The German Illustrated Book

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The Latin word *incunabula* means “cradle” or “baby linen.” Its connotations of birth and beginnings caused seventeenth–century writers to adopt it as a name for books printed from Gutenberg’s invention of typography until the end of the fifteenth century. (The date is completely arbitrary; this chapter traces the logical continuation of design and typography into the early 1500s.) Printing spread rapidly. By 1480 twenty-three northern European towns, thirty-one Italian towns, seven French towns, six Spanish and Portuguese towns, and one English town had presses. By 1500 printing was practiced in over 140 towns. It is estimated that over thirty-five thousand editions for a total of nine million books were produced. In 1450 Europe’s monasteries and libraries housed a mere fifty thousand volumes. In addition, a vast array of ephemera, including religious tracts, pamphlets, and broadsides, was produced for free distribution or sale. Broadsides—single-leaf pages printed on one side—eventually evolved into printed posters, advertisements, and newspapers. Four years after printing came to Venice, a dismayed scribe complained that the city was “stuffed with books.” The boom in this new craft led to overproduction and the proliferation of firms. From the ranks of over one hundred printing firms established in Venice before 1490, only ten survived until the end of the century.

Printing was resisted in some quarters. The scribes in Genoa banded together and demanded that the town council forbid printing in that town. They argued that greedy printers were threatening their livelihood. The council did not support the petition, and within two years Genoa joined the mushrooming list of towns with printers. Parisian illuminators filed suits in the courts in a vain attempt to win damages from printers who were engaged in unfair competition that caused the demand for manuscript books to decline. Some bibliophiles maintained that type was inferior to calligraphy and unworthy of their libraries. In 1492 a cardinal, who later became Pope Julius II, ordered scribes to hand-letter a copy of a typographic book for his library.

But typographic printing reduced a book’s price to a fraction of its earlier cost, turning the serious shortage of books (and the knowledge they contained) into an abundance. The tide of progress could not be stayed, and manuscript production slowly declined. The philosopher Alfred N. Whitehead once observed how major advances in civilization are processes that all but wreck the society where they occur.

Typography is the major communications advance between the invention of writing and twentieth-century electronic mass communications; it played a pivotal role in the social, economic, and religious upheavals that occurred during the fifteenth and sixteenth centuries. The modern nation developed as a result of the vigorous spirit of nationalism that swept over Europe and led to the American and French revolutions of the late eighteenth century. In addition to being a powerful vehicle for spreading ideas about human rights and the sovereignty of the people, printing stabilized and unified languages. People all across France, for example, were reading the same material in French, which formerly had many provincial idiosyncrasies of spelling and grammar. The French, English, and German languages became typographic mass media communicating to audiences of unprecedented size with one voice.

Illiteracy, the inability to read and write, began a long, steady decline. Literacy was of limited value to a medieval peasant who had no hope of gaining access to books. But tumbling book prices, the beginnings of such popular writing as romantic novels, and the proliferation of the ever-present broadside made reading desirable and increasingly necessary for Renaissance townspeople. The medieval classroom had been a scriptorium of sorts, where each student penned his own book. Typography radically altered education. Learning became an increasingly private, rather than communal, process. Human dialogue, extended by type, began to take place on a global scale that bridged time and space. Gutenberg's invention was the first mechanization of a skilled handicraft. As such, it set into motion, over the next three hundred years, the processes that would lead to the Industrial Revolution.

Renaissance innovators altered the perception of information by creating two visual systems. Painting evoked illusions of the natural world on flat surfaces through such means as the single light source and light-and-shadow modeling, the fixed viewpoint and linear perspective, and atmospheric perspective. Typography created a sequential and repeatable ordering of information and space. It led people toward linear thought and logic and toward a categorization and compartmentalization of information that formed the basis for empirical scientific inquiry. It fostered individualism, a dominant aspect of Western society since the Renaissance.

