

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

---

Faculty Publications and Creative Activity,  
School of Art, Art History and Design

Art, Art History and Design, School of

---

2013

## The Birth of Mass Media: Printmaking in Early Modern Europe

Alison Stewart

University of Nebraska-Lincoln, [astewart1@unl.edu](mailto:astewart1@unl.edu)

Follow this and additional works at: <https://digitalcommons.unl.edu/artfacpub>



Part of the [Book and Paper Commons](#), and the [Illustration Commons](#)

---

Stewart, Alison, "The Birth of Mass Media: Printmaking in Early Modern Europe" (2013). *Faculty Publications and Creative Activity, School of Art, Art History and Design*. 22.  
<https://digitalcommons.unl.edu/artfacpub/22>

This Article is brought to you for free and open access by the Art, Art History and Design, School of at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Faculty Publications and Creative Activity, School of Art, Art History and Design by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

Published in *A Companion to Renaissance and Baroque Art*, First Edition, edited by Babette Bohn and James M. Saslow (Chichester: John Wiley & Sons, 2013), pp. 253–273.  
Copyright © 2013 John Wiley & Sons, Inc. Used by permission.

# The Birth of Mass Media

## Printmaking in Early Modern Europe

Alison G. Stewart

*It is hardly too much to say that since the invention of writing there has been no more important invention than that of the exactly repeatable pictorial statement [called the print].*

William Ivins<sup>1</sup>

In the digital age, when images and films can be streamed with lightning speed onto computers at the press of a button, it is hard to fathom the society-altering impact the new printed image had when it first appeared in Europe around 1400. The introduction of printed images or repeatable pictorial statements irrevocably changed the practice of manually producing images one by one, by making them available in identical form, as multiple examples printed onto paper, a material that was newly available in Europe. Such multiples appeared first as independent images, then as book illustrations, but either way, this process of producing multiple originals and the ability to print as many examples as desired inexorably changed the art and culture of the time and the art and culture to come.

Early prints learned from and drew on a variety of past arts and crafts that were made exclusively by hand. Such earlier images, especially panel paintings and manuscript illuminations, were often stunningly beautiful, but they were labor-intensive and costly. The new printed image continued the two-dimensionality and other aspects of such medieval art including size (small to medium), subjects (mostly Christian), the importance of added color, and even typefaces, initials, and compositions for printed books. Yet the printed image, due to its ability to be multiplied and coupled with less expensive materials, namely paper—instead of wooden panels or the animal skin called vellum or parchment used for manuscripts—opened new possibilities by offering more affordable images and more of them. Such works included over the course of the early modern period

new subjects, more sophisticated images, and works in new forms (for example, broadsheets and pamphlets), all of which reached a larger audience.

This essay considers the three major print techniques of the early modern period and discusses representative examples, showing how prints both continued and broke with past traditions, and exploring print practices and paper, prints' subjects, numbers, and early collections. It hopes to show how prints changed two-dimensional art in early modern culture by expanding the possibilities of what it meant to be a visual image, at a time that saw the transition from hand to machine during the early modern print revolution.

### Techniques

In early modern Europe, prints included woodcuts, engravings, and etchings, each having a different process, appearance, and heritage. These prints are classified as either relief or intaglio, from the part of the matrix printed. Relief included woodcuts, and intaglios (from the Italian *intagliare* to cut) both engravings and etchings. Prints of this period predate lithographs and other modern techniques including photography.<sup>2</sup> It is important to understand the difference between relief and intaglio techniques for prints of this period, and what the two methods and their lines looked like, because the available technology and tools decidedly influenced their appearances.<sup>3</sup>

Woodcuts generally had bolder lines, were more suitable for larger images, and were often, beginning in the sixteenth century, glued together to produce prints of extraordinary size. Engravings, by contrast, were capable of producing finer, subtler effects with various shades of gray and were suitable for close-up viewing in smaller format. Etchings, which offered a freer technique characterized by more regular, even, and wiry lines, constituted the newer intaglio process and grew to great importance in the seventeenth century. Each of these techniques had different chronologies and arose from different crafts requiring different skills: woodcuts from wood carving and carpentry; engravings from goldsmithery; and etchings from armor-making.<sup>4</sup>

Yet each of these techniques shared common features, including the necessity of a design, which was transferred to block or plate, cut, inked, and printed onto paper made from linen rags. A print's design was made directly on the surface to be printed or on a separate piece of paper that was then transferred to that surface. Because the composition was reversed during printing, the design also needed to be reversed when transferred. If a separate drawing were used, it was turned over and pricked or pounced for transfer (see chapter 8) or oiled for transparency, making its design visible for cutting directly through the drawing.

### Woodcuts

Although woodcuts existed in China well before the first preserved example, from the ninth century, European woodcuts date over 500 years later to around

1400. By that time, paper-making mills made paper plentifully available at reasonable prices.<sup>5</sup> Woodcut's birth place is unknown, but early examples come from such diverse locations as Bohemia and France, south Germany and Austria.<sup>6</sup> The few surviving early woodcuts are principally German and simple in technique. They include the Bavarian *St. Dorothy* from ca. 1410,<sup>7</sup> which has characteristically thick, rather uniform lines, no shading, and looped drapery (<http://www.all-art.org/Architecture/12.htm>, fig. 562). This woodcut emphasizes the surface and foreground through the large figure of the saint, the tiny Christ Child standing nearby, and the sprawling rose bush that fills the surrounding surface area. Such woodcuts were typically colored by hand.

The lines are key to this woodcut, for they continue one aspect of late medieval art seen in other contemporary media: an emphasis on surface decoration. The lines hug the surface and are generally wide, with only an occasional thinner line used for blades of grass and Christ's halo. The uniform lines reveal how demanding the carving of such early wood blocks must have been. Cutting a wood block required the skills of someone who belonged to one of the late medieval guilds for wood carvers or carpenters and trained as such. The wood cutter used knives to cut, gouge, and remove the unwanted wood surrounding the lines in a subtractive process.<sup>8</sup> Thus the skill of the wood carver in cutting clean, uniform lines was essential to the quality of the final print.

