of the same height in double **r**, **l**, **u**, and **n**. The second scribe use **v** as the beginning letter of a word, and **u** in any other part of a word, while the first scribe does not have the habit. The second scribe often stretches out the final letter(s) of the line for justification. Secundo folio. I: *adversus eum habuerat*; II: *ba*

diecum: quod significantius; III: iungebantur: (*punctus flexus*) et due tegebant; IV sores amicorum non esse neglegentes; V: *urie. Salomon autem genuit.*

Marks of punctuation are the period followed by a small and capital letter, the *punctus elevatus* and the *punctus flexus* followed by a small letter, the question mark followed by a capital, and the raised mid-point (by the first scribe only). A syllable is often separated into two lines, sometimes into the next column, or into the next page. Syllable separation is indicated by a faint hyphen (/) or double strokes (//) in some parts of volumes 3 and 4, and in single stroke (/) in the rest.

General rules of decoration are as follows: (1) Initials of books and prologues occupy usually eight lines (those of the Pauline and Catholic Epistles are smaller, and more for initial **I**) and are ornamented in blue and red or in blue and gold with pen-work. A book begins on a new column or a new page. The opening pages of the General Prologue and the Genesis have ornamental borders, painted in a very elaborate style. The former depicts Jerome at work; the latter depicts full-length figures, and the incipit is written in gold and blue alternately. (2) Initials of capitula occupy three to six lines in the same style as those for prologues. (3) Initials of chapters are alternately in blue with red pen-work and in red with purple pen-work in two lines, and three lines in volume 5. (4) A space for the chapter initial **I** is usually in the margin, but within the column of writing in volume 5. That for the book initial **I** is within the column of writing, except for Prologue to Isaiah and Argument to 2 Timothy, and Argument to Hebrews. (5) Chapter numbers in roman numerals are written in red ink in the volume 3, and in red and blue in the rest. Some guides in roman numerals are still visible in the margins. (6) Capital letters of each sentence are marked with a red stroke. (7) Running titles to each book are written across the top of each opening in red ink in the volume 3, and in blue and red ink in the others.

**(8) British Library, Add. MS 15259. *Biblia Sacra*****A Latin Bible of the Fifteenth Century**

Contents. The Bible in the usual order. Genesis-Ruth, 1-4 Kings, 1-2 Chronicles, 1 Ezra, Nehemiah, 'Esdra 2' (= 3 Ezra), Tobit-Job, Psalter, Proverbs-Ecclesiasticus, Isaiah, Baruch, Ezekiel, Daniel, Minor Prophets (Hosea, Joel, Amos, Obadiah, Jonah, Micah, Nahum, Habakkuk, Zephaniah, Haggai, Zechariah, and Malachi), 1-2 Maccabees, Gospels (Matthew, Mark, Luke, and John), Pauline Epistles (Romans, 1-2 Corinthians, Galatians, Ephesians, Philippians, Colossians, 1-2 Thessalonians, 1-2 Timothy, Titus, Philemon, and Hebrews), Acts, Catholic Epistles (James, 1-2 Peter, 1-3 John, and Jude), and Apocalypse (fols. 5r to 357v); Table of contents (fols. 1r to 4v); *Interpretationes Nominis Hebraicorum* (fols. 358r to 388r).

The prologues are 62 of the common set of 64, and 4 others show here by \*: 284, 285, 311, 323, 327, 328, 330, 332, 335, 341+343, 344, 357, Prologue to Psalms ('Cum omnes prophetas spiritu...')\*, 457, 462, 468, 473\*, 26\*, 482, 487, 491, 492, 494, 500, 507, 511, 510, 515, 512, 513, 519+517, 524. 521, 526, 528, 531, 534, 538, 539, 543, Prologue to 1 Maccabees ('Domino excellentissimo...')\*, 551, 590, 589, 607, 620, 624, 677, 685, 699, 707, 715, 728, 736, 747, 752, 765, 772, 780, 783, 793, 640, 809, 839.

iii + iii + 388 + ii + iii. Parchment. 495 x 345 mm. Written space: 352 x 225 mm. Double columns, except for the dictionary of the Hebrew names (3 column). 59 lines. Collation: 1<sup>4</sup> 2-49<sup>8</sup>. Catchwords are found in the middle of the lower margin on the last verso of quires, framed within pen-work ornamentation. The court of arms of the original owner has been obliterated on the first leaf (fol. i), and a later court and monogram (VR) was introduced. Ruled in red ink. On the separate first quire, a table of contents is found; the folio number for each chapter is listed. In the biblical text (from General Prologue to Apocalypse), each folio is numbered in Roman numerals in red ink at the top right corner by the original scribe. Written by one scribe in secretary in France. The explicit for Nehemiah reads 'explicit primus liber esdre'. The beginning of the New Testament receives no special treatment. Some of running titles for 2 Maccabees are mistakenly written as 'Machabeus primo'. Additions, corrections, or annotations are not found. Secundo folio: *celestia sacramenta*.

Marks of punctuation are the colon and the period followed by a small or capital letter. A syllable is often separated into two lines, sometimes into the next column, or into the next page. Syllable separation is indicated by a faint hyphen in single or double stroke (/ or //).

General rules of decoration are as follows: (1) Elaborate miniatures in red, blue, green, purple, black, white, and gold are prefixed to the principal books, beginning on a new column or a new page, and occupy generally seventeen lines. Some of them (General Prologue, the Psalter, and all

the pages of the *Interpretationes Nominus Hebraicorum*) have full-page border decoration depicting plants, humans, and animals. (2) Initials of the rest of the books (Wisdom, Ecclesiasticus, Jeremiah, Baruch, Ezekiel, Daniel, each of Minor Prophets, some of the Pauline Epistles, most of the Catholic Epistles) occupy six to eight lines (mostly seven). (3) Initials of prologues occupy four to eight lines. (4) Initials of chapters are painted in blue with red pen-work and gold with blue pen-work alternately in two lines. (5) A space for the chapter initial **I** is always within the column of writing. (6) Chapter numbers in Roman numerals are written in blue and red ink alternately, with red-and-blue line fillers. (7) Capital letters of each sentence are not marked with a red stroke. In the Psalter, capital letters are inserted in blue with red pen-work and gold with blue pen-work alternately, each occupying one line. (8) Running titles to each book are written in red ink across the top of each opening. (9) In the *Interpretationes Nominus Hebraicorum*, initials of headings occupy four lines, and those for sub-headings one line in the same style as chapter initials.

### (9) Congregational Library, 1. b. 1. *Biblia, pars I*

#### A Latin Bible of the Fifteenth Century

Contents. The first part of a Bible and the Psalm is omitted. (1) Genesis-Ruth, 1-4 Kings, 1-2 Chronicles, Prayer of Manasseh, 1 Ezra, 3 Ezra, Nehemiah, Tobit, Judith, Esther, Job, Proverbs, Ecclesiastes, Song of Songs, Wisdom, Ecclesiasticus (with the Prayer of Solomon at the end) (fols. 5r-292v; fol. 292v is blank); (2) Mnemonic verses, starting with 'Sex prohibet peccant abel enoch archa fit intrat' (fols. 1r-4v).

The prologues are 14 of the common set and 1 other shown here by \*: Stegmüller nos. 284, 311, 323, 328, 330, 332, 335, 341+343, 344, 357, 457, 462, 468, 26\*.

iv + 292 + iii (f. iv is a contemporary paper flyleaf). Paper. 280 x 205 mm. Written space: 213 x 150 mm. Double columns, except for the mnemonic verses (in single column). 47 lines with some exceptions (for example, 50 lines on f. 1r, 44 lines on f. 29v) and 46 lines after f. 281r. Collation: 1<sup>4</sup> 2-25<sup>12</sup>. The first volume of a Bible, wanting the second part. The brown leather binding of the early nineteenth century has the centrepiece of a gilt panel of gothic architecture; the spine title reads 'BIBLIA SACRA MS. TOM I. MCCCLXXX'. Armorial bookplate of Robert Mackenzie Beverly of the nineteenth century, and of the Congregational Library (Memorial Hall) are pasted. On the latter, a note is written saying 'the actual date is 1471', but it is probably not (see the description of the next manuscript). Modern foliation in pencil appears in the upper left of the first leaf of a quire. Catchwords are written at the right bottom corner of the last verso of a quire. Ruled faintly in hard point for horizontals, and in pencil or ink for some verticals. Parchment tabs are assumed to have been attached to the margins of the page at the beginning of each book as an index. Corrections by crossing out in red ink or scraping, additions, and markings ( ) are often made. In the margins of the General Prologue, names of books referred to and persons such as David are written in a different hand. In the margin of Ecclesiasticus at the point where the Prayer of Solomon begins, 'Huc usque habetur in greco' is written.

The text is heavily abbreviated, and written by several scribes in hybrida or cursiva in Germany. Changes in hand occur on fols. 45r, 184r, and 281r. The second hand is more cursive and ascenders are looped. The latter letter of double **I** and ligatured-long **s** (ſ) is slightly taller than the first, and that of ligatured double **p** is slightly broader. The letter **r** is always 2-shaped. Folio 112vb is left blank, maybe because the ink showed through too clearly from the recto. In addition to the usual chapter numbers, corresponding numbers to the capitula of 'series A forma' are added in the margins of 2-4 Kings, 1-2 Chronicles, and the last part of Ecclesiasticus (from f.281r, quire 25/1, where hand changes) in red ink. Guides for the incipit remain in the last part, written in black with a red underline at the bottom of the page, although incipits and explicits are often omitted. Mnemonic Verses, 115 in number, are written in a separate first quire, assigning one word to each



chapter of the books from Genesis to the end of Ecclesiasticus (that is, all the books contained in this volume) with explanatory glosses above the verses; the number of the books is 21 instead of 27, because Kings, Chronicles, and 3 books of Ezra are dealt as one book respectively. Secundo folio: 'clauem david qui aperit' (fol. 6r).

No punctuation appears before each capital letter. A *virgula*, or a single hyphen (/), is used to mark the pause in the sentence often with a red stroke, and each line ending is marked by ( ) from fol. 281r (quire 25/1r) to the end, where the last scribe worked. A red tick ( ) is marked at the end of the last line of every page, both rectos and versos. A syllable is often separated into two lines, sometimes into the next column, or into the next page. Syllable separation is indicated by a colon by the first scribe, and a single or double hyphen (/ or //) by the others.