Publication of edition after edition of the Bible made increased study possible. People throughout Europe formulated their own interpretations instead of relying on religious leaders as the locus of truth. This led directly to the Reformation, which shattered Christianity into hundreds of sects. After Martin Luther (c. 1483–1546) posted his Ninety-five Theses for debate on the door of Castle Church in Wittenberg, Saxony, on 31 October 1517, his friends passed copies to printers. By December his proclamation had spread throughout central Europe. Within a few months, thousands of people all over Europe knew his views. Without typography, it is doubtful that the Protestant movement of the Reformation era could have happened. Both Luther and Pope Leo X used printed broadsides and tracts in a theological dispute before a mass audience throughout the continent.

By the end of the incunabula period, presses had been established throughout Europe, but very few printers at the time contributed to the development of graphic design. Most were content to print copies of manuscripts or earlier printed editions. Although the press replaced the copisti in producing running text, the same division of labor found in the scriptorium continued. Multicolor printing was used in Fust and Schoeffer's *Psalter in Latin*, but rubrication, decoration, and illumination in early incunabula were almost always by hand. Perhaps the difficulties of multicolor printing made it more expensive, or maybe enough political pressure was generated by the rubricators and illuminators to allow them to continue their crafts on typographic books.

Design innovation took place in Germany, where woodcut artists and typographic printers collaborated to develop the illustrated book and broadsheet. In Italy, the letter styles and format design inherited from illuminated manuscripts gave way to a design approach unique to the typographic book. Early printers followed the manuscript custom of putting the title and author at the top of the first page, in the same size

and style of lettering as the text. A short space was skipped, then *Incipit* (here begins) launched the book. Early in the incunabula period, a printed *ex libris*, or bookplate (Fig. 6–1), was pasted into the front of a book to identify the owner. As printing spread from Mainz, so did the use of the printer's trademark as a visual identifier.

6–1. Ex libris design for Johannes Knabensberg, c. 1450s. One of the earliest extant bookplates, it bears an inscription, "Hans Igler that the hedgehog may kiss you. Igler, Knabensberg's nickname,
is similar to the German word for hedgehog, making an early graphic pun.

Scribes and artists were often called upon to make exemplars, or layouts, for illustrated books and broadsides. Manuscript books have been discovered with editorial notes, marginal notes to indicate where typeset pages ended, inky fingerprints, and sketches for woodblocks. These indicate their use as layouts and manuscripts for printed books. In one such manuscript, the scribe's colophon is scratched out; in the printed book it is replaced by a typeset version.

Origins of the illustrated typographic book

Block printers and woodcarvers feared typographic printing as a serious threat to their livelihood, but early in the evolution of the typographic book, Bamberg printer Albrecht Pfister began to illustrate his books with woodblock prints. About 1460, he used five woodblocks (Fig. 6–2) and the types from Gutenberg's thirty-six-line Bible to print his first edition of Johannes von Tepl's *Der Ackerman aus Böhmen* (*Death and the Plowman*); Pfister's nine editions of five books were popular literature, in contrast to the theological and scholarly works published by most other early printers. As the decades passed, typographic printers dramatically increased their use of woodblock illustrations. This created a booming demand for blocks, and the stature of graphic illustrators increased. Augsburg and Ulm, centers for woodblock playing-card and religious-print production, became centers for illustrated books. In the 1470s Günther Zainer (d. 1478) established a press in Augsburg, and his relative Johann Zainer established one about 70 kilometers (43 miles) to the east in Ulm. Both men were scribes and illuminators who had learned printing in Strasbourg.

6–2. Albrecht Pfister (printer), illustration from the second edition
of Der Ackerman aus Böhmen, c. 1463. Death sits as a king on his throne, flanked by a widower and his child on the left and the deceased wife on the right.

6–3. Gunther Zainer (printer), illustration from Spiegel des menschlichen Lebens, 1475. In this illustration of a voice instructor, the triangular pattern on the tile floor introduces a lively tonal contrast.