From their beginnings, woodcuts probably included a division of labor that was inherent to the technique, with designer and block cutter as different individuals.<sup>9</sup> One person designed the woodcut, another cut it, and who inked and printed the block's surface is uncertain. The earliest woodcuts were not printed on a printing press. Rather, they were either inked and stamped onto paper, in the manner of late medieval textile stamping, or printed with the aid of a wooden spoon or another object. By the mid-fifteenth century, with the invention of movable type and printed books, woodcuts were printed on flatbed or common presses that exerted pressure on the block and type from above through a screw mechanism.<sup>10</sup>

No names of designers, cutters, or printers are known for the *St. Dorothy* woodcut. Signing one's work only became customary gradually during the fifteenth and sixteenth centuries. By 1500, the situation had changed radically with Albrecht Dürer's *Apocalypse* series, which offered more mature and sophisticated woodcuts from his skillful hand. In his *Four Horsemen of the Apocalypse* (Figure 1), ca. 1497-98, four men ride swiftly on horses that bring death, famine, war, and the plague to humanity. The viewer can almost feel and hear the horses galloping close by in fore- and mid-ground. Dürer underscores speed and urgency through curved parallel lines and dark crosshatching that bring the figures to life. Cloaks and horse tails fly through the air, as men and women are trampled below. The background is ominous: long parallel lines delineate dark clouds that open up to a downpour. Such complex prints by Dürer did not require additional color by hand.

The technique of this Nuremberg artist (1471–1528) is unprecedentedly complex for a woodcut. Before he reached age thirty, he designed this woodcut, the accompanying text, and fourteen other woodcuts, each with text to be made into



**Figure 1.** Albrecht Dürer, *Four Horsemen*, from *The Apocalypse*, woodcut, 1498. British Museum, London. Private Collection/The Bridgeman Art Library.

book form. Dürer signed this woodcut and others with his monogram at bottom: AD. Some historians believe Dürer cut his own wood blocks for this series because of their skillful carving and lines with highly individualized heights. Yet the case can also be made for a highly trained wood carver who performed the cutting. The involvement of a professional woodcutter, albeit an anonymous one, seems plausible considering the large numbers of works Dürer made earlier in the 1490s before the *Apocalypse*, not to mention his trip to Italy in 1494-95, all of which may have precluded his cutting the wood blocks himself.<sup>11</sup>

Dürer's print is included in a book that showcases woodcuts first, at the full size of the page, with text on their backs. His shop in Nuremberg must have been large to support the production of the *Apocalypse* prints and other illustrated books. To print the woodcuts and text, Dürer needed paper, ink, and a flatbed press. Such a press is large, and he may have printed his *Apocalypse* at another location, perhaps the same one used by his godfather Anton Koberger for the *Nuremberg Chronicle* (*Weltchronik*) he published in 1493. Dürer may have been one of the woodcut designers on that project, for he had been apprenticed to the book's designer, Michael Wolgemuth. From that project, Dürer would have learned various aspects of the production of a huge book project featuring text and large illustrations. That Dürer used the same format and typeface for his *Apocalypse* as that for the *Nuremberg Chronicle* points to the latter's influence.<sup>12</sup>

Woodcuts continued both to illustrate books and to be produced as independent images throughout the sixteenth century, when woodcuts were often glued side-by-side in what Max Geisberg later called single-leaf woodcuts (*Einblattdrucke*), a term unknown in the early modern period.<sup>13</sup> Such woodcuts were often extremely large, as in Dürer's *Triumphal Arch of Emperor Maximilian I*, dated 1515, composed of 192 woodcuts that assembled measured 3.57 × 2.95 meters or some 12 × 10 feet.<sup>14</sup> In Italy, the nearly contemporary woodcut by Ugo da Carpi after Titian's design, *The Submersion of Pharaoh's Army in the Red Sea* (ca. 1513-16), measured 1.18 × 2.15 meters, or 4 × 7 feet, and comprised twelve woodcut sheets.<sup>15</sup> The trend toward large multi-woodcut prints continued in both the north and Italy, as did chiaroscuro woodcuts begun by artists like Ugo and Hans Burgkmair ca. 1500 and continued by Hendrick Goltzius a century later. This technique printed striking light and dark contrasts in color, using a separate block for each color in addition to the customary black-line block. These blocks needed to be registered or lined up. Such experiments with tone and color were typical during the seventeenth century and allowed prints to reproduce in black and white the tonal qualities of paintings: for example, Hendrik Goudt's etching and engraving after Adam Elsheimer's painting *Flight into Egypt*, and Guillaume Chasteau's engraving after Nicolas Poussin's *Death of Germanicus*.<sup>16</sup>

## Book Illustrations and Printed Books

Several decades after woodcuts were introduced in Europe, the first printed book was produced in the mid-fifteenth century by Johann Gutenberg of Mainz, Germany, over 500 years after the Chinese had begun printing books. At first, printed books on paper stressed text, not imagery, as handmade manuscripts using animal skin or vellum had done. Early printed books drew on similar typefaces, large initials that were hand-colored, and compositions using one or two columns of text. But the use in printed books of cast-metal letters that could be reused was new. Each page of type was set from right to left, in mirror image, then inked, and printed on paper in the same kind of flatbed press used for woodcuts.

The *Gutenberg Bible*, or *42-Line Bible*, the first book believed to be produced with this new process of movable type, was printed multiple times and dates to the 1450s. Gutenberg's invention resulted in books being produced more easily in identical examples, more cheaply, and with a larger audience because more people could afford them. Before his Bible was published, Gutenberg printed indulgences offering remission of sins, thereby linking the early history of printed books to the Catholic Church.<sup>17</sup>

During the next decades, printing took off throughout Europe, with printers named in the books themselves. During the last quarter of that century, book printing in Italy centered around Florence and Venice, and in south Germany at Augsburg and Ulm. By 1493, the *Nuremberg Chronicle*, written by humanist Hartmann Schedel and published by Koberger, was printed at Nuremberg on large sheets of paper: 48.4 × 66 centimeters or 19 × 26 inches. The illustrations often filled at least half a page and were no longer subordinate to the text. The book was richly decorated with woodcut illustrations.<sup>18</sup>