General rules of decoration are as follows: (1) Initials of books are plainly painted in red with green pen-work or in green, though often omitted. (2) Initials of chapters are coloured in red ink in two lines from fols. 5r to 44v and from 281r to the end; in red and green ink alternately sometimes with pen-work of the other colour usually in three lines in the middle part of the manuscript; and in red ink occupying two or three lines from fols. 184r to 280v (red initials are not filled in from 237v to 268v). The first line of the chapter is underlined in red ink. Guide letters are sometime visible in the reserved space. (3) Chapter initial **I** is painted within the column of writing in the first part of the manuscript and fol. 184r onwards (where the hand changes), but painted in the margin in the rest of the manuscript. A space for book initial I is also created within the column, but often omitted. (4) Chapter numbers are coloured in red, and written in both Arabic and Roman numerals, preceded by an abbreviated 'capitulus'; but omitted from fols. 245v to 256r. Some guide letters in black Arabic numerals remain. (5) Capital letters of each sentence are marked with a red stroke, except for those in fols. 245v to 256r. (6) Running titles to each book are written in red across the top of each opening except for fols. 245v to 280v; green is used for the running title on fol. 163r (3 Kings). (7) In quire 1, the mnemonic verses and glosses are written in black ink, and the name of books, chapter numbers, and arguments are in red ink.

**(10) Congregational Library, 1. b. 2. *Biblia, pars II*****A Latin Bible of 1471**

Contents. The second part of the Bible, including the Epistle to the Laodiceans after Colossians.

(1) Ecclesiasticus (with the Prayer of Solomon at the end, accompanied no title or incipit), Isaiah, Jeremiah, Lamentations, Baruch (with Jeremiah's epistle at the end), Ezekiel, Daniel, Minor Prophets (Hosea, Joel, Amos, Obadiah, Jonah, Micah, Nahum, Habakkuk, Zephaniah, Haggai, Zechariah, and Malachi), 1-2 Maccabees, Gospels (Matthew, Mark, Luke, and John), Acts, Pauline Epistles (Romans, 1-2 Corinthians, Galatians, Ephesians, Philippians, Colossians, Laodiceans, 1-2 Thessalonians, 1-2 Timothy, Titus, Philemon, and Hebrews), Catholic Epistles (James, 1-2 Peter, 1-3 John, and Jude), Apocalypse. (Leaf 1 is blank.)

(2) 'Sequitur mistica descriptio quid rationis habeat tocius ... quoniam ego sum deus: Cuncz freudenreich'. (fols. 412-414v)

(3) Bindus de Senis' *Distinctiones* (Stegmüller no. 1765), and an entry is conflated with Nicholas de Hanapis, *Exempla Scripturarum*, ends in *Amor dei*, starting with 'Abstinencia est meriti augmentatiua' and ending with 'faciens misericordiam his' (The text ends abruptly here.) (fols. 414v-418r; folio 418v is blank).

The prologues are 43 of the common set of 64, and 38 others shown here by \*: Stegmüller nos. 26\*, 482, 538 (the common prologue to Haggai is used as the first prologue to Jeremiah), 486\*, 487, 491, 492, 494, 500, 507, 511, 5208 (Isiodorus' Prologue to Joel)\*, 515, 512, 513, 519+517, Alius prologue to Obadiah (starting with 'Esau filius iisac frater iacob')\*, 524, 526, Alius prologue to Micah (starting with 'Sermo dei qui semper descendit')\*, 528, Alius prologue to Naum (starting with 'Cum ionas et naum de eadem nivine')\*, Alius prologue to Naum (starting with 'Zelator dominus in salutem eorum')\*, 530\*, 531, 534, 538 (the first seven words only, and a reference is made to Jeremiah), 539, Alius prologue to Zechariah (starting with 'Ciirus rex persarum')\*, 543\*+544\*, first prologue to Maccabees (starting with 'Domino excellentissim in cultu')\* 547, 551, 596\*, 590, 607, 620, 49\*, 624, 640, 651\*, 670\*, 674\*, 677, 685, 699, 707, 715, 728, 736, 747, 752, 765, 772, 780, 783, 793, 640, 806\*, 816\*, 818\*, 822\*, 823\* + 'Quidam hanc et sequentem epistolam...detestantur hereticos'\* , 824\*, 825\*, 835\*, 829\*.

iii + 418 + iii. Paper. 297 x 210 mm. Written space: 215 x 140 mm. Double columns. 42 lines from fols. 1r to 44v, and 41 lines from fol. 45r onwards. Collation: 1-34<sup>12</sup> 35<sup>10</sup>. This copy contains the second part of the Bible, but it is not a companion volume to MS 1.b.1 (no. 9 above), although the binding (modern) is uniform with it and armorial bookplate of Robert Mackenzie Beverly is pasted. Every first leaf of a quire has the quire number (at the upper left) and the folio number (at the upper right) in pencil. No catchword remains. Ruled in ink in quires 1 to 4, and in dry point in the rest. A list of contents is written on f. 1v in a sixteenth-century hand. The text is written in a skilled backward sloping cursiva by a German scribe named Conradus Freudenreich in the year of 1471, as

the two colophons state: '1471. Conradus Freudenreich. Finita [in black ink] in vigilia armorum christi [in red ink]' at the end of the Apocalypse (fol. 412r), and 'Cunz freudenreich' (fol. 414r). Ascenders of letters in the first lines and at the beginning of a line are looped. The latter letter of ligatured-double **f** and long **s** (ſ) is slightly taller than the first, while that of **I** and **r** is of the same height. Numbered lists of capitula precede Ecclesiasticus, Isaiah, Jeremiah, Ezekiel, Daniel, 1 and 2 Maccabees, Acts, each Pauline Epistles, each Catholic Epistles, and Apocalypse. The corresponding numbers are added in the margins of these texts in red ink, and red paragraph marks are inserted in the text; Gospels are not preceded by capitula, but marks are inserted in the text. The word 'evangelista' is always spelled as 'ewangelista'. Secundo folio: 'De remissione peccati' (fol. 3r).

Punctuation includes the period followed by a capital, raised-mid point, and question mark followed by a small letter. A syllable is often separated into two lines, sometimes into the next column, or into the next page. Syllable separation is indicated by a single hyphen (/).

General rules of decoration are as follows: (1) Initials of books of Ecclesiasticus, Jeremiah, and four Gospels are red and blue ink with red pen-work, occupying 10 to 15 lines. Those of other books are in 5 to 8 lines and painted only in red ink. (2) Initials of prologues are coloured red, usually occupying 3 or 4 lines. (3) Initials of chapters are coloured red in two or three lines, except for an initial of chapter 2 of the Acts (fol. 342r) which is in blue. Guide letters in black ink are visible in the middle of the reserved space. (4) Initial **I** is always painted in the margin, except for that of Prologue to Jeremiah (fol. 67v). (5) Chapter numbers are coloured red, and written in Arabic or Roman numerals, or in letters, preceded by an abbreviated 'capitulum'. Guide letters in Arabic numerals are written in the margin. (6) Capital letters of each sentence are marked with a red stroke. (7) Running titles to each book are written in red ink, except for one in blue ink on fol. 341v, across the top of each page or each opening.

**(11) Victoria and Albert Museum, National Art Library, Reid 23**  
***Old Testament, pars***

A Latin Old Testament of 1450-1453

Contents. The text consists of 1 Kings to 2 Ezra and Isaiah to Malachi only. (1) 1-4 Kings, 1-2 Chronicles, Prayer of Manasseh, 1 Ezra, Nehemiah, 2 Ezra (pages 21-292; pages 290-292 are blank with ruling); Isaiah to Malachi (pages 297-560; pages 559-560 are blank with ruling). (2) Two later supplied indices to each surviving part (pages 1-20 and 293-296; pages 18-20 and 296 are blank).

Some leaves are cut out, and the remaining prologues are 6 of the common set: Stegmüller nos. 323, 328, 330, 491, 492, 500.

ii + 280 + ii. Parchment. 305 x 215 mm. Written space: 215 x 145 mm. Double columns of 42 lines (from p.21 to 289) or 43 lines (from p.297 to 558) for the original text. Collation: 1<sup>10</sup> 2<sup>8-1</sup> 3-19<sup>8</sup> 20<sup>2</sup> 21-37<sup>8</sup> 38<sup>2</sup> (quires 1 and 20 are the later additions). This manuscript probably formed the second and the fourth parts of a copy of the Old Testament. Brown calf blind-tooled binding of the nineteenth century. Three armorial bookplates of George Reid, the Victoria and Albert Museum, and Henry White were pasted on the front pastedown. A list of contents in modern hand is pasted on the rear pastedown. The modern page reference to every surviving illumination page is written in German at page 20 ('Seite 21 + 61 + 129...'). Some illuminated leaves are cut out, and the remaining pages are continuously paginated in pencil at the upper right corner of every recto. Catchwords are written at the bottom right corner of the last verso of the quire. White parchment tabs are attached to the margins of the page at the beginning of some books and prologues. A later hand supplied the two indices to each surviving part are written in hybrida in double columns of 49 lines (p.1 to 17) or 48 lines (p. 293 to 295).

The text is written in *textura* (*textualis rotunda*) by an anonymous nun at the house of Augustinian canonesses of Diepenveen, near Deventer (the Netherlands), and dated by her in the two colophons for each surviving part: 28 September 1450 ('finitus in profesto sancti michaelis archangeli Anno domini millesimo quadringestesimo quinquagesimo cum multo corporis labore sed non paruo cordis affectu per quendam monialem in diepenveen ancillarum christi ultimam cuius nomen scriptum sit in libro vite, at p.289) and 9 July 1453 ('finitus in octaua visitacionis beate virginis marie Anno domini Millesimo quadringestesimo quinquagesimo tercio cum multo corporis labore...in libro vite', at p.558). The column is often justified either by line fillers such as 'n' (ex. p.180), which are crossed out in red, and a wavy line (~), or by stretching the last letter of the line. In some cases, the previous or next word is repeated and crossed out, maybe for justification (ex. p.23 and p.179). The latter letter of double long s (ſ) and l are generally of the same height, while that of double f is higher than the first. The same scribe made some corrections and additions. The last line of page 439 is crossed out by red ink, since the same line appears at the beginning of the

next page. The Prologue to the Minor Prophets (Stegmüller no. 500) appears at the end of the manuscript, after Malachi and the colophon, written by the original scribe. The second folio is cut out, and the opening words of the third folio are ‘vini: (#pe) et adduxit eum ad domum’ (p. 23).