6–4. Johann Zainer, page from De Mulieribus Claris, by Boccaccio, 1473. In this book about famous women, the woodcuts are all designed in rectangles the width of the type column and dropped
in flush to it.

6–5. Anton Sorg, page from Aesop's Vita et fabulae, c. 1479. Sorg used a wider column width than Zainer did in an earlier version of Aesop's Fables and tried to compensate for the lack of alignment between the woodcut and the type column by a margin of white space above and below the illustration.

Günther Zainer met resistance from the Augsburg woodcutter's guild when he wanted to illustrate his books with woodblocks. A 1471 agreement allowed Zainer to use woodblock illustrations as long as he commissioned them from members of the guild. His first illustrated books used a rounded Gothic type and woodblocks set into a type column of the same width. By 1475 his illustrated books, including *Spiegel des menschlichen Lebens* (The Mirror of Life), which analyzed the positive and negative aspects of various careers, used woodcuts with textured areas and some solid blacks (Fig. 6–3). This introduced a greater tonal range to the page design. Fortune smiled upon Zainer, for the sale of about thirty-six thousand books printed in over a hundred editions made him one of Augsburg's most prominent and affluent citizens.

In Ulm, Johann Zainer used eighty woodcuts in his 1473 edition of *De Mulieribus Claris* (Of Famous Women) by Boccaccio (Fig. 6–4). These illustrations have a very even line weight; the capital initials, printed rather than added later by hand, are wonderful little woodblock letters formed by birds, snakes, and plants. Woodcuts were used over and over in different books. For example, the 175 woodcuts in Johann Zainer's 1476 edition of Aesop's *Vita et fabulae* (Life and Tales) appear again in the edition by Ulm printer Anton Sorg four years later (Fig. 6–5). Many of these illustrations are not completely enclosed with rectangular borders, which allows white space to flow from the wide margins into the pictures. Simple outline initials extend this light design effect. Typographic paragraph marks leave nothing for the rubricator in this volume; the printed book was becoming independent of the manuscript.

The first illustrator to be identified as such in a book was Erhard Reuwich, for his work in *Peregrinationes in Montem Syon* (Travels in Mount Syon), printed with Schoeffer's types in 1486. The author of this first travel book, Bernardus de Breidenbach, dean of the Mainz Cathedral, departed for Jerusalem on 25 April 1483 and took Reuwich along to record the sights. When they returned to Mainz in January 1484, Breidenbach wrote a book about his journey; the published volume featured woodblocks cut from Reuwich's drawings. Reuwich was a careful observer of nature who introduced crosshatch illustration in this volume. His illustrations included regional maps, significant buildings, and views of major cities. This book was the first to have fold-out illustrations, including the four-page-wide view of Modon illustrated here (Fig. 6–6), and a woodcut of Venice stretching almost meters (4 feet, 9 inches).

Nuremberg becomes a printing center

Because printing required a huge capital investment and large trained labor force, it is not surprising that Nuremberg, which had become central Europe's prosperous center of commerce and distribution, housed Germany's most esteemed printer, Anton Koberger (c. 1440–1513), by the end of the century. His firm was staffed by a hundred craftsmen operating twenty-four presses; it printed over two hundred editions, including fifteen Bibles. As a bookseller, Koberger owned sixteen shops and had agents throughout Europe. By the 1490s most printers had trouble selling large books and abandoned the huge format of the liturgical Bibles. Books with smaller page sizes were more convenient and affordable for private customers. Koberger, however, continued to publish and sell large books.

As a printer working in concert with master illustrators, he produced three masterpieces. The 1491 *Schatzbehalter* (Treasure Trove), a religious treatise, contains ninety-two full-page woodcuts by the painter and woodcut illustrator Michael Wolgemuth (1434–1519). Published in German and Latin versions in 1493, the six-hundred-page *Liber Chronicarum (Nuremberg Chronicle)* by Dr. Hartmann Schedel is an ambitious history of the world from the biblical dawn of creation (Fig. 6–7) until 1493. One of the masterpieces of incunabula-period graphic design, the *Nuremberg Chronicle* has 1,809 woodcut illustrations in its complex, carefully designed 47.5 by 32.6–centimeter (18 by 12–inch) pages. The title page for the index is a full-page woodblock of calligraphy (Fig. 6–8) attributed to George Alt (c. 1450–1510), a scribe who assisted Hartmann Schedel in lettering the Latin exemplar and who translated the Latin manuscript into German for that version.