Woodcuts continued to be used throughout the sixteenth century as illustrations for books, pamphlets, and broadsheets, as books grew both larger and smaller. The small-size pocket book was invented by the humanist publisher Aldus Manutius in Venice ca. 1500. Those books were portable, inexpensive, and excellently edited. The turn toward engravings on copper for book illustrations was aided by Christopher Plantin (d. 1589) in Antwerp, Flanders (now Belgium), whose work as a printer and publisher marks a transition away from woodcuts for book illustrations. Engraved book illustrations produced the curious mix of a text requiring a flatbed press and an image needing a cylinder press.<sup>19</sup>

In the seventeenth century, engravings replaced woodcuts for book illustrations, with Peter Paul Rubens a prominent designer of them. Books became even smaller with the development of new small typefaces, allowing as many as thirty-two pages to be printed together on one side of a sheet. In the Netherlands, the Elzevir publishing family exemplified this trend toward small-format books with dense pages of tiny type featuring classic texts.<sup>20</sup>

## Engravings

The earliest European engravings date somewhat later than early woodcuts, to ca. 1430 in the Rhineland. The Master of the Playing Cards' *King of Wild Men* engraving, ca. 1435-40, emphasizes—as did early woodcuts—the foreground and decoration, but here the wild man's soft, thick hair covering his body, like the hard, sharp-edged rocks he sits on,<sup>21</sup> and the surrounding space, both underscore the decorative potential of early engravings and point to the wild man's home in nature ([http://commons.wikimedia.org/wiki/Meister\\_der\\_Spielkarten](http://commons.wikimedia.org/wiki/Meister_der_Spielkarten)). This engraving used a triangular-ended tool called a burin or graver that cut into a copper plate.<sup>22</sup> The engraving tool first produces a thin line that swells to become wider, then thinner as the line is completed and the burin emerges from the plate. Fine detail can be achieved in the engraving technique. The Master of the Playing

Cards (who remains anonymous but is named after his main body of works) uses short strokes called flicks, and longer parallel ones to create both texture and light and dark areas.

The engraving plate was inked, making sure the grooves below the surface received enough ink, the surface was wiped clean, and damp paper was placed on top of the plate and printed in a cylinder press that pushed the paper into the lines to pick up the ink. The earliest intaglios were probably printed by the application of pressure from a cylinder alone.

The first fifteenth-century prints made by an artist whose name is known are engravings by the painter Martin Schongauer (d. 1491), who lived in the German-speaking area of Alsace. Today his prints survive in much greater numbers than his paintings, and his engravings are noted for their unprecedented variety of tone and texture. His *Carrying of the Cross to Calvary* from ca. 1475<sup>23</sup> is a large (28.8 × 43.4 centimeters/11 × 17 inches) *tour de force* of printed detail: the fine wood grain of Christ's cross, a horse's braided tail at left, and sky filled with dark brooding clouds and clear landscape vista.<sup>24</sup> Schongauer generally uses curved engraving strokes for his cross-hatching and for modeling human forms.

By the late fifteenth century, Schongauer in the Rhineland and Andrea Mantegna in northern Italy had become important painters who designed and sometimes signed their own engravings. Mantegna's *Battle of the Sea Gods* from ca. 1480, an engraving and drypoint from two plates, offers another approach to engraving technique through the use of different line work, and introduces subject matter deriving from antiquity.<sup>25</sup> Mantegna emphasizes foreground, as do the early woodcuts and engravings already discussed, recreating what appears to be Roman relief sculpture. But figures are the focus, and Mantegna shows them as three-dimensional, from various perspectives. Although it is not clear that Mantegna cut his own plates, notable are the straight parallel lines throughout the print that run from lower left to upper right; shorter straight lines model the figures and longer ones the dark marsh-like background. These straight lines contrast with the curved lines used by Schongauer and Dürer in the North.

David Landau calls Mantegna's two-part print possibly the "earliest engraving of high aesthetic aspiration to be made from two plates,"<sup>26</sup> an accolade that underscores the fact that this engraving was too wide at 82.6 centimeters (nearly 3 feet) to be printed on one plate and one sheet of paper, resulting in an unusually large engraving after the sheets were glued together at center. Dürer made same-size drawings of Mantegna's two prints, and he must have been impressed with their large size. He may have been impressed also by Schongauer's *Carrying of the Cross*, which was even wider at 42.6 centimeters (nearly 1.5 feet), than each of Mantegna's sheets.<sup>27</sup>

For engraving, designer and cutter generally appear to have been the same person during the first century of its history. Their names are not often known, because signing one's name to work was not yet a regular practice; this was also true for contemporary painters and sculptors. Over time, the division of labor appears to have increased for intaglios, as the printmaking industry became professionalized. By the mid-sixteenth century, the names of the individuals respon-





**Figure 2.** Pieter Bruegel the Elder, engraved by Pieter van der Heyden, *Big Fish Eat Little Fish*, engraving, 1557. Metropolitan Museum of Art. Art Resource, NY.

sible for the physical manufacture and publishing were added to the names on prints. Pieter Bruegel's *Big Fish Eat Little Fish*, dated 1557 (Figure 2), is an engraving after a possibly commissioned drawing that Bruegel submitted to the publisher Hieronymus Cock. The drawing<sup>28</sup> is signed and dated 1556 and was reversed in the print engraved by Peter van der Heyden, who signed his initials at lower left. Cock included his last name as publisher ("ExcV" or executed) along with the date 1557, at bottom right. He was an astute businessman who capitalized on the continued popularity and marketability of the inventions of Hieronymus Bosch; he added Bosch's name, not Bruegel's, at lower left as "inventor" or designer, even though Bosch had died decades earlier, in 1516.

Such painter-engravers as Dürer, Schongauer, Mantegna, and Bruegel were the focus of much twentieth-century research on early prints, mirroring the artist-based research of art history during that time.<sup>29</sup> "Painter-engraver," or *peintre-graveur*, is a term created by Adam von Bartsch in the early nineteenth century. Print curator of the Imperial Library in Vienna, Bartsch published his pioneering catalogues of early modern prints in twenty-one volumes between 1803 and 1821. He stressed artists whose prints he deemed original and skillful technically, at a time before prints were taken seriously as important works of art.<sup>30</sup> Bartsch attempted to elevate prints to a more respected position within the discipline of art history.