The main mark of punctuation is the period followed by both a capital and a small letter. Punctuation includes the *punctus flexus* followed by a small letter, the *punctus elevatus* followed by a small letter, and the question mark followed by a capital letter. A syllable is often separated into two lines, sometimes into the next column, or into the next page. Syllable separation is indicated by a faint hyphen.

General rules of decoration are as follows: (1) Initials of books: some leaves and one miniature are cut out, and three miniatures have had small pieces cut from them. The remaining 16 miniatures occupy 11 to 30 lines mostly within the text frames; Baruch has only a decorative initial instead of a miniature. The miniatures with golden frames are executed in an elaborate archaic style, using various colours (pink, blue, gold, green, black, and white) on diapered grounds in pink and blue with white patterns and small white dots (··). Red, green, or blue-and-white string is stitched on to the margins of above and below of each miniature. The new book usually begins on a new column or a new page. (2) Most of initials of prologues are cut out. The remaining 3 miniatures (prologues to 1 Kings, 1 Ezra, and Ezekiel) occupy 21, 13, and 14 lines respectively, and 3 decorated initials of prologues to 2 Chronicles, Baruch, and the Minor Prophets occupy 15, 8, and 7 lines respectively. (3) Initials of chapters: blue and red alternately in 2 lines. (4) A space for book initial **I** is always within the column of writing, while that for chapter initial **I** is generally in the margin. (5) Chapter numbers in Roman numerals are usually written at the end of the last line of the previous chapter in red and blue ink. (6) Capital letters of each sentence are marked with a red stroke. (7) Running titles to each book are written across the top of each opening in red ink.

White parchment tabs are attached to the margins of the page at the beginning of some books and prologues. A later hand supplied the two indices to each surviving part are written in hybrida in double columns of 49 lines (p.1 to 17) or 48 lines (p. 293 to 295). There are only a few annotations by later readers.

## Appendix 2. Stop-press Variants in the First Volume

No.	Cate-gory	Folio (quire)	1st state	1st state copies	2nd state	2nd state copies
1	G	2rb 40 (1/2r)	scruptura[rum]	P15, P16, P17, P29, V4, V8	scriptura[rum]	P13, P14, P20, P30, P33, P35, P39, <b>V7</b>
2	F	3ra 39-40 (1/3r)	attra(he)nte[m] ... [et] famen / in ... famen (pa)ni(s) ("s" in "samen" is the shape of figure 5)	P14, P17, P33, P35, P39	attrahente[m] ... et fame[n] / in ... fame[n] (pa)nis (standard "s")	P13, P15, P16, P30, V4, V7, V8
3	D	15rb 42 (2/5r)	vide[n]ti.s	P39	vide[n]tis.	P13, P15, P16, P17, P14, P17, P20, P22, P23, P25, P26, P28, P30, P33, P35, P38, V1, V2, V7, V11
4	A	23va 1 (3/3v)	pro(pa)gines · tres (narrower spacing)	P20, P39	pro(pa)gines · tres (wider spacing)	P16, P27, V6
5	C	23va 6 (3/3v)	"e" of "fuerit" is smaller	P20, P39	"e" of "fuerit" is larger	P16, P27, P30, P35, V6
6	A	23va 19 (3/3v)	ca nistra · (unnecessary spacing)	P20, P39	canistra ·	P16, P27, V6
7	A	23va 26 (3/3v)	p isto[rum] (unnecessary spacing)	P20, P39	pisto[rum]	P16, P27, V6
8	A	25vb 10 (3/5v)	[et] preciu[m] (narrower spacing) (orders cannot be decided)	P16, P20, P39	[et] preciu[m] (wider spacing) (orders cannot be decided)	P27
9	A	34rb 24 (4/4r)	iudicia ego (wider spacing)	P16, P27, P39	iudicia ego (narrower spacing)	P20, P33, V6, V10
10	A	37va 23 (4/7v)	ait pri[mu]s (wider spacing)	P16, P27, P33, P39	ait pri[mu]s (narrower spacing)	P20, V6, V10
11	A	37va 36 (4/7v)	p(ha)raoni [et] (wider spacing)	P16, P27, P33, P39	p(ha)raoni [et] (narrower spacing)	P20, V6, V10
12	A	44ra 23 (5/4r)	michi. Filiis (narrower spacing)	P27	michi . Filiis (wider spacing)	P16, P20, P33, P39, V6, V10
13	A	45va 1 (5/5v)	non tuipe (wider spacing; "n" in "non" is of the standard shape)	P27	non tuipe (narrower spacing; "n" in "non" is smaller)	P16, P20, P33, P39, V6, V10
14	A	49vb 11 (5/9v)	sacerdotis. (narrower spacing)	P33	sacerdotis . (wider spacing)	P16, P20, P27, P39, V6, V10
15	F	52ra 38 (6/2r)	d[e]serto	P20	deserto	P13, P14, P15, P16, P17, P27, P30, P33, P35, P39, P42, V4, V6, V7, V8, V10
16	A	57rb 21 (6/7r)	eni[m] requietionis (narrower spacing)	P16, P27, P33	eni[m] requietionis (wider spacing)	P20, P39, V6, V10
17	A	60r (6/10r)	b3, b13, b19 are not well superimposed			
18	A	60va 7 (6/10v)	ebd omade septime (unnecessary spacing)	P39	ebdomade septime	P16, P20, P27, P29, P33, V6, V10
19	A	60vb 37 (6/10v)	(pri= / ) mo fructus	P39	(pri= / ) mo fructus (wider spacing)	P16, P20, P27, P29, P33, V6, V10
20	A	61ra 26 (7/1r)	sing[u]la sab(ba)ta (narrower spacing)	P20, P29, P39	sing[u]la sab(ba)ta (wider spacing)	P16, P27, P33, V6, V10
21	A	62ra 1 (7/2r)	de terra (wider spacing)	P16, P27, P29, P33	de terra (narrower spacing)	<b>P20?</b> P39, V6, V10
22	A	62ra 2 (7/2r)	vobis terram chanaan	P16, P20, P27, P29, P33	vobis terram chanaan	P39, V6, V10
23	A	67ra 34 (7/7r)	illo · et (narrower spacing)	P16, P20, P33	illo · et (wider spacing)	P27, P29, P39, V6, V10

## Appendix 2. Stop-press Variants in the First Volume(continued)

No.	Cate-gory	Folio (quire)	1st state	1st state copies	2nd state	2nd state copies
24	A	69ra 41-42 (7/9r)	first half of the line shifted to right?	P29, P33, P39	first half of the line shifted to left? (space for a chapter initial at left-hand side)	P16, P20, P27, V6, V10
25	A	78va 6 (8/8v)	"et" shifted to left?	P16, P20, P27, P29, P33, P39	"et" shifted to right?	V6, V10
26	A	83va 13 (9/3v)	ad fugitiuoru[m] (wider spacing)	P33, P39	ad fugitiuoru[m] (narrower spacing; better justified)	P16, P20, P27, P29, V6, V10
27	A	85r (9/5r)	a23, b24, p30, b39 are not well superimposed			
28	A	91ra 27 (10/1r)	letters in "ceruus" are drifting (cer uus, ceru us, c eruus)			
29	A	93ra 9 (10/3r)	shifted to left?	P20, P27, P29, P33	shifted to right? (space for a chapter initial at left-hand side)	P16, P39, V6, V10
30	A	98ra-b 42 (10/8r)	the latter half of a 42 and b 42 shifted to left and normally justified	P16, P29, P27, P33	the latter half of a 42 and b 42 shifted to right (b42 is not justified)	P39, V6, V10
31	A	102rb 14 (11/1r)	shifted to left	P27	shifter to right	P16, P20, P29, P33, P39, V6, V10
32	A	103vb 4 (11/2v)	the first word "inde" shifted to left	P27, P39	the first word "inde" shifted to right	P16, P20, P29, P33, V6, V10
33	A	105va 27 (11/4v)	(Faci=) esq[ue] urbi (narrower spacing; some overlapped letters)	P16, P27, P29	(Faci=) esq[ue] urbi (wider spacing)	P20, P33, P39, V6, V10
34	B	106ra 25 (11/5r)	(homi= / ) num	P14, P17, P16, P27, P30, P42	(homi= / ) uum (first "u" is shorter)	P13, P15, P20, P29, P33, P35, P39, V4, V6, V7, V8, V10
35	A	106rb 13 (11/5r)	sicut preceperat (narrower space)	P16, P27, P33	sicut preceperat (wider space: justified)	P20, P29, P39, V6, V10 (originals: P13, P15, V4)
36	A	106vb 9 (11/5v)	comporten t (unnecessary spacing)	P16	comportent	P20, P27, P29, P33, P39, V6, V10
37	A	106vb 25 (11/5v)	tibi bonum (narrower spacing)	P16	tibi bonum (wider spacing)	P20, P27, P29, P33, P39, V6, V10
38	A	107ra 36 (11/7v)	p[er]cussera[n]t ("e" and "r" is touched eath other)	P16	(normal)	P20, P27, P29, P33, P39, V6, V10
39	A	113va 27 (12/2v)	co[n]tra ("o" overlapped with "c")	P27	co[n]tra (not overlapped)	P16, P20, P29, P33, P39, V6, V10
40	C	114ra 42 (12/3r)	sed econtrario ("s" of the later form; narrower spacing)	P20, P27, P29, P30, P35, P39	sed econtrario ("s" of the primary form; wider spacing)(b42 shifted to right slightly)	P16, P33, V6, V7, V8, V10, V11
41	A	116vb 42 (12/5v)	[et] transires (narrower spacing)	P20, P27, P29, P39	[et] transires (wider spacing)	P16, P33, P39, V6, V10
42	A	118ra 15 (12/7r)	omnia. Et dixerunt (narrower spacing)	P16, P20, P27, P29, P39	omnia. Et dixerunt (wider spacing; better justified)	P33, V6, V10
43	A	126vb 1 (13/4+1v)	reliquias ci= (narrower spacing)	P16, P29, P29, P33	reliquias ci= (wider spacing; slightly less justified??)	P27, P39, V6, V10
44	A	128va 10 (13/6v)	"booz ad" shifted to right and space between "portam" is narrower	P16, P20, P33	"booz ad" shifted to left with wider spacing	P27, P29, P39, V6, V10
45	G	131va 25 (14/3v)	reuelatus fuerat (do)min[us] samuel i[n] sylo	P13, P16	reuelat[us] fuerat domin[us] samueli i[n] sylo	P14, P15, P17, P20, P27, P30, P39, P42, V4, V8