6–6. Erhard Reuwich (illustrator), illustration from Peregrinationes in Montem Syon, 1486. Panoramic vistas present accurate depictions of the cities visited on the journey.

6–7. Anton Koberger, pages from the Nuremberg Chronicle, 1493. The raised hand of God in the initial illustration is repeated over several pages retelling the biblical story of creation.

6–8. George Alt, title page for the Nuremberg Chronicle, 1493. This title reads, “Registry [index] for this Book of Chronicles with illustrations and portraits from the initiation of the world.”

The exemplars (handmade model layouts and manuscript texts used as guides for the woodcut illustrations, typesetting, page design, and makeup of books) for both editions survive and provide rare insight into the design and production process (Figs. 6–9 and 6–10). The exemplars for the *Nuremberg Chronicle* are the work of several “sketch artists” and numerous scribes, whose lettering in the exemplar has the same character count as the type font to ensure an accurate conversion. The publishers contracted with Michael Wolgemuth and his stepson Wilhelm Pleydenwurff (d. 1494) to create the exemplars, draw the illustrations, and cut, correct, and prepare the woodblocks for printing. Also, one or the other had to be present at the printshop during typesetting and printing. For this work the artists were paid a one-thousand-guilder advance and guaranteed one half of the net profits. Because many woodcuts were used several times, only 645 different woodcuts were required. For example, 598 portraits of popes, kings, and other historical personages were printed from ninety-six blocks. Major cities of the world were illustrated (Figs. 6–11 and 6–12); some woodblocks were used for more than one city.

Koberger’s contract required him to order and pay for paper that was as good as, or better than, the sample he had supplied; print the book according to the exemplars in an acceptable type style; maintain the security of a locked room for the project; and provide a workroom for Wolgemuth and Pleydenwurff. Koberger was paid four guilders for every ream (five hundred sheets) of four-page sheets printed. During the months of production, Koberger could bill the publishers periodically for portions of the book that had been printed and gathered into three-sheet, twelve-page signatures.

Page layouts range from a full double-page illustration of the city of Nuremberg to unillustrated type pages. On some pages, woodcuts are inserted into the text; on others, woodcuts are lined into vertical columns. Rectangular illustrations are placed under or above type areas. When the layout threatens to become repetitious, the reader is jolted by an unexpected page design. The dense texture and rounded strokes of Koberger’s sturdy Gothic types contrast handsomely with the tones of the woodcuts. The illustrators used their imagination to create unseen monstrosities, unvisited cities, and awful tortures, and to express the story of creation in graphic symbols.

Koberger was godfather to Albrecht Dürer (1471–1528), whose goldsmith father apprenticed him to Michael Wolgemuth for almost four years, beginning in 1486. Most likely the young Dürer, who grew up three houses down the street in Nuremberg from Wolgemuth’s home and studio, assisted in the layout and illustration for the *Nuremberg Chronicle.*

6–9. Anton Koberger, pages from the Nuremberg Chronicle, 1493. This complex layout is ordered by the use of rules around the illustrations. These convert the silhouette images into rectangles, which can be tightly fitted with the rectangles of type.

6–10. Studio of Michael Wolgemuth and Wilhelm Pleydenwurff, pages from the Nuremberg Chronicle, Latin exemplar, pre-1493. This layout and manuscript provided guidance for the compositors, although liberties were taken in the final layout.