**Figure 3.** Marcantonio Raimondi after Raphael, *Massacre of the Innocents*, engraving, ca. 1509. British Museum, London/The Bridgeman Art Library.

Over time, the early domination of painting over printmaking activities among painter-engravers shifted dramatically, with later painters focusing more heavily on prints. By the time Dürer's pupil Sebald Beham died (1550), the scales had gradually tipped away from the dominance of paintings toward prints.<sup>31</sup> The printing shop of Hieronymus Cock, called the Four Winds, became the foremost publishing house in Antwerp, producing a vast number of engravings, including examples from commissioned designs by painters like Bruegel. Cock employed numerous named engravers from north and south, including Philip Galle, Cornelis Cort, and Giorgio Ghisi. In Italy, somewhat earlier, Marcantonio Raimondi made engravings after drawings by Raphael in an enterprise of mutual cooperation, producing the first prints that are generally but erroneously called "reproductive prints," a modern term not used in the sixteenth century. It goes back to the writings of Giorgio Vasari, who understood Marcantonio as reproducing Raphael's paintings, frescoes, and drawings.<sup>32</sup>

Raphael's workshop in Rome involved collaboration with Marcantonio, who turned Raphael's drawings (not his paintings) into engravings, in a manner similar to the working relationship between Bruegel and Cock in Antwerp. Marcantonio's *Massacre of the Innocents*, ca. 1510-15, is considered one of his four engraved masterpieces (Figure 3). It is signed on the pedestal at left by both Raphael and

Marcantonio: RAPHA URBI INVEN MAF. Pen and ink designs by Raphael directly related to this engraving exist today.<sup>33</sup> Drawing on Matthew 2:16, the engraving shows the slaughter of newborn infants at the hands of the soldiers of Herod the Great, who had heard that a child had been born who would threaten his power. The scene shows naked soldiers stabbing infants with their swords, as helpless mothers cling to the babies they carry close to their bodies. Soldiers and mothers have classically idealized bodies, and the background includes a bridge that does not appear in any of the drawings.

Through detailed cross-hatching, the engraving contrasts expert modulations of light that emphasize the soldiers with dark areas for the bridge and drapery of the fleeing women. Raphael's final drawing for the engraving (called his *modello* or model) may be lost, because Marcantonio's engraving is more highly finished than the most complete drawing, which also lacks the background bridge. Raphael's drawn model in pen and ink would have been the same size as the engraving and was probably either pricked for transfer or oiled and pasted face down onto the plate for cutting.<sup>34</sup>

In the seventeenth century, Peter Paul Rubens, the painter-humanist-businessman, employed many talented engravers, including Lucas Vorsterman, to reproduce his paintings, often after his own drawings. Rubens's painting of the *Martyrdom of St. Lawrence* from ca. 1613-14 in Munich provided the model for Vorsterman's engraving.<sup>35</sup> The trend toward larger print businesses exemplified by Cock in the sixteenth century and later by Rubens appears to have been bucked by Rembrandt van Rijn. The great seventeenth-century intaglio maker continued to use engraving, minimally, but preferred etching with drypoint for its rich, dark printed effects. He sometimes used engraving to reinforce those techniques, experimenting in unprecedented ways. Judging from the signature he often used, "Rembrandt f." (f. stood for *fecit* meaning "made"), Rembrandt worked alone on his prints. He is the celebrated printmaker closest to the modern notion of the "artist" for the early modern period.<sup>36</sup>

Despite the increasing number of recognizable names associated with engravings over the course of the period—Schongauer, Dürer, Bruegel, Goltzius, Rubens, and Rembrandt in the north, and Mantegna, Pollaiuolo, Parmigianino, Barocci, Castiglione, Reni, and Piranesi for Italy—most prints made in the first century of printmaking (the fifteenth) were unsigned. And although those engravings were sometimes designed and cut by the same person, that was not always the case. The lack of signatures for many prints has created difficulties in cataloguing them: anonymous? Florentine or Italian? The discipline of art history has found organizing works around artists' names convenient and efficient, so prints by named artists have been privileged over those that cannot be associated with a name. For this reason, names have been invented for some unsigned prints: examples include the Master of the Die and Master B.S., names based on the subjects they favored or initials included on prints with a similar style. Although these engravers are now well known and researched, many prints by less well-known artists remain unstudied.

In recent decades, art historians have increasingly begun to research anonymous prints for information about patronage and cultural connections. One recent study approaches the early engraver called The Master of the Berlin Passion in terms of manuscripts made for convents in the Rhine-Maas region, the triangle formed by northwest Germany, Belgium, and the Netherlands. Those engravings date from the second half of the fifteenth century and were glued into manuscripts as illustrations for the texts.<sup>37</sup> The engravings show, regardless of who the designer was, that both printed and handmade images were used together after the invention of printed books.<sup>38</sup>

Over time, new engraving techniques developed to advance the increasing interest in textures and tones. A variety of lines, dots, and shading became available, beginning with Giulio Campagnola's introduction in early-sixteenth-century Italy of stipple engraving (dots used for shading) employing the point of the burin to increase tonal qualities.<sup>39</sup> Goltzius's invention of intersecting systems of arcs of lines enhanced three-dimensionality and enabled striking tonal effects in early seventeenth-century Netherlands,<sup>40</sup> effects that continued into the eighteenth century in England with the social satires of William Hogarth.