## Appendix 2. Stop-press Variants in the First Volume(continued)

No.	Cate-gory	Folio (quire)	1st state	1st state copies	2nd state	2nd state copies
46	A	132r (14/4r)	vertical alignment is not good, especially for "e" "i"	P16	vertically better aligned	P20, P27, P39
47	A	133r (14/5r)	P16 and P27 are superimposed; P39 and P20 are superimposed			
48	A	133v (14/5v)	P27 is not well superimposed with other copies			
49	A	136vb 1 (14/8v)	.R[o]ndensq[u] (narrower spacing)	P20	. R[o]ndensq[ue] (wider spacing)	P16, P27, P39
50	A	136vb 24 (14/8v)	[et] no[n] (narrower spacing)	P20	[et] no[n] (wider spacing)	P16, P27, P39
51	A	141va 21 (15/3v)	i ll[u]m (unnecessary spacing)	P16	illu[m]	P20, P27, P39, V6
52	A	143vb 6 (15/5v)	quadringen ti (unnecessary spacing: not justified)	P16, P20, P27	quadringenti (narrower spacing)	P39, V6
53	C	144va7 (15/6v)	aute[m] (bar above "e" is higher; or added by hand?)	P15, P20, P27, P30, P42	aute[m] (bar above "e" is printed at the lower, normal position)	P13, P14, P16, P17, P39, V4, V6, V7, V8, V11
54	H	144vb 2 (15/6v)	de longe [et]	P15, P20, P27, P42	delonge et	P13, P14, P16, P17, P30, P39, V4, V6, V8
55	A	145vb 33 (15/7v)	p[ro]e]liu[m]:ne fi at (unnecessary spacing between "fi" and "at")	P27?	p[ro]e]liu[m]: ne fiat (wider spacing between ":" and "ne")	P16, P20, P39, V6
56	A	150vb 7 (16/2v)	seruiens s su b (unnecessary spacing)	P39	seruiens sub	P16, P20, P27, P33, V6 (originals: P13, P14, P15, P17, P20, P42, V4)
57	A	150vb 16 (16/2v)	au te[m] (unnecessary spacing)	P39	aute[m]	P16, P20, P27, P33, V6 (originals: P13, P14, P15, P17, P20, P42, V4)
58	A	150vb 31 (16/2v)	"siria" is left, line beginning not smooth	P39	"siria" is right, line beginning smooth	P16, P20, P27, P33, V6 (originals: P13, P14, P15, P17, P20, P42, V4)
59	G	150vb 40 (16/2v)	sarme	P39	saruie	P13, P14, P15, P16, P17, P20, P27, P30, P33, P42, V4, V6, V8
60	A	151ra 2 (16/3r)	scrib a (unnecessary spacing)	P27	scriba	P16, P20, P33, P39, V6
61	A	151ra 17 (16/3r)	veni sset (unnecessary spacing)	P27	venisset	P16, P20, P33, P39, V6
62	A	151ra 27 (16/3r)	can em (unnecessary spacing)	P27	canem	P16, P20, P33, P39, V6
63	G	154ra 37 (16/6r)	Surrexit	P39	Surrexit	P13, P14, P15, P16, P17, P20, P23, P25, P26, P27, P28, P30, P33, P36, P42, V1, V2, V4, V6, V8
64	A	156rb 10 (16/8r)	fame et (narrower spacing)	P16, P33	fame et (wider spacing; space for a chapter number at the right-hand side)	P20, P27, P39, V6
65	A	162ra 13 (17/4r)	o[mn]is isr[ah]e] (wider spacing)	P16, P29, P33, P39	o[mn]is isr[ah]e] (slightly narrower spacing)	P20, P27, V6, V10
66	A	163rb 32 (17/5r)	regebat t(ha)nach (wider spacing)	P16, P20, P27, P39	regebat t(ha)nach (slightly narrower spacing)	P29, P33, V6, V10



## Appendix 2. Stop-press Variants in the First Volume(continued)

No.	Cate-gory	Folio (quire)	1st state	1st state copies	2nd state	2nd state copies	
67	A	168rb 32 (17/10r)	choa. Negociatores (wider spacing)	P16, P20, P29, P27, P39	choa.Negociatores (narrower spacing; better justified)	P33, V6, V10	
68	A	169rb 38 (18/1r)	P39 is not well superimposed with other copies				
69	A	170va 34 (18/2v)	"vbi [est] achias p[ro]p" shifted to left?	P27?	"vbi [est] achias p[ro]p" shifted to right?	P16, P20, P29, P33, V6, V10	
70	A	171va 28 (18/3v)	rege isr[ahē]·et recebat (unnecessary spacing)	P16, P27, P33, V6?	rege isr[ahē]·et recebat	P20, P29, P39, V10	
71	A	171vb 41 (18/3v)	te ducem sup[er] (wider; narrower)	P16, P27, P33, V6? (but V6 is heavily speckled)	te ducem sup[er] (narrower; wider)	P20, P29, P39, V10	
72	A	172vb 1 (18/4v)	shifted to left? (smooth line beginning) "F" of th last word is abutting?	P16, P27, P33	the first two words, "no[n] enim" shifted to right? "F" of normal shape?	P20, P29, P39, V6, V10	
73	A	172vb 5 (18/4v)	group 1	P16, P27, P33	group 2	P20, P29, P39, V6, V10	
74	A	180ra 7 (19/2r)	ei. Pater (narrower spacing)	P16, P20, P29, P33, P39	ei . Pater (wider spacing; the last "m" in "rem" on this line is overlapped with "e")	P27, V6, V10	
75	B	180ra 32 (19/2r)	nt	P14, P16, P20, P29, P30, P33, P39	ut	P13, P15, P17, P27, P35, P42, V4, V6, V7, V8, V10, V11	
76	A	182rb 5 (19/4r)	subsistes. Abijt (narrower spacing)	P29, P33	subsistes . Abijt (wider spacing)	P16, P20, P27, P39, V6, V10	
77	A	183vb 14 (19/5v)	group 1	P20, P27, P29	group 2	P16, P33, P39, V6, V10	
78	A	185r (19/7r)	a14, b5: group 1	P16, P27, P29, P33, P39	a14, b5: group 2	P20, V6, V10?	
79	A	186r (19/8r)	from the 2nd word, shifted to left	P16, P29, P33?	from the 2nd word, shifted to right	P20, P27, P39, V6, V10?	
80	A	188r (19/10r)	b12, b19: group 1	P27, P33	b12, b19: group 2	P16, P20, P29, P39, V6, V10	
81	A	188r (19/10r)	b14: group 1	P20, P27, P33, V10	b14: group 2	P16, P29, V6	
82	A	189r (20/1r)	copies are not well superimposed				
83	A	190va 3 (20/2v)	scriba[m] templi (narrower spacing; almost one word)	P33	scriba[m] templi (wider spacing)	P16, P20, P27, P29, P39, V6, V10	
84	A	190vb 4 (20/2v)	Hec dicit (narrower spacing)	P33	Hec dicit (wider spacing)	P16, P20, P27, P29, P39, V6, V10	
85	H	192va 27 (20/4v)	euulgo	P33	e vulgo	P13, P14, P15, P16, P17, P20, P23, P25, P26, P27, P28, P30, P35, P36, P38, P39, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11	
86	I	195ra 2 (20/7r)	(sa= / ) phat sex numero.	P33	(sa= / ) phat [et] sesa sex numero. (required a partial resetting from a2 to a9)	P13, P14, P15, P16, P17, P20, P23, P25, P26, P27, P28, P30, P35, P36, P38, P39, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11	
87	A	197ra 3 (20/9r)	suis: [et] (wider spacing)	P16, P27, P29, P33, P39	suis:[et] (narrower spacing)	P20, V6, V10	
88	A	199ra 32 (21/1r)	i srahel (unnecessary spacing)	P16, P20, P27, P29, P39	israhel	P33, V6, V10	