In 1498 Dürer published Latin and German editions of *The Apocalypse* (Fig. 6–13) illustrated by his monumental sequence of fifteen woodcuts. This thirty-two-page book, with 44.5 by 30.5–centimeter (16 by 12–inch) pages, has fifteen layouts with two columns of Koberger's type on the left facing one of Dürer's illustrations on the right. Dürer's *Apocalypse* has an unprecedented emotional power and graphic expressiveness. Volume and depth, light and shadow, texture and surface are created by black ink on white paper, which becomes a metaphor for light in a turbulent world of awesome powers. At age twenty-seven, Dürer earned renown throughout Europe.

The colophon reads "Printed by Albrecht Dürer." Given his prodigious volume of prints, Dürer probably had a press in his workshop. As the types used are Koberger's, we don't know if Dürer acquired set type from his godfather and printed *The Apocalypse*, printed the woodblocks, and sent the sheets to Koberger's shop for typographic imprinting, or commissioned Koberger to print the edition under his own (Dürer's) supervision.

In 1511 Dürer issued a new edition of *The Apocalypse* and published two other large-format volumes, the *Large Passion* and *The Life of the Virgin* (Fig. 6–14). In his mature work he achieved mastery in the use of line as tone. Dürer's broadsides were very popular, and at least eight editions of his *Rhinoceros* (Fig. 6–15) went out of print. The text was undoubtedly edited to make the five lines of metal type form a perfect rectangle of tone aligning with the woodcut border.

Trips to Venice for six months at age twenty-three and for one-and-a-half years when he was thirty-four enabled Dürer to absorb the painting theory and technique, as well as the humanist philosophy, of the Italian Renaissance. He became a major influence in the cultural exchange that saw the Renaissance spirit filter into Germany. He believed German artists and craftsmen were producing work inferior to that of the Italians because they lacked the theoretical knowledge of their fellow professionals to the south. This inspired his first book, *Underweisung der Messung mit dem Zirckel und Richtscheyt* (A Course in the Art of Measurement with Compass and Ruler), in 1525. The first two chapters are theoretical discussions of linear geometry and two-dimensional geometric construction. The third chapter explains the application of geometry to architecture, decoration, engineering, and letterforms. Dürer's beautifully proportioned Roman capitals, with clear instructions for their composition, contributed significantly to the evolution of alphabet design (Fig. 6–16). Relating each letter to the square, Dürer worked out a construction method using a one-to-ten ratio of the heavy stroke width to height. This is the approximate proportion of the Trajan alphabet, but Dürer did not base his designs on any single source. Recognizing the

6–11 and 6–12. Anton Koberger, page from the Nuremberg Chronicle, 1493. Many woodblock book illustrations were hand-painted.

6–13. Albrecht Dürer, The Four Horsemen of the Apocalypse, 1498. Poised at a historical watershed as the medieval epoch evolved toward the German Renaissance, Dürer simultaneously achieved the spiritual power of the former and the artistic mastery of the latter.

6–14. Albrecht Dürer, title page for The Life of the Virgin, 1511. A linear sunburst creates a dazzling luminosity seldom achieved with black ink on white paper. The triangular shape of the title echoes angular lines radiating from the figures; the text (below) repeats the horizontal lines above it.

6–15. Albrecht Dürer, broadside, 1515. Dürer developed his woodcut illustration from a sketch and description sent from Spain, after the first rhinoceros in over a thousand years arrived in Europe.

value of art and perception as well as geometry, he advised his readers that certain construction faults could only be corrected by a sensitive eye and trained hand. The fourth chapter covers the construction of geometric solids, linear perspective, and mechanical aids to drawing.

6–16. Albrecht Dürer, from Underweisung der Messung, 1525. Dürer presented variations for each character in the alphabet.

6–17. Albrecht Dürer, woodcut from De Symmetria Partium Humanorum Corporum, 1532. To assist his fellow artists, Dürer offers a “through-the-looking-grid” device as an aid to drawing.

6–18. Johann Schoensperger (printer), pages from Teuerdank, 1517. The flamboyant calligraphic gestures are appropriate for this romantic novel about chivalry. The swashes are carefully placed to animate the pages in the layout of the book.