## Etchings

The first etchings were made in Augsburg, in south Germany, around 1500. Deriving from armor-making, etchings use acid, rather than the human hand, to incise lines into metal plates. Etchings first employed plates made of iron, which rusted, producing serious technical problems. Daniel Hopfer, from Augsburg, is credited with the invention of etching on iron around 1500, followed by Hans Burgkmair and Dürer. Etchings on iron produced coarse, wiry lines and required plates to be oiled to avoid rust. In the Netherlands, Lucas van Leyden, who is known for his delicate engravings and inventive genre subjects, replaced the iron etching plate around 1520 with one made of copper. The result: finer lines that eventually came to rival engraving.<sup>41</sup>

Etchings produce lines with an acid-resistant ground that is applied to the plate's surface, onto which a design is made through the ground using an etching needle, in a technique similar to drawing, exposing the plate in those drawn areas. When the plate is placed into an acid bath, the acid etches or bites the revealed areas, resulting in lines that are uniformly straight from beginning to end; they do not swell and taper like engraved lines. These lines and their differences are visible in good close-up illustrations.<sup>42</sup>

By the seventeenth century, etching had increased in popularity and become the favored print technique, as exemplified by Rembrandt's *Hundred Guilder Print* of ca. 1648 (Figure 4). Etching is the print technique that most closely approximates drawing, so for a loose, free, sketchy approach, etching was chosen. Rembrandt's print describes a crowd of ordinary people and Jewish Pharisees, at left, who listen with rapt attention to Christ.<sup>43</sup> Christ stands at the center, at the border



**Figure 4.** Rembrandt van Rijn, *Hundred Guilder Print*, etching, 1647. Private Collection/The Bridgeman Art Library.

between light foreground and dark background. Light radiating from Christ's head subtly illuminates the crowd below, as does an unseen light source in the building at right.

The sketchy figure holding the sword, at lower left, employs etching to great effect, as light and shade alternate across him as well as the people and dog in the foreground. These dark areas contrast with the background and its dark shadows created from surface tone, ink that Rembrandt intentionally left on the plate. The background at right and the dark shadow at lower right feature dark, rich effects Rembrandt created by cutting into his etched plate with a drypoint needle. He experimented with engraving, etching, and drypoint. Rembrandt relied on drypoint more and more, after etching his composition, because drypoint created beautiful velvety effects and was faster than etching, which required multiple bitings.

Rembrandt's tendency to experiment may have been partially innate, but he undoubtedly learned from his predecessor and kindred spirit in the Netherlands, the painter-etcher Hercules Seghers (ca. 1589–1635), whose experiments with a variant of etching called soft-ground etching resulted in astonishing effects in atmosphere and landscape. Those etchings were printed with various colored inks on colored paper and cloth and are unlike any other prints of the time. They constitute important forerunners for Rembrandt's tonal experiments with drypoint and etching.<sup>44</sup>

Rembrandt owned at least one of Seghers's plates, *Tobias and the Angel*; he cut it down and re-cut parts of it to make his *Flight into Egypt* etching with engraving and drypoint from ca. 1635. Rembrandt experimented with various kinds of inks, wiping techniques, and papers including ordinary white paper, rough gray-flecked oatmeal paper that softened tonal contrast, a thin "Chinese" paper, various absorbent imported yellowish Japanese papers, and vellum or animal skin that is more absorbent and better suited to drypoint than Japanese papers.<sup>45</sup> Rembrandt experimented with his prints more than most of his contemporaries, re-cutting his plates, using a slow-biting acid, and the process of stopping-out (or covering up) areas so that they would not be bitten, also employing multiple biting to intensify specific areas while protecting others.<sup>46</sup>

The interest in broadening etching's visual vocabulary, seen in Rembrandt, can also be found by the mid-seventeenth century in France with Abraham Bosse, who invented a technique that imitated copper engraving using a harder ground and a rounded tool. The result was images that were easier to produce, and that offered commercial advantages because they allowed the production of what looked like engravings in the faster process of etching.<sup>47</sup> Etching was also used for such subject matter as landscape and genre, or scenes from everyday life, in the Protestant Netherlands by Esias van de Velde and Jacob van Ruisdael, and by Adriaen van Ostade. Other etched subjects include Jacques Callot's provocative *Miseries and Misfortunes of War* in France and traditional Catholic ones in Italy by Annibale Carracci and Pietro Testa of the Virgin and Child and saints.<sup>48</sup> Piranesi's views of Italian monuments are impressive, large etchings from the eighteenth century.<sup>49</sup>

## Paper

Paper was invented in China over a millennium before it reached Europe, via the Silk Road and the Muslim world.<sup>50</sup> After handmade paper was introduced into Europe in the later Middle Ages, and became more accessible and affordable, European paper-making mills arose to support growing demand.

Paper today differs from early modern paper, where a papermaker produced paper pulp from linen and sometimes cotton rags that were pulverized in water by large wooden hammers. This pulp was placed into a wooden mold or tray, and strained.<sup>51</sup> Early modern paper is called "laid paper" because the pulp was laid into a mold with metal wires running vertically and horizontally. An additional metal wire formed into a unique shape became the watermark identifying the paper and its maker. When the pulp was released from the mold, it was dried between felt blankets and hung to dry. Early modern paper is characterized by a textured surface with short hair lines on one side of the paper produced from the felt surface.<sup>52</sup> Such paper retains its color, strength, and flexibility when kept in good conditions, but modern paper manufactured from wood pulp turns brown and brittle relatively quickly, due to its high acid content.

## Printing on Demand

In early modern Europe the market determined the number of impressions to be printed from a block or plate. Artists did not cancel their plates, as they do today, to create a fixed number of impressions, nor did they number their prints. For each edition of a print or book in early modern Europe, the matrix was inked and printed over and over again in smaller or larger numbers. The print run was gauged in advance by a number of factors, which are not always clear today, including the interest in the subject, the size and nature of the audience, and the print technique. For extremely popular works, thousands of impressions might be printed, in various “print runs,” rather than at once. For works with a limited audience, only a handful might be printed.

Printing on demand meant guessing what the market would bear, and if demand outstripped the number of works printed, the plate or block would be printed once again. The number of impressions that could be printed for each technique is estimated based on surviving records, printmaking practices today, and guesswork. A wood block could print as many as thousands of impressions. Over time it broke down around the edges, and in areas where the wood was left unsupported by being carved away. Wood blocks also split over time, resulting in hairline breaks that widened very noticeably over time into wide cracks running the full length or width of the block. Early modern wood blocks often continued to be printed into the nineteenth century, a fact that can be established by the presence of wood pulp in some impressions; paper in earlier centuries did not use wood fibers.<sup>53</sup>

Although wood blocks broke and cracked, intaglio plates wore down, because copper is relatively soft and wears down quickly, with both plate and lines becoming thinner. Early engravings may have been printed in dozens of impressions, a relatively small number,<sup>54</sup> yet the contemporary *Gutenberg Bible*, the earliest extant printed book, was reported by contemporaries to have been printed in 158 or 180 copies.<sup>55</sup> Over time, the numbers of engravings printed may more closely have approximated the following estimate: 200 brilliant impressions, 600 good ones, 600 fair, with the plate totally exhausted after 3,000 impressions.<sup>56</sup>

Popular images with Christian subjects such as saints, Mary, or Christ might have been printed in larger numbers, and the woodcut technique was often more suitable to them. For subjects with a more limited audience, a small number of intaglio prints, dozens to hundreds, were printed. Such works probably included Marcantonio's erotic *I Modi* engravings from 1524, after drawings by Giulio Romano, intended for a small group of individuals, perhaps collectors, interested in prints showing a variety of sexual positions.<sup>57</sup> The numbers of impressions offered here are estimates based on surviving information, which is scarce. There are few reports on this topic from the period.