## Appendix 2. Stop-press Variants in the First Volume(continued)

No.	Cate-gory	Folio (quire)	1st state	1st state copies	2nd state	2nd state copies
89	A	199va 8 (21/1v)	netophatites · ethai fili[us] (space before "ethai" is narrower)	P16, P27, P33, P39	netophatites · ethai fili[us] (equally spaced)	P20, P29, V6, V10
90	A	201vb 42 (21/3v)	(Reuer=) susq[ue] shifted to right?	P39	shifted to left (smooth beginning)	P16, P20, P27, P29, P33, V6, V10
91	A	202va 19 (21/4v)	(prebe=) ret a(da)dezer (narrower spacing)	P16, P20	(prebe=) ret a(da)dezer (wider spacing)	P27, P29, P33, P39, V6, V10
92	A	204r (21/6r)	b32, b34: group 1	P33, P39	b32, b34: group 2	P16, P20, P27, P29, V6, V10
93	G	205ra 4 (21/7r)	eis hoc est filiis eleazari ("hoc" is inclined) ("qu" above is also inclined)	P20, P27	eis hoc est filiis eleazar (types are vertical)	P13, P14, P15, P16, P17, P29, P30, P33, P35, P39, P42, V4, V6, V8, V10, V11
94	A	205ra 23 (21/7r)	isbaal · decimaquinta (narrower space; "n" is not vertical)	P20, P27	isbaal · decimaquinta (wider space; "n" is vertical)	P39 ("n" is vertical, but spacing is a little different from: P16, P29, P33, V6, V10) (and from originals: P13, P14, P15, P17, P35, P42)
95	G	205ra 25 (21/7r)	decimaoctaua (ha)phses	P20, P27	decimaoctaua aphses	P13, P14, P15, P16, P17, P29, P30, P33, P35, P39, P42, V4, V6, V8, V10, V11
96	A	206r (21/8r)	P39 is not well superimposed with other copies, especially on a31-33, b23-25, b16-17			
97	A	207ra 16 (21/9r)	a16: group 1	P27, P39	a16: group 2	P16, P20, P29, P33, V6, V10
98	A	209va 19 (22/1v)	a19: group 1	P16, P33	a19: group 2	P16, P20, P29, P33, V6, V10
99	B	212vb 40 (22/4v)	"i" of "in" is inverted	P13, P20, P25, P26, P27, P28, P35, P38, P39, P42, P44	inversion of "i" is corrected	P14, P15, P16, P17, P23, P30, P33, P36, V1, V2, V4, V6, V7, V8, V9, V10, V11
100	B	214vb 24 (22/6v)	tuleruut (2nd "u" is higher)	P15, P16, P27	tulerunt ("n" is at normal position)	P13, P14, P17, P20, P29, P30, P33, P35, P39, P42, V4, V6, V8, V10, V11
101	G	217va 18 (22/9v)	insanabuli .	P27	insanabili .	P13, P14, P15, P16, P17, P20, P29, P30, P33, P35, P39, P42, V4, V6, V8, V10, V11
102	B	217vb 3 (22/9v)	iu	P27	in	P13, P14, P15, P16, P17, P20, P29, P30, P33, P35, P39, P42, V4, V6, V8, V10, V11
103	A	217vb 6 (22/9v)	(amb[u]la=) uitq[ue]	P27	(amb[u]la=) uitq[ue] (left, smooth line begging)	P16, P20, P29, P33, P39, V6, V10 (originals: P13, P14, P15, P17, P20, P42)
104	B	217vb 13 (22/9v)	inda	P27	iuda	P13, P14, P15, P16, P17, P20, P29, P30, P33, P35, P39, P42, V4, V6, V8, V10, V11

## Appendix 2. Stop-press Variants in the First Volume(continued)

No.	Cate-gory	Folio (quire)	1st state	1st state copies	2nd state	2nd state copies
105	A	217vb 21 (22/9v)	(princi=) pes (left, not smooth line beginning)	P27	(princi=) pes (right, smooth line begging)	P16, P20, P29, P33, P39, V6, V10 (originals: P13, P14, P15, P17, P20, P42, V4)
106	A	221rb 17 (23/3r)	(sanctifi=) cati sunt	P27, P29, P39?	(sanctifi=) cati sunt (wider spacing??)	P20, P33, V10?
107	D	232va 30 (24/4v)	edi (/ ficaverunt)	P20, P27, P39	edi= (/ ficaverunt)	P16, P29, P30, P33, P35, V6, V7, V8, V10, V11
108	A	233rb 18 (24/5r)	"qui" shifted to right	P16, P27, P33	"qui" shifted to left	P20, P39, V10
109	A	234v (24/6v)	a7, b18: group 1	P39	a7, b18: group 2	P16, P20, P29, P33, V6, V10
110	A	234vb 1 (24/6v)	"nabucho="	P39	"nabucho="	P16, P20, P29, P33, V6, V10 (original: P13)
111	A	243ra 21 (25/5r)	in syria (narrower spacing?)	P16, P27, P29, P33	in syria (wider spacing?)	P20, P39, V6, V10
112	C	246rb 5 (25/7+1r)	"s" of "samus" is abutting	P27, P29, P33, P39	"s" of "samus" is of the normal shape	P16, P20, P30, P35, V6, V7, V8, V10, V11
113	G	250va 7 (26/1v)	que[m]	P13, P16, P17, P28, P30, P38, P39	qua[m]	P14, P20, P23, P25, P26, P27, P29, P33, P35, P36, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11
114	G	250va 14 (26/1v)	velotitas	P13, P16, P17, P28, P30, P38, P39	velocitas	P14, P20, P23, P25, P26, P27, P29, P33, P35, P36, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11
115	D	250vb 8 (26/1v)	a period is omitted	P13, P16, P17, P28, P30, P38, P39	a period is inserted	P14, P20, P23, P25, P26, P27, P29, P33, P35, P36, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11
116	F	250vb 33 (26/1v)	iniciu[m]?	P13, P16, P17, P28, P30, P38, P39	iniciu?	P14, P20, P23, P25, P26, P27, P29, P33, P35, P36, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11
117	D	251rb36 (26/2r)	· / Et (raised mid-point; "/"s at the end of b37 and b38 are slipped upwards)	P13, P14, P16, P17, P20, P27, P30, P33, P35, P39, P42	· / Et (period; "/" at the end of b37 and b38 are at the normal position)	V4, V6, V7, V8, V10, V11
118	A	254rb 25 (26/5r)	shifted to left? (something looks like ";" is printed between "quid" and "doles")	P16, P20, P27, P33	shifted to right? (in the paper copies ";" is printed between "quid" and "doles")	P29, P38, V6, V10
119	A	258ra 1 (26/9r)	cogi tationes:[et] p[ro]ice (unnecessary spacing)	P16, P20	cogitationes:[et] p[ro]ice (wider spacing after "[et]")	P27, P29, P33, P39, V6, V10
120	A	259rb 20 (26/9+1r)	shifted to left from the 2nd word	P16, P27	shifted to right	P20, P33, P39, V10
121	C	259va 42 (26/9+1v)	the first "r" of "terra" is shorter	P15, P17, P20, P23, P25, P27, P28, P30, P35, P38, P39, P42, P44	both "r"s are of the standard height	P13, P14, P16, P26, P29, P33, P36, V1, V2, V4, V6, V7, V8, V9, V10, V11

## Appendix 2. Stop-press Variants in the First Volume(continued)

No.	Cate-gory	Folio (quire)	1st state	1st state copies	2nd state	2nd state copies
122	G	261ra 4 (27/1r)	Nira= (/ ri)	P13, P14, P15, P16, P17, P27, P33, P35, P39, P42	Mira= (/ ri)	P20, P29, P30, V4, V6, V7, V8, V10, V11
123	A	263r (27/3r)	a7, a15: group 1	P33, P39	a7, a15: group 2	P16, P20, P29, V6, V10
124	A	263ra 26 (27/3r)	secu tus (unnecessary spacing)	P27	secutus (space for a chapter initial at the left-hand side)	P16, P20, P29, P33, P39, V6, V10
125	A	264ra 2 (27/4r)	(pullo=) rum cantum	P27, P33	(pullo=) rum cantum (wider spacing)	P16, P20, P29, P39, V6, V10
126	A	264ra 3 (27/4r)	suos:[et] (narrower spacing)	P27, P33	suos: [et] (wider spacing: justified)	P16, P20, P29, P39, V6, V10 (originals: P13, P15, P17, P20, P23, P25, P26, P28, P30, P36, P44, V1, V2, V4, V7, V8, V9, V11)
127	A	267ra 3 (27/7r)	(ho=) norati simul (narrower spacing)	P27, P33	(ho=) norati simul (wider spacing)	P16, P20, P29, P39, V6, V10
128	A	268va 19 (27/8v)	mitte[n]tes cinere[m] (narrower spacing; "ē" is corrected by hand)	P16, P20	mitte[n]tes cinere[m] (wider spacing)	P27, P29, P33, P39, V6, V10
129	A	271rb 19 (28/1r)	et gira[n]tes (narrower spacing?)	P16	et gira[n]tes (wider spacing?)	P20, P27, P29, P33, P39, V6, V10
130	A	272rb 27 (28/2r)	israhel. Porro (narrower spacing)	P16, P33	israhel. Porro (wider spacing: smoother beginning)	P20, P27, P29, P39, V6, V10
131	A	273ra 4 (28/3r)	eustochium quoniam (wider spacing)	P27, V10? (but V10 is heavily cockled)	eustochium quoniam (narrower spacing)	P16, P20, P29, P33, P39, V6
132	A	280ra 14 (28/10r)	meo labore tra[n]slata (narrower spacing)	P20, P39	meo labore tra[n]slata (wider spacing)	P16, P27, P29, P33, V6, V10
133	G	281ra 37 (29/1r)	sicud .. no[n]	P39	sicut .. non	P13, P14, P15, P16, P17, P20, P23, P25, P26, P27, P28, P30, P33, P35, P36, P38, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11
134	F	281rb 8-9 (29/1r)	deus tenebris. Anteq[uam] co= / meda[m] suspiro	P39	de[us] tenebris. Anteq[uam] com= / edam suspiro	P13, P14, P15, P16, P17, P20, P23, P25, P26, P27, P28, P30, P33, P35, P36, P38, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11
135	C	281rb 39 (29/1r)	two "r"s of "rr" in "perterrita" are of the standard height	P39	the second "r" of "rr" is shorter	P13, P14, P15, P16, P17, P20, P23, P25, P26, P27, P28, P30, P33, P35, P36, P38, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11
136	C	282vb 25 (29/2v)	a standard "r" is used in "querit[ur]"	P14, P15, P25, P26, P27, P28, P33, P35, P44	a short "r" is used	P13, P16, P17, P20, P23, P30, P36, P38, P39, P42, V1, V2, V4, V6, V7, V8, V9, V10, V11