The illustrated book *De Symmetria Partium Humanorum Corporum* (Treatise on Human Proportions) (Fig. 6–17) first appeared in Nuremberg shortly after Dürer’s death in 1528. It shared his tremendous knowledge of drawing, the human figure, and the advances of Italian artists with German painters and graphic artists.

The further development of the German illustrated book

While graphic artists and printers in Italy and France evolved toward Renaissance book design (discussed in chapter 7), German graphic design continued its tradition of textura typography and vigorous woodcut illustrations. One of Dürer’s former students, Hans Schäufelein, was commissioned to design the illustrations for Pfintzing’s *Teuerdank* (Fig. 6–18), an adventure of chivalry and knighthood that was printed by Johann Schoensperger the Elder at Nuremberg in 1517. Commissioned by Emperor Maximilian to commemorate his marriage to Mary of Burgundy, this lavish book required five years to produce. The types for *Teuerdank*, designed by court calligrapher Vincenz Rockner, comprise one of the earliest examples of the Gothic style known as *Fraktur*. Some of the rigid, angular straight lines found in textura letterforms were replaced with flowing, curved strokes.

Rockner carried this design quality even further in an effort to duplicate the gestural freedom of the pen. As many as eight alternate characters were designed and cast for each letterform. These had sweeping calligraphic flourishes, some of which flowed deep into the surrounding space. When the book was published, other printers insisted that these ornamental letterforms must have been printed from woodblocks, for they refused to believe that it was possible to achieve these effects with cast metal types. (An inverted *i* in the 1517 edition, however, conclusively proves that metal types were used to print *Teuerdank*.)

Technically speaking, a *broadside* is a single leaf of paper printed on one side only. When both sides are printed, the page is frequently called a *broadsheet*; however, these terms are often used interchangeably. This ephemeral form of graphic communications became a major means for information dissemination from the invention of printing until the middle of the nineteenth century. Content ranged from announcements of deformed births to portraits of famous secular and religious leaders (see Fig. 6–

21). Festivals and fairs were advertised, and the sale of lottery tickets and indulgences was announced. Political causes and religious beliefs were expounded, and invasions and disasters were proclaimed. Folded printed sheets evolved into pamphlets, tracts, and, later, newspapers. The design of a broadside was often the task of the compositor, who organized the space and made typographic decisions while setting the type. Woodblock illustrations were commissioned from artists. Once available, a given woodblock might appear in a number of broadsides, or be sold or loaned to another printer.

As Martin Luther pressed the breach with the Catholic Church that began in 1517, his presence at the university in Wittenberg brought importance to the graphics produced there. Luther found a loyal friend and follower in the artist Lucas Cranach the Elder (1472–1553), who had been called to Wittenberg by the electors of Saxony. In addition to his studio, staffed by a number of well-trained assistants, Cranach operated a printing office, a bookshop, and a paper mill. He even found time to serve twice as mayor of Wittenberg. He turned his considerable energy to the Reformation by portraying the Reformers and their cause in books and broadsides. When Luther traveled to Worms for his celebrated trial in 1521, his portraits by Cranach filled the town on printed matter proclaiming his beliefs. And yet Cranach regularly accepted commissions for Madonnas and Crucifixions from Catholic clients, and many of the woodcuts he produced for the Luther Bible were also used in a subsequent Catholic edition. A most effective example of propaganda is Cranach's work for the *Passional Christi und Antichristi* (Passional of Christ and Antichrist) (Fig. 6–19), printed by Grunenberg in 1521. Inspired by Luther, scenes from the life of Christ and biting depictions of the papacy are juxtaposed in graphic contrast on facing pages. Both of Cranach's sons, Hans Cranach (d. 1537) and Lucas Cranach the Younger (1515–86), joined their father's studio; few examples of Hans's work remain, but the younger son continued to work in the family style for many years after his father's death (Figs. 6–20 and 6–21).