Other works with limited print runs may have included the small postage-stamp-sized engravings from ca. 1510-50, by the group of German artists called the Little Masters, and Albrecht Altdorfer's hand-colored etchings of landscapes

from ca. 1520 that resemble drawings.<sup>58</sup> Over time portraits of individuals, from Martin Luther to local dukes, were printed in larger or smaller numbers, depending on the perceived importance of the individual involved and the desired distribution area of the image. Truly exclusive prints could be produced by printing on more costly materials like vellum or silk, and such works were collectible and printed in small numbers.

Blocks and plates continued to be printed as long as demand existed, a practice that departs from the modern one of limiting the print run to a specific small number. Such modern practices are related to another modern concept that did not exist in the early modern period, that of the “artist” underpinned by fame and celebrity, genius and psychological problems. In the early modern period, the art market, the concept of the “artist,” and art collecting were just beginning.

## Subjects

The subjects of early modern prints increased exponentially during the period, mirroring shifting interests seen in painting and other media. The simply rendered woodcuts of the fifteenth century were valued for their religious themes, not for their aesthetics. They were kept in purse or pocket for daily devotions or during pilgrimages. Subjects of woodcuts included those found in contemporary painting and sculpture: at first, Christian saints, like the *St. Dorothy* discussed above, and the life of Christ and Mary, including the Nativity and Passion of Christ; later, festivals, landscapes, and portraits. Engravings also favored Christian subjects, but added playing cards and fanciful alphabets. By the late fifteenth century, themes from antiquity stressing gods and goddesses were added to the visual repertoire of available subjects, above all in Italy. Mantegna’s *Battle of the Sea Gods* from ca. 1480 is one example.

Other new categories included still lifes, battle scenes, landscapes, and a wide variety of subjects from everyday life; scientific instruments with movable dials, and other scenes with flaps that, when lifted, revealed bawdy scenes or private body parts; musical scores; and social satires, including Hogarth’s *Marriage a la Mode*.<sup>59</sup> As society expanded and explored the world beyond Europe, including to the New World, print subjects followed suit. Hans Burgkmair’s *King of Cochin* woodcut frieze from four blocks of 1508 is part of his illustrations of peoples from exotic lands, for a report of an expedition to Africa, East India, and Arabia sponsored by the Welser trading company of Augsburg.<sup>60</sup> The Protestant Reformation also encouraged new subjects and brought about portraits of Martin Luther and other reformers as well as didactic images (Lucas Cranach’s *Law and Grace* woodcut, ca. 1530; [http://en.wikipedia.org/wiki/File:Cranach\\_law\\_and\\_grace\\_woodcut.jpg](http://en.wikipedia.org/wiki/File:Cranach_law_and_grace_woodcut.jpg)) that attempted to persuade viewers to come over to the Lutheran side. Prints by Italian artists during the Catholic Counter-Reformation might commemorate an indulgence (Federico Barocci, *Il Perdono*, 1581), provide biblical il-



illustrations for private devotion, or celebrate the miracles of the saints (Agostino Carracci after Francesco Vanni, *Ecstasy of St. Francis*, 1595).

Prints offered a place to try out new subjects and approaches. Prints that were used and handled included calendars, images of saints, bed-frame decorations, and wallpaper made from numerous printed sheets. New too were collectable prints that were tiny, postage-stamp size. These prints were so small that, by the mid-sixteenth century, they encouraged viewers to enjoy them privately.<sup>61</sup>

## Print Collections

Art collecting was in its infancy during the early modern period. Of course there were patrons who commissioned paintings and sculptures and purchased prints, but organizing works of visual art into discrete groups or listing them in inventories or albums does not seem to have begun until after 1500. The print collection of Hartmann Schedel, humanist and doctor from Nuremberg, Germany, and the author of the *Nuremberg Chronicle*, is an interesting case in point. Schedel's collection spanned the decades around 1500, ending with his death in 1514. Some 300 prints collected by him were glued into books; they included woodcuts, engravings, and other techniques. This eclectic mixture is unlike our modern notion of systematic collecting by artist or by quality. Schedel's assemblage has been called the first preserved print collection in the West<sup>62</sup> and contrasts with the somewhat later one, recently published, of Ferdinand Columbus (1488–1539), the illegitimate son of Christopher Columbus, who lived in Seville, Spain.

Ferdinand's collection contained over 3,200 prints and 15,000 books when he died and is the largest known Renaissance print collection.<sup>63</sup> Now known only from an inventory, the collection was organized using a classification system that privileged size and subject: saints, men and women, animals, inanimate objects, decorative knots, topography, ornament, and vegetation. Artist's name was not a category. This organization differed from modern notions of collecting, which use artist's name as the major organizing category, as did Bartsch, discussed above. Columbus's collection also demonstrates the increased numbers of prints and printed books that had become available by 1539. Compared to medieval libraries of manuscripts that numbered only a handful or a few dozen books, Ferdinand's library was huge. And compared to Schedel's collection less than fifty years earlier, this collection shows that the number of prints and books printed during the first half of the sixteenth century had increased ten-fold.

One additional print collection that should be mentioned here is Rembrandt's in Amsterdam. Its organization was by maker or artist, thereby contrasting with contemporary print collections divided by sections on subjects such as architecture, plants, or portraits, among others.<sup>64</sup> Rembrandt collected the prints of many artists in a nearly encyclopedic, very modern manner.