## Appendix 2. Stop-press Variants in the First Volume(continued)

No.	Cate-gory	Folio (quire)	1st state	1st state copies	2nd state	2nd state copies
137	A	284vb 26 (29/4v)	vos.Roborarem (narrower spacing)	P16, P20	vos. Roborarem (wider spacing; a little better justified?)	P27, P29, P33, P39, V6, V10
138	A	286r (29/6r)	a8, a42, b40: group 1	P27, P39	a8, a42, b40: group 2	P16, P20, P29, P33, V6, V10
139	A	289ra 31 (29/9r)	. Foris (narrower spacing)	P20, P33, P39	. Foris (wider spacing; better justified)	P16, P27, P29, V6, V10
140	A	289rb 19 (29/9r)	q[uo]d tres	P20, P33?	q[uo]d tres (wider spacing)	P16, P27, P29, P39, V6, V10
141	A	289v (29/9v)	a-b 42 not justified	P16, P27, P29, P33, P39	a-b 42 justified	P20, V6, V10
142	A	289v (29/9v)	a23-26: group 1	P16, P29, P39	a23-26: group 2	P20, P27, P33, V6, V10
143	B	291ra 34 (30/1r)	Accinge	P15, P28, P29, P30, P35, P36, P39, P44	Acciuge	P13, P14, P16, P17, P20, P23, P25, P26, P27, P33, P38, P42, V1, V2, V4, V6, V7, V8, V9, V10, V11
144	F	291va 37 (30/1v)	rinocerota (or changed by hand?)	P20	rinocerota[m]	P16, P27, P29, P30, P33, P35, P39, V6, V8, V10, V11
145	F	292rb 38 (30/2r)	eu (or changed by hand?)	P20	eu[m]	P16, P27, P29, P30, P33, P35, P39, V6, V8, V10, V11
146	G	292va 1 (30/2v)	Feruescere ... profundum	P13, P14, P15, P16, P20, P27, P33, P35, P39	Feruercere ... profu[n]dum	P17, P30, P42, V4, V6, V7, V8, V10, V11
147	D	293ra 42 (30/3r)	eius: (or illumination?)	P39	eius.	P16, P20, P27, P29, P30, P33, V6, V7, V8, V10, V11
148	A	297ra 22 (30/7r)	qui requiru[n]t (narrower spacing)	P20, P39	qui requiru[n]t (wider spacing; better justified)	P16, P27, P29, P33, V6, V10
149	A	297ra 29 (30/7r)	in co[s](pe)(ct)u (narrower spacing)	P20, P39	in co[s](pe)(ct)u (narrower spacing)	P16, P27, P29, P33, V6, V10
150	B	299ra 28 (30/9r)	"i" of the second "ip[s]e" is inverted	P13, P27, P29	inversion of "i" is corrected	P14, P15, P16, P17, P20, P30, P33, P35, P39, P42, V4, V6, V7, V8, V10, V11
151	A	299vb 1 (30/9v)	quasi fratrem (narrower spacing)	P16, P20, P27, P33	quasi fratrem (wider spacing)	P29, P39, V6, V10
152	D	303vb 30 (31/3v)	iniquitatib[us] (a colon is omitted)	P14, P17, P27, P28, P29, P35, P38, P39, P44	iniquitatib[us]: (a colon is inserted)	P13, P15, P16, P20, P23, P25, P26, P27, P30, P33, P36, P42, V1, V2, V4, V6, V7, V8, V9, V10, V11
153	G	304ra 40 (31/4r)	pusillamini = (tate)	P13, P15, P16, P17, P20, P30, P33, P39, P42	pusillanimi = (tate)	P14, P27, P35, V4, V6, V7, V8, V10, V11
154	A	307ra 34 (31/7r)	"no[n] sunt abscondita." (shifted to left?)	P27, P33	"no[n] sunt abscondita." (shifted to right?)	P16, P20, P29, P39, V6, V10
155	C	308rb 6 (31/8r)	the left of the first "t" in "(su= / ) perextolletur" is not smooth	P15, P17, P23, P25, P26, P27, P38, P39	the left side of the first "t" is smooth	P13, P14, P16, P20, P28, P30, P33, P35, P36, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11

## Appendix 2. Stop-press Variants in the First Volume(continued)

No.	Cate-gory	Folio (quire)	1st state	1st state copies	2nd state	2nd state copies	
156	B	308rb 11 (31/8r)	magnificabuut (second "u" is slightly shorter)	P15, P17, P23, P25, P26, P27, P38, P39	magnificabunt	P13, P14, P16, P20, P28, P30, P33, P35, P36, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11	
157	B	308rb 13 (31/8r)	solns	P15, P17, P23, P25, P26, P27, P38, P39	solus	P13, P14, P16, P20, P28, P30, P33, P35, P36, P42, P44, V1, V2, V4, V6, V7, V8, V9, V10, V11	
158	A	309rb 15 (31/9r)	"(R)enuit" shifted to left	P20, P27, P29, P33, P39	"(R)enuit" shifted to right (space for a chapter initial at the left-hand side)	P16, V6, V10	
159	A	311v (32/1v)	a27, v2, b4, b7: group 1	P39	a27, v2, b4, b7: group 2	P16, P20, P27, P29, P33, V6, V10	
160	A	316ra 24 (32/6r)	group 1	P39	group 2	P16, P20, P27, P29, P33, V6, V10	
161	A	316va 28 (32/6v)	suos [et] (narrower spacing)	P16, P33, P39	suos [et] (wider spacing)	P20, P27, P29, V6, V10	
162	A	317r (32/7r)	a14, 23, 32, b20, b32: P39 is not well superimposed with other copies				
163	A	321va 40 (33/1v)	divimus ea[m] (narrower spacing)	P16, P27, P29	divimus ea[m] (wider spacing)	P20, P33, P39, V6, V10	
164	A	322ra 28 (33/2r)	"iherusalem.Alleluia" shifted to left	P16, P20, P27, P33, P39	"iherusalem.Alleluia" shifted to right (space for a verse capital at the right-hand side)	P29, V6, V10	
165	A	322vb 10 (33/2v)	me . (Q)uia (wider spacing)	P16, P27, P29, P33, P39	me . (Q)uia (narrower spacing; better justified; space for a verse capital at the right-hand side)	P20, V6, V10	
166	A	323rb 35 (33/3r)	nus deducet (narrower spacing)	P20, P27, P29, P33, P39	nus deducet (wider spacing)	P16, P29, V6, V10	

## Appendix 3. Stop-press Variants in the Second Volume

No.	Category	Folio	1st state	1st state copies	2nd state	2nd state copies
1	G	4rb 5 (1/4r)	(Sub= / ) stantia	P16, P46	(Sub= / ) stancia	P13, P14, P15, P17, P20, P25, P27, P29, P33, P35, V7, V8
2	A	6vb 25 (1/6v)	et p[re]ciosi (narrower space)	P27, P46	et p[re]ciosi (wider space)	P16, P33,
3	A	7rb 14 (1/7r)	principi [bus] (wider unnecessary spacing)	P27	principi [bus] (narrower spacing; better justified)	P14, P15, P16, P17, P20, P25, P33, P46, V7, V8
4	A	16v (2/6v)	P33 and P46 are not well superimposed with other copies, especially on lines a3, a9, a38. the 1st word of b23 protrudes from the line beginning			
5	A	24vb 27 (3/2v)	the first word "lectionis" protrudes to the left	P46	the first word "lectionis" is shifted to the right; smooth beginning	P16, P20, P27, P29, P30, P33, V6, V8, V10, V11
6	A	24vb 40 (3/2v)	(trans/ ) "lata" protrudes to the left	P46	(trans/ ) "lata" is shifted to the right; smooth beginning	P16, P27, P29, P30, P33, P35, V6, V8, V10, V11
7	C	27ra 6 (3/7r)	bilinguis. Non (standard "s")	P16, P27	bilingui(s). Non ("s" in the shape of 5; better justified)	P13, P14, P15, P17, P22, P25, P29, P30, P33, P35, P46, V6, V10, V11
8	H	27ra 11 (3/7r)	lignu m	P16, P27	lignum	P13, P14, P15, P17, P22, P25, P29, P30, P33, P35, P46, V6, V10, V11
9	F	27ra 22 (3/7r)	Et est	P16, P27	Et [est] (better justified)	P13, P14, P15, P17, P22, P25, P29, P30, P33, P35, P46, V6, V10, V11
10	F	27ra 24 (3/7r)	[et] rixa[m] [et] co[n]iucia denu	P16, P27	et rixa[m] et co[n]iucia (de)nu	P13, P14, P15, P17, P22, P25, P29, P30, P33, P35, P46, V6, V10, V11
11	F	27ra 36 (3/7r)	[et] non est digna	P16, P27	et non [est] digna (better justified)	P13, P14, P15, P17, P22, P25, P29, P30, P33, P35, P46, V6, V10, V11
12	F	27ra 39 (3/7r)	[et] qui metuunt do=	P16, P27	et qui metuunt (do)= (better justified)	P13, P14, P15, P17, P22, P25, P29, P30, P33, P35, P46, V6, V10, V11
13	H	27rb 26 (3/7r)	inoblectationem . Et	P16, P27	in oblectationem. Et	P13, P14, P15, P17, P22, P25, P29, P30, P33, P35, P46, V6, V10, V11
14	A	27r (3/7r)	a8, a16, a19. a20 is not well overlapped			
15	F	30vb 1 (3/10v)	illu[m]	P46	illu	P14, P15, P17, P25, P27, P29, P30, V6, V7, V8, V10, V11



Appendix 3. Stop-press Variants in the Second Volume(continued)