6–19. Grunenberg (printer) and Lucas Cranach the Elder (illustrator), pages from Passional Christi und Antichristi, 1521. In a biting satirical contrast, Christ labors under the weight of his cross while the Pope travels in style in a sedan chair.

6–20. Hans Lufft (printer) and Lucas Cranach the Younger (illustrator), pages from Auerswald's Ringer-Kunst (Art of Wrestling), 1539. Lufft printed Cranach's eighty-seven woodcuts without the usual border, enabling them to move dynamically on the page. The centered captions above and thick rule below restore balance in this predominantly pictorial book.

6–21. Lucas Cranach the Younger, broadside, 1551. This commemorative portrait of Martin Luther bears the identification of the illustrator (Cranach's flying snake device) and the block cutter, a craftsman named Jörg, who is identified typographically above the date.

6–22. Conrad Sweynheym and Arnold Pannartz, specimens of the first (top, 1465) and second (bottom, 1467) type-faces in the evolution toward Roman-style typefaces, shown near original size.

6–23. William Caxton and Colard Mansion, page from The Game and Play of the Chesse, c. 1476. The eccentric, jerky type used by Caxton ushered the era of the typo-graphic book into the British nation.

Typography spreads from Germany

Italy, which was at the forefront of Europe's slow transition from the feudal medieval world to one of cultural and commercial renaissance, sponsored the first printing press outside Germany. Although fifteenth-century Italy was a political patchwork of city-states, monarchies, republics, and papal domains, it was at the zenith of its wealth and splendid patronage of the arts and architecture. In 1465 Cardinal Turrecremata of the Benedictine monastery at Subiaco invited two printers, Conrad Sweynheym (d. 1477) of Mainz, who had been employed by Peter Schoeffer, and Arnold Pannartz (d. 1476) of Cologne, to Subiaco to establish a press. The cardinal wished to publish Latin classics and his own writings.

The types designed by Sweynheym and Pannartz (Fig. 6–22) marked the first step toward a Roman-style typography based on letterforms that had been developed by Italian scribes. These scholars had discovered copies of lost Roman classics written in ninth-century Caroline minuscules. They mistakenly thought they had discovered authentic Roman writing, in contrast to the black medieval lettering that they erroneously believed to be the writing style of "barbarians" who had destroyed Rome. Sweynheym and Pannartz created a typographic "double alphabet" by combining the capital letters of ancient Roman inscriptions with the rounded minuscules that had evolved in Italy from the Caroline minuscule. They tried to unify these contrasting alphabets by adding serifs to some of the minuscule letters and redesigning others. After three years in Subiaco, Sweynheym and Pannartz moved to Rome, where they designed a more fully Roman alphabet that became the prototype for the Roman alphabets still in use today. By 1473 the partnership had printed over fifty editions, usually in press runs of 275 copies. Ten other Italian cities also had printers publishing Latin classics, and the market could not absorb the sudden supply of books. The partnership of Sweynheym and Pannartz suffered a financial collapse and was dissolved.

Early volumes printed in Italy continued the pattern of the early German printed books. Initials, folios, headings, and paragraph marks were not printed. Space was left for these to be rubricated by a scribe with red ink. Often, a small letter would be printed in the space left for an illuminated initial to tell the scribe what initial to draw. In many incunabula, the paragraph marks were not drawn in the spaces provided. Eventually, the blank space alone indicated a paragraph.

After apprenticing in the English textile trade, William Caxton (c. 1421–91) left his native land for the textile center of Bruges in the Low Countries, where he set up his own business as a merchant and diplomat. In the early 1470s he spent a year and a half in Cologne, where he translated the *Recuyell of the Histories of Troy* from French into English and learned printing. On returning to Bruges, he enlisted the help of the illuminator and calligrapher Colard Mansion and set up a press in that city. In 1475 Caxton's translation became the first typographic English language book. In the epilogue to the third part, Caxton tells the reader, "my pen is worn, my hand is weary and shaky, my eyes are dimmed from too much looking at white paper"; thus he "practiced and learned at great expense how to print it."