## What was a Print?

Over the course of the early modern period, the number of prints on the open market exploded, as did the number of artists involved in their production. The seventeenth-century world was filled with prints, and according to a recent exhibition catalogue of Rembrandt's prints,

In many houses they hung on the walls, framed or pinned, and were stored in wrappers, folders, and—loose or pasted—in bound albums. Shops offered them for sale singly or in series, and they were often purchased not only for their subject matter, or for purposes of study, but also because of the fame of the printmaker or designer.<sup>65</sup>

Prints increasingly permeated early modern European culture as the centuries passed and spread ideas and images from one generation and century to another.

In short, a print in the early modern period was an authorized or unauthorized version of a drawing, painting, or sculpture made to be printed repeatedly. A print might be a newly created work or one that reproduced another, or one that illustrated a book, pamphlet, or broadsheet. A print might be precisely and skillfully drawn and executed for a small, select audience, or one that was simply produced for a large audience with wide distribution. A print might also be something that was used frequently: maps, calendars, pictures of saints, wallpaper, furniture decoration, numbers, dissection manuals, and astronomical instruments. Prints could be produced repeatedly, assembled, and glued together to serve as decorations for walls and furniture. Prints might have movable parts and flaps and function as interactive scientific instruments.<sup>66</sup>

In other words, prints were visual images that had myriad uses, both aesthetic and practical. They were printed pictorial statements that spread ideas and images throughout the early modern world, as Ivins earlier claimed. Repeatability was unquestionably a characteristic of the early modern print, yet each printed impression was more than a simple reproduction, it was an original in itself. To understand this on an experiential level, you would do well to look at real prints in your university's print collection. Linger over them and enjoy.

## Notes

- 1 Ivins, *Prints and Visual Communication*, 3.
- 2 Griffiths, *Prints and Printmaking*, 10. On modern techniques, Hulst, *The Print*, chapters 8-13.
- 3 Helpful for differentiating these techniques visually are YouTube videos under "print techniques," and useful books by Ivins (see bibliography).
- 4 Landau and Parshall, *Renaissance Print*, 7 ff.
- 5 <http://www.clevelandart.org/exhibcef/woodcut/html/3509276.html> ; [http://www.metmuseum.org/toah/hd/wdct/hd\\_wdct.htm](http://www.metmuseum.org/toah/hd/wdct/hd_wdct.htm)
- 6 Hulst, *The Print*, 19; Parshall and Schoch, *Origins of European Printmaking*.

- 7 Hulst, *The Print*, 23, fig. 1.3, and <http://www.sgsu.edu/index.php?c=1&s=photothek>
- 8 <http://www.youtube.com/watch?v=O0skLwaFpn0> ; for carved wood blocks, Bartrum, *Dürer and his Legacy*, 119, fig. 50, and 171, fig. 115; Twyman, *Printing*, 10, fig. 1.
- 9 Stewart, "Early Woodcut Workshops."
- 10 Twyman, *Printing*, frontispiece and cover.
- 11 Stewart, "Early Woodcut Workshops," 192ff. and nn. 14-15; Ivins, "Three Dürer Woodblocks," 109; Landau and Parshall, *Renaissance Print*, 170-72.
- 12 Hulst, *The Print*, 77.
- 13 Geisberg, *Deutsche Einblatt-Holzschnitt*; Strauss, *German Single-Leaf Woodcut*.
- 14 [http://www.britishmuseum.org/explore/highlights/highlight\\_objects/pd/a/albrecht\\_dürer\\_and\\_others\\_the.aspx](http://www.britishmuseum.org/explore/highlights/highlight_objects/pd/a/albrecht_dürer_and_others_the.aspx) . For illustrations, Silver and Wyckoff, *Grand Scale*, 128-29; Bartrum, *Dürer and his Legacy*, 194-95, fig. 139; Hulst, *The Print*, 100-01, fig. 2.22.
- 15 Silver and Wyckoff, *Grand Scale*, 111 illustrated, and cat. no. 7. Also illustrated at: <http://www.clevelandart.org/exhibcef/woodcut/html/3509276.html>
- 16 Hulst, *The Print*, 274, 289.
- 17 The British Library has an excellent website on Gutenberg's Bible with illustrations: <http://www.bl.uk/treasures/gutenberg/homepage.html>
- 18 Landau and Parshall, *Renaissance Print*, 38-43; Wilson, *Making the Nuremberg Chronicle*.
- 19 For illustrations, see n. 9 above (flatbed press) and Twyman, *Printing*, 41 (cylinder press).
- 20 Twyman, *Printing*, 34.
- 21 Hulst, *The Print*, 46, fig. 1.29.
- 22 [http://www.metmuseum.org/toah/hd/engr/hd\\_engr.htm#thumbnails](http://www.metmuseum.org/toah/hd/engr/hd_engr.htm#thumbnails)
- 23 [http://www.britishmuseum.org/explore/highlights/highlight\\_image.aspx?image=ps287812.jpg&retpage=21637](http://www.britishmuseum.org/explore/highlights/highlight_image.aspx?image=ps287812.jpg&retpage=21637)
- 24 Snyder, *Northern Renaissance Art*, 256, fig. 12.20; 255, fig. 12.18.
- 25 Landau and Parshall, *Renaissance Print*, fig. 76; <http://collections.vam.ac.uk/item/O1056078/print-battle-of-the-sea-gods/>
- 26 Landau and Parshall, *Renaissance Print*, 87.
- 27 Hulst, *The Print*, 46, 57, 150.
- 28 Albertina, Vienna; <http://www.albertina.at/jart/prj3/albertina/main.jart?rel=en&content-id=1202307119457&reserve-mode=reserve>
- 29 Bartsch, *Le Peintre graveur*; revised and reissued as *The Illustrated Bartsch*, edited by Walter L. Strauss.
- 30 <http://www.dictionaryofarthhistorians.org/bartscha.htm>
- 31 Stewart, *Before Bruegel*.
- 32 Pon, *Raphael, Dürer, and Marcantonio*, 27ff.; Landau and Parshall, *Renaissance Print*, 117, 120-22, esp. 120.
- 33 Drawings discussed and illustrated in Landau and Parshall, *Renaissance Print*, 123-25, and Pon, *Raphael, Dürer and Marcantonio Raimondi*, 118-36 (excellent illustrations).
- 34 Landau and Parshall, *Renaissance Print*, 124.
- 35 <http://www.metmuseum.org/toah/works-of-art/51.501.7125>
- 36 On Rembrandt, <http://www.nga.gov/cgi-bin/tsearch?artistid=1822&page=6&secti>