No.	Category	Folio	1st state	1st state copies	2nd state	2nd state copies
16	C	35va 10 (4/5v)	locupletari (abutting "i")	P15, P16, P17, P25, P29, P30, P33, P35, P46	locupletari (standard "i")	P13, P14, P20, P27, V6, V10, V11
17	C	35vb 5 (4/5v)	denu= (/ daueris) (abutting "n")	P15, P16, P17, P25, P29, P30, P33, P35, P46	denu= (/ daueris) (standard "n")	P13, P14, P20, P27, V6, V10, V11
18	C	35vb 13 (4/5v)	caprea (first "a" is an abutting "a")	P15, P16, P17, P25, P29, P30, P33, P35, P46	caprea (standard "a")	P13, P14, P20, P27, V6, V10, V11
19	G	35vb 32 (4/5v)	vnde	P15, P16, P17, P25, P29, P30, P33, P35, P46	unde	P13, P14, P20, P27, V6, V10, V11
20	C	35vb 38 (4/5v)	co[n]tine[n]s (abutting "ō")	P15, P16, P17, P25, P29, P30, P33, P35, P46	co[n]tine[n]s (standard "ō")	P13, P14, P20, P27, V6, V10, V11
21	C	35vb 41 (4/5v)	s[er]uabit (abutting "u")	P15, P16, P17, P25, P29, P30, P33, P35, P46	s[er]uabit (standard "u")	P13, P14, P20, P27, V6, V10, V11
22	G	53vb 27 (6/3v)	Tra[n]sfreta[n]ces ("t" is scratched and corrected by hand?)	P27	Tra[n]sfreta[n]tes	P13, P14, P15, P16, P17, P20, P25, P29, P30, P33, P35, P46, V6, V8, V10, V11
23	B	56va 7 (6/6v)	p[er]neneru[n]t	P17, P25, P27	p[er]ueneru[n]t	P13, P14, P15, P16, P20, P30, P33, P35, P46, V6, V8, V10, V11
24	A	60r (6/10r)	a21-b21 left (better justified)	P16, P33, P25, P46	a21-b21 right	P27, V10, V11?
25	C	65ra 1 (7/5r)	audiens ("u" of strange shape)	P14, P15, P17, P27, P35	audiens ("u" of the standard shape)	P13, P16, P20, P25, P30, P33, P46, V7, V8, V10, V11
26	A	66ra 18 (7/6r)	desere magis (wider spacing; b18 beginning is retreating)	P27, P46	desere magis (narrower spacing; a18 well justified & b18 beginning is more smooth)	P16, P25, P33, P35, V6, V8, V10, V11
27	H	68rb 30 (7/8r)	ampli[us] sol adlucendu[m]	P13, P14, P15, P16, P17, P20, P22, P25, P27, P29, P30, P33, P35, P46	ampli[us] sol ad lucendu[m]	V6, V7, V8, V10, V11
28	A	69ra 11 (7/6r)	a11-b11 shifted to the right	P25? P27, P33	a11-b11 shifted to the left (b11 beginning more smooth)	P16, P46, V10, V11
29	A	71ra 11	habitor es (unnecessary spacing)	P16, P17, P27	habitatores	P14, P15, P25, P29, P30, P33, P46, V6, V7, V8, V10
30	A	73rb 5 (8/3r)	domus isra(he)  (narrower spacing; almost 1 word; better justified?)	P33, P46	domus isra(he)  (wider spacing)	P16, P25, P27, P30, V7, V8, V10, V11
31	A	81vb 26 (9/1v)	"Hec" shifted towards left	P46	"Hec" shifted towards right	P16, P27, P33, V6, V10, V11



## Appendix 3. Stop-press Variants in the Second Volume(continued)

No.	Category	Folio	1st state	1st state copies	2nd state	2nd state copies	
32	A	81vb 36 (9/1v)	"c" and "ō" in "co[n]siderauit" are overlapped	P35, P46	"c" and "ō" are not overlapped but tend to touched	P13, P14, P15, P16, P17, P25, P27, P30, P33, V6, V10, V11	
33	G	87ra 31 (9/7r)	hanc · [et] succende[n]t (b31 shifted to the left)	P33	(ha)nc · [et] succende[n]t	P13, P14, P15, P16, P17, P20, P25, P27, P29, P30, P35, P46, V6, V7, V8, V10, V11	
34	H	89va 25 (9/9v)	no[n]audiuit	P20, P46	no[n] audiuit	P13, P14, P15, P16, P17, P25, P27, P30, P33, P35, V6, V7, V8, V10, V11	
35	E	97va 1 (10/7v)	(: / ) Confusus...i[n]	P15, P16, P30	(: / )confusus...in	P13, P14, P17, P20, P22, P25, P27, P29, P33, P35, P46, V6, V7, V8, V10, V11	
36	C	98va 25 (10/8v)	decim[us]nonus (b25 shifted to the right)	P16	decimusnon[us]	P13, P14, P15, P17, P20, P27, P29, P30, P33, P35, P46, V6, V10, V11	
37	C	99vb 8 (10/9v)	Precipitauit (abutting "r"; smooth line beginning)	P15, P29, P33	Precipitauit (standard "r"; shifted to the left from second half of a8 (after [est]; space for "Seth" at the left-hand side)	P13, P14, P16, P17, P20, P27, P30, P35, P46, V6, V10, V11	
38	A	100rb 14 (10/10r)	effuger et et (or, "effugere t et")	P15, P16, P27, P33, P46 (P14, P20, P22, P35)	effugeret et	P13, P17, P25, P29, P30, V6, V7, V8, V10, V11	
39	H	102rb 25 (11/2r)	om nis	P13, P14, P16	omnis	P15, P17, P20, P27, P29, P30, P33, P35, P46, V6, V10, V11	
40	A	106va 30 (11/6v)	"Et ordi=" shifted to the left	P16, P29, P33, P39, P46	"Et ordi=" shifted to the right	V6, V10, V11	
41	A	106vb 1 (11/6v)	iniquitates eo[rum] . Ego (wider spacing; 1st word protrudes from the column beginning)	P14,, P20, P27, P29, P30, P33, P46	iniquitates eo[rum]. Ego ( smoother line beginning)	P13, P15, P16, P17, P22, P25, P35, V6, V7, V8, V10, V11	
42	A	107vb 18 (11/7v)	impietatis. No[n] (narrower, wider?)	P16	impietatis.No[n] (wider,narrower)	P27, P29, P33, P46, V6, V10, V11	
43	A	109vb 3 (11/9v)	letters in the final word "aspi= (/ciant)" are drifting				
44	H	116rb 39 (12/6r)	te :que[m] tecu[m]exerce[n]t	P13, P14, P15, P16, P17, P20, P22, P25, P27, P29, P30, P33, P35, P46	te :que[m] tecu[m] exerce[n]t	V6, V7, V8, V10, V11	
45	D	121va 14 (13/1v)	requira[m] Et...spe= (/ clatore[m]) (period is omitted)	P13, P14, P15, P16, P17, P20, P25, P27, P29	requira[m].Et...s(pe)= (/ clatore[m]) (period is inserted)	P22, P30, P33, P35, P46, V6, V7, V8, V10, V11	
46	G	122rb 20 (13/2r)	mea[m]	P16, P20, P25, P30, P33, P35	meu[m]	P13, P14, P15, P17, P27, P46, V6, V7, V8, V10, V11	

## Appendix 3. Stop-press Variants in the Second Volume(continued)

No.	Category	Folio	1st state	1st state copies	2nd state	2nd state copies
47	G	125va 10 (13/5v)	aurbius	P15, P17, P20, P29, P46	auribus	P13, P14, P16, P25, P27, P30, P33, P35, V6, V7, V8, V10, V11
48	G	127vb 15 (13/7v)	fabritatu[m]	P16, P25, P29, P46	fabricatu[m]	P13, P14, P15, P17, P20, P27, P30, P33, P35, V6, V7, V8, V10, V11
49	A	129va 27 (13/9v)	"qu" of "quatuor" is drifting			
50	G	130va 19 (13/10v)	. Omns	P14, P20, P25, P29, P30, P33, P35, P46	. Omnes	P13, P15, P16, P17, P27, V6, V7, V8, V10, V11
51	B	139ra 19 (14/9v)	uichil	P27, P29	nichil	P13, P14, P15, P17, P20, P16, P22, P25, P33, P35, P46, V6, V7, V8, V10, V11
52	D	142ra 3 (15/2r)	sui Et...abbacuc (period is omitted)	P13, P14, P17, P20, P30, P35, P46	sui . Et...ab(ba)cuc (period is inserted)]	P15, P16, P25, P27, P29, P33, V6, V7, V8, V10, V11
53	G	142rb 24 (15/2r)	dūo	P13, P14, P17, P20, P30, P35, P46	dno ("n" with an upper bar, i.e. d[omi]no)	P15, P16, P25, P27, P29, P33, V6, V7, V8, V10, V11
54	G	147vb 30 (15/7v)	(sacri= /) ficace	P27	(sacri= /) ficate	P13, P14, P15, P16, P17, P20, P22, P25, P29, P30, P33, P35, P46, V6, V7, V8, V10, V11
55	B	148va 33 (15/8v)	auima	P13, P15, P16, P25, P29, P30, P35, P46	anima	P14, P17, P20, P27, P33, V6, V7, V8, V10, V11
56	G	153va 1 (16/3v)	facies omne[m] sicut nigredo	P20, P29, P30, P33	facies omniu[m] sicut nigre(do)	P13, P14, P15, P17, P16, P27, P35, P46, V6, V10, V11
57	C	160rb 16 (16/10r)	omni (larger "n")	P13, P15, P16, P17, P20, P27, P33, P35	omni (smaller "n"; wider space between "terra")	P14, P30, P46, V6, V10, V11
58	C	169va 14 (17/8v)	(ha)b eba[n]t conser= (/ vaveru[n]t) (unnecessary spacing; "o" in "conser" is of standard shape)	P16	(ha)beba[n]t (co)nser= (/ vaveru[n]t) (beter justied; "o" is abutting or ligatured)	P13, P14, P15, P17, P20, P25, P27, P29, P30, P33, P35, P46, V6, V7, V8, V10, V11
59	A	169vb 3 (17/8v)	miserun t (unnecessary spacing)	P16	miserunt	P13, P14, P15, P17, P20, P25, P27, P29, P30, P33, P35, P46, V6, V7, V8, V10, V11
60	A	169vb 6 (17/8v)	t[er]ra (shifted to the right)	P16	t[er]ra (shifted to the left)	P27, P29, P33, P46, V6, V10
61	A	170va 17 (17/9v)	[et] viderunt	P16, P27, P29, P33	[et] viderunt (narrower spacing?)	P46, V6, V10, V11
62	A	170va 24 (17/9v)	group 1	P16, P27, P29, P33	group 2	P46, V6, V10