The partners separated after printing an English translation of *The Game and Playe of the Chesse* (Fig. 6–23) and two or three French-language books. Mansion remained in Bruges and printed twenty-seven editions before 1484, when he was forced to flee the city to escape his creditors. Caxton moved his types and press across the English Channel and established the first press on English soil. He had printed the first book in English; now he printed the first book in England, at the Sign of the Red Pail in Westminster.

6–24. William Caxton, printer's trademark, after 1477.

6–25. Philippe Pigouchet, page from Horae Beatus Virginis Mariae (Hours of the Blessed Virgin Mary), 1498. The dense complexity of illustration, typography, and ornaments compressed into the space is typical of Pigouchet's book design.

6–26. Diego de Gumiel, title page for Aureum Opus (Great Works), 1515. The title almost becomes an afterthought in this title page. The use of white-on-black woodblocks and heraldic imagery is typical of early Spanish graphic design.

6–27. Arñao Guillen de Brocar, page from the Polyglot Bible, 1514–17. The grid system developed for this volume uses uneven columns to compensate for the different running lengths of the different languages.

The roughly ninety books that he published in Westminster encompassed nearly all the major works of English literature up to the fifteenth century, including Chaucer's *Canterbury Tales* and Sir Thomas Malory's *Morte d'Arthur*. Caxton is a pivotal figure in the development of a national English language, for his typographic work stabilized and unified the constantly changing, diverse dialects in use throughout the islands. Primarily a scholar and translator, Caxton contributed little to the evolution of book design and printing, as his work had a crude vigor devoid of graphic elegance or refinement. Woodcut illustrations from his volumes have a brash forcefulness and are awkwardly drawn; the workmanship of his printing is inferior to continental printing of the same period. Caxton's printer's mark (Fig. 6–24) evokes the carpets woven at Bruges. After Caxton's death, his foreman, Wynkyn de Worde, continued his work and published nearly four hundred titles over the following four decades.

Printing came to France in 1470 when three German printers—Michael Freiburger, Ulrich Gering, and Martin Kranz—were sponsored by the prior and the librarian of the Sorbonne to establish a press there. At first they used Roman letters inspired by Italian types to reprint classics, but after they lost their Sorbonne sponsorship in 1473 they began to print with Gothic types that were more familiar to their French audience. To a greater degree than in any other country, French block printers and typographic printers joined forces to duplicate the design of illuminated manuscripts. Late Gothic illumination was the zenith of French art at that time, and early French printing surrounded its Gothic type and woodcut illustrations with modular blocks that filled the space with flowers and leaves, birds and animals, patterns and portraits. Jean Dupré printed France's first outstanding typographic book, Augustine's *La cité de Dieu (The City of God),* in 1486. Philippe Pigouchet's *Horae* (Book of Hours) established the graphic excellence of this popular form (Fig. 6–25). Pigouchet appears to have introduced the *criblé* technique, in which the black areas of a woodblock are punched with white dots, giving the page a lively tonality.

Spain also received three German printers, who arrived in Valencia in 1473 under the auspices of a major German import-export firm. The design sense of the Spanish, which favored dark masses balancing decorative detail, influenced their graphic design, particularly their large woodblock title pages (Fig. 6–26). A particular masterpiece of Spanish typographic design is Arñao Guillen de Brocar's Polyglot Bible (Fig. 6–27) of 1514–17. Composed of correlated texts in multiple languages, this massive research project drew scholars from all over Europe to the University of Alcalá de Henares. The printer had to design a page format to accommodate five simultaneous typographic presentations.

During the remarkable first decades of typography, German printers and graphic artists established a national tradition of the illustrated book and spread the new medium of communication throughout Europe and even to the New World. Simultaneously, a cultural renaissance emerged in Italy and swept graphic design in unprecedented new directions.