## Appendix 3. Stop-press Variants in the Second Volume(continued)

No.	Category	Folio	1st state	1st state copies	2nd state	2nd state copies
63	A	170vb 13 (17/9v)	des : et (wider spacing)	P16, P27, P29, P33	des : et (narrower spacing; better justified)	P46, V6, V10, V11
64	A	172v (18/1v)	a-b 41-42, b30 are not well superimposed			
65	A	173v (18/2v)	a8, a33, b12, b14 are not well superimposed			
66	B	176vb 14 (18/5v)	simonem ("n" is smaller)	P15, P16, P20, P25	simouem	P13, P14, P15, P17, P27, P29, P30, P33, P35, P46, V6, V7, V8, V10
67	A	185r (19/4r)	a42-b42 of P27 is not well superimposed with other images, and "e" is printed at the lower position on lines b6 and b23.			
68	C	185va 42 (19/4v)	the first "r" of "ferre" is standard; the second is shorter	P27	both "r"s are shorter	P13, P14, P15, P16, P17, P20, P22, P25, P29, P30, P33, P35, P46, V6, V7, V8, V10
69	A	188va 32 (19/7v)	si est potens i[n] ("potens" and "i[n]" looks like almost a word)	P13, P27	si est potens i[n]	P14, P15, P16, P17, P20, P25, P29, P30, P33, P35, P46, V6, V7, V8, V10
70	C	189ra 19 (19/8v)	. Et (wider "E" of an unique shape)	P29, P33, P35	. Et (abutting "E" of standard height; b19 shifted towards right)	P13, P14, P15, P16, P17, P20, P25, P27, P30, P46, V6, V7, V8, V10, V11
71	G	200va 32 (20/9v)	castraveru[n]t	P15, P22, P25, P27, P29, P30, P33	castraveru[n]t	P13, P14, P16, P17, P20, P35, P46, V6, V7, V8, V10, V11, V12
72	G	213va 22 (22/2v)	eis	P13, P15, P17, P20, P25, P33, P35, P46	ei[us]	P14, P16, P27, P29, P30, V6, V7, V8, V10, V11
73	A	214ra 7 (22/3r)	letters in "i(he)sus" is drifting			
74	G	214ra 19 (22/3r)	vestr qui in	P46	vester qui i[n]	P13, P14, P15, P16, P17, P20, P25, P27, P29, P30, P33, P35, V6, V7, V8, V10, V11
75	C	214ra 33 (22/3r)	credidistis (the first "d" is standard)	P46	credidistis (the first "d" is abutting)	P13, P14, P15, P16, P17, P20, P25, P27, P29, P30, P33, P35, V6, V7, V8, V10, V11
76	G	215va 6 (22/4v)	p[er]dicio	P17, P25, P33	p[er]ditio	P13, P14, P15, P16, P17, P20, P25, P27, P29, P30, P33, P35, P46, V6, V7, V8, V10, V11
77	C	215va 17 (22/4v)	euangeliu[m] (abutting "a")	P17, P25, P33	euangeliu[m] (standard "a")	P13, P14, P15, P16, P17, P20, P25, P27, P29, P30, P33, P35, P46, V6, V7, V8, V10, V11

## Appendix 3. Stop-press Variants in the Second Volume(continued)

No.	Category	Folio	1st state	1st state copies	2nd state	2nd state copies	
78	H	217ra 9 (22/6r)	(iaco=/) biminoris	P16, P17, P29, P30, P33	(iaco=) bi minoris (due to loosening?)	P13, P14, P15, P20, P25, P27, P35, P46, V6, V7, V8, V10, V11	
79	G	217rb 10 (22/6r)	(appa=) ruit primo marie madalene (+ normal "d")	P14, P15, P16, P17, P29, P30, P33	(appa=) ruit p[ri]mo marie magdalene (+ abutting "d")	P13, P20, P25, P27, P35, P46, V6, V7, V8, V10, V11	
80	G	225ra 22 (23/4r)	(ciui= / ) tem et...ipse ventur[us] . Et	P14, P15, P16, P25, P33, P35	(ciui= / ) tate[m] [et] ...ipse ventur[us] . Et (space before a period is slightly wider)	P13, P20, P27, P29, P30, P46, V6, V7, V8, V10, V11	
81	A	227va 4 (23/6v)	"i" in "liberari" is drifted up	P27	"i" is at lower position	P16, P25, P29, P30, P33, P46, V6, V7, V8, V10	
82	C	227va 30 (23/6v)	responde[n]s (abutting "o")	P25, P27, P29	responde[n]s (standard "o")	P13, P14, P15, P16, P17, P20, P30, P33, P35, P46, V6, V7, V8, V10, V11	
83	A	227va 33 (23/6v)	"ec" in "fecerit" is drifted				
84	G	234ra 41 (24/3r)	p[er]tucientes	P13, P16, P17, P30, P46	p[er]cutientes	P14, P15, P20, P25, P27, P29, P33, P35, V6, V7, V8, V10, V11	
85	B	241va 28 (24/10v)	Qni	P14, P16, P17, P27	Qui	P13, P15, P20, P25, P29, P30, P33, P35, P46, V6, V7, V8, V10, V11	
86	F	250ra 37 (25/9r)	cognouisset ("e" without contraction bar, which is added by hand)	P13, P14, P15, P16, P17, P20? P22, P25, P27, P29, P30, P33	cognouisse[n]t ("e" with contraction mark)	P35, P46, V6, V7, V8, V10, V11, V12	
87	G	250vb 14 (25/9v)	dolese	P16, P17, P22, P27, P30, P33, P46	dolose	P13, P14, P15, P20, P25, P29, P35, V6, V7, V8, V10, V12	
88	G	253vb 35 (26/2v)	querbat	P27, P30	quere(ba)t	P13, P14, P15, P16, P17, P20, P22, P25, P29, P33, P35, P46, V6, V7, V8, V10, V11, V12	
89	D	256rb 18 (26/5r)	ego • (ve)ro	P16	• ego (ve)ro	P13, P14, P15, P17, P20, P25, P27, P30, P33, P35, P46, V6, V7, V8, V10, V11	
90	G	256vb 42 (26/5v)	stipulam : uniuscuisq[ue]	P15, P16	stipula[m] : uniuscuisq[ue]	P13, P14, P17, P20, P25, P27, P29, P30, P33, P35, P46, V6, V7, V8, V10, V11	
91	C	257ra 36 (26/6r)	(tra[n]sfigura= / ) ni ("n" of "u" of irregular shape)	P14, P15, P16, P17, P25, P29, P33, P46	(tra[n]sfigura= / ) ui	P13, P20, P27, P30, P35, V6, V7, V8, V10, V11	
92	C	257ra 39 (26/6r)	(e= / ) uim ("u" of "n" of irregular shape)	P14, P15, P16, P17, P25, P29, P33, P46	(e= / ) nim	P13, P20, P27, P30, P35, V6, V7, V8, V10, V11	

## Appendix 3. Stop-press Variants in the Second Volume(continued)

No.	Category	Folio	1st state	1st state copies	2nd state	2nd state copies
93	A	258rb 16 (26/7r)	: quomo[do]	P16	: quomo[do] (wider spacing; better justified)	P27, P29, P33, P46, V10, V11
94	G	266vb 2 (27/5v)	acce=	P16	acci- (not "i", but "r")	P13, P14, P15, P17, P20, P25, P27, P29, P30, P33, P35, P46, V6, V7, V8, V10, V11
95	C	266vb 5 (27/5v)	michi (abutting "m")	P16	michi (standard "m")	P13, P14, P15, P17, P20, P25, P27, P29, P30, P33, P35, P46, V6, V7, V8, V10, V11
96	D	266vb 21 (27/5v)	simula (/ tioni)	P16	simula= (/ tioni)	P13, P14, P15, P17, P20, P25, P27, P29, P30, P33, P35, P46, V6, V7, V8, V10, V11
97	A	266v (27/5v)	P16 is not well overlapped with other copies			
98	H	274va 31 (28/1v)	tempta uerit	P13, P14, P16, P17, P20, P27, P30, P33, P35, P46	temptauerit	P15, P29, V6, V10, V11, V12
99	G	286vb 18 (29/2v)	qui lo= (/ ti)	P20, P27, P29, P30, P33, P35	q[ui] locu= (/ ti)	P13, P14, P15, P16, P17, P22, P25, P46, V6, V7, V8, V10, V11, V12
100	G	289rb 40 (29/5r)	eres : tra(de)[n]s... lgit[ur] qui	P46	eres:tra(de)bat... lgit[ur] q[ui]	P13, P14, P15, P16, P17, P20, P25, P27, P29, P30, P33, P35, V6, V7, V8, V10, V11
101	C	289vb 23 (29/5v)	Qui ("u" of strange shape)	P33	Qui	P13, P14, P15, P16, P17, P20, P25, P27, P29, P30, P35, P46, V6, V7, V8, V10, V11
102	C	290rb 8 (29/6r)	"o" in "nomen" is smaller, and "e" is abutting	P29, P33	"e" is of the primary form, and "o" is larger	P14, P15, P16, P17, P20, P25, P27, P30, P35, P46, V6, V7, V8, V10, V11
103	A	291va 1 (29/7v)	deum. (narrower spacing)	P16	deum . (wider spacing; smooth line beginning)	P27, P33, P46, V10
104	A	291va 6 (29/7v)	eu[m]:ut ("narrower spacing; u" of "ut" is at the lower position)	P16	eu[m]: ut	P27, P33, P46, V10, V7, V11
105	G	292vb 14 (29/8v)	arbri= (/ tramini)	P13, P14, P15, P16, P17, P20, P22, P27, P33, P46	arbi= (/ tramini)	P25, P29, P30, P35, V6, V7, V8, V10, V11, V12
106	A	293ra 13 (29/9r)	ego i[n] diebus (narrower spacing)	P27, P33	ego i[n] diebus (wider spacing)	P16, P46, V10, V11
107	A	293ra 25 (29/9r)	Tu[n]c co[n]stanter (narrower spacing)	P27, P33	Tu[n]c co[n]stanter (wider spacing)	P16, P46, V10, V11

Appendix 3. Stop-press Variants in the Second Volume(continued)

No.	Category	Folio	1st state	1st state copies	2nd state	2nd state copies
108	G	302vb 32 (30/8v)	. In m[u]ltis...	P20, P25, P27, P29, P35	. In in[u]ltis... (less smoothly justified)	P13, P14, P15, P17, P16, P30, P33, P46, V6, V7, V8, V10, V11
109	A	308rb 1 (31/3+1r)	q[ui] cre= (better justified)	P29, P46	q[ui] cre= (wider spacing; "cre" protrudes from the column ending)	P13, P14, P15, P16, P17, P25, P27, P33, V6, V7, V8, V10, V11
110	A	308rb 13 (31/3+1r)	q[ui] natus (narrower spacing)	P29, P46	q[ui] natus (wider spacing)	P13, P14, P15, P16, P17, P25, P27, P33, V6, V7, V8, V10, V11
111	A	308rb 14 (31/3+1r)	(ge= / ) nerat[i]o dei (narrower spacing)	P29, P46	(ge= / ) nerat[i]o dei (wider spacing; less justified)	P13, P14, P15, P16, P17, P25, P27, P33, V6, V7, V8, V10, V11

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\*This dissertation is written according to the Chicago Manual of Style, 15th edition.