- [on=W](#)
- 37 Weekes, *Early Engravers and their Public*; and [http://www.britishmuseum.org/research/search\\_the\\_collection\\_database/search\\_object\\_details.aspx?objectId=1349973&partid=1&output=People%2f!!%2fOR%2!!%2f91822%2f!%2f91822-1-7%2f!%2fRepresentation+of+Apostles%2f!%2f%2f!!%2f%2f!!%2f&orig=%2fresearch%2fsearch\\_the\\_collection\\_database%2fadvanced\\_search.aspx&currentPage=1&numpages=200](http://www.britishmuseum.org/research/search_the_collection_database/search_object_details.aspx?objectId=1349973&partid=1&output=People%2f!!%2fOR%2!!%2f91822%2f!%2f91822-1-7%2f!%2fRepresentation+of+Apostles%2f!%2f%2f!!%2f%2f!!%2f&orig=%2fresearch%2fsearch_the_collection_database%2fadvanced_search.aspx&currentPage=1&numpages=200)
- 38 Hindman and Farquhar, *Pen to Press*.
- 39 Landau and Parshall, *Renaissance Print*, 261.
- 40 Griffiths, *Prints and Printmaking*, 49-50, illustrated.
- 41 Hults, *The Print*, 106.
- 42 See <http://www.spencerart.ku.edu/collection/print/maps/schirmap.shtml> and <http://www.metmuseum.org/toah/hd/etch/hd/etch.htm> and the superb, detailed illustrations in Ivins, *How Prints Look* and *Notes on Prints*.
- 43 Hinterding, *Rembrandt the Printmaker*, cat. 61.
- 44 See [http://www.rijksmuseum.nl/aria/aria\\_artists/00017535?lang=en](http://www.rijksmuseum.nl/aria/aria_artists/00017535?lang=en)
- 45 Griffiths, *Prints and Printmaking*, 35; Hults, *The Print*, 222-23.
- 46 [http://www.christies.com/LotFinder/lot\\_details.aspx?intObjectID=4683279](http://www.christies.com/LotFinder/lot_details.aspx?intObjectID=4683279)
- 47 Twyman, *Printing*, 37.
- 48 Hults, *The Print*, chap. 4.
- 49 [http://www.metmuseum.org/toah/hd/pira/hd\\_pira.htm](http://www.metmuseum.org/toah/hd/pira/hd_pira.htm)
- 50 <http://www.bl.uk/treasures/gutenberg/paper.html>
- 51 Twyman, *Printing*, 13, fig. 6; <http://www.papiermuseum.ch/en/tour/Papermaking>
- 52 Hults, *The Print*, 5ff.; Hunter, *Papermaking: Rainwater, On Paper*, esp. figs. 6, 7.
- 53 Hunter, *Papermaking*.
- 54 Landau and Parshall, *Renaissance Print*, 31.
- 55 On Gutenberg, see <http://www.bl.uk/treasures/gutenberg/homepage.html>
- 56 Landau and Parshall, *Renaissance Print*, 32; Griffiths, *Prints and Printmaking*, 18.
- 57 Talvacchia, *Taking Positions*, esp. chap. 2.
- 58 Goddard, *World in Miniature*, and Altdorfer's landscape etchings in the Albertina, Vienna.
- 59 Schmidt, "Interactive and Sculptural Printmaking," passim.
- 60 Landau and Parshall, *Renaissance Print*, 177ff., fig. 188.
- 61 On large woodcuts, Stewart, "Woodcuts as Wallpaper." For small prints, see Goddard, *World in Miniature*.
- 62 Hernad and Dachs, *Die Graphiksammlung des Humanisten Hartmann Schedel*, 8; Landau and Parshall, *Renaissance Print*, 64.
- 63 McDonald, *Ferdinand Columbus*, 9; McDonald, *Print Collection of Ferdinand Columbus*.
- 64 Hinterding, *Rembrandt the Printmaker*, 11.
- 65 *Ibid.*, 11.
- 66 Susan Dackerman, ed., *Prints and the Pursuit of Knowledge in Early Modern Europe* (exh. cat. Cambridge, MA: Harvard Art Museums; New Haven, CT: Yale University Press, 2011; Suzanne Karr Schmidt with Kimberly Nichols, *Altered and Adorned: Using Renaissance Prints in Daily Life* (exh. cat. Chicago: The Art Institute of Chicago; New Haven, CT: Yale University Press, 2011).

## Bibliography

- Baron, Sabrina Alcorn, Erin N. Lindquist, and Eleanor F. Shevlin. *Agent of Change: Print Culture Studies after Elizabeth L. Eisenstein*. Amherst, MA: University of Massachusetts Press, 2007.
- Bartrum, Giulia. *Albrecht Dürer and his Legacy: The Graphic Work of a Renaissance Artist*. London: British Museum Press, 2002.
- Bartsch, Adam von. *Le Peintre graveur*. 21 vols. Vienna: J. V. Degen, 1803-21.
- Bury, Michael. *The Print in Italy, 1550-1620*. London: British Museum, 2001.
- Chartier, Roger. *The Cultural Uses of Print in Early Modern France*. Translated by Lydia G. Cochrane. Princeton, NJ: Princeton University Press, 1987.
- Dackerman, Susan, with Thomas Primeau. *Painted Prints: The Revelation of Color in Northern Renaissance and Baroque Engravings, Etchings and Woodcuts*. Exh. cat. Baltimore Museum of Art; University Park: Penn State University Press, 2002.
- Dean, Clay, Theresa Fairbanks, and Lisa Pon. *Changing Impressions: Marcantonio Raimondi and Sixteenth-Century Print Connoisseurship*. New Haven, CT: Yale University Press, 1999.
- Eisenstein, Elizabeth L. *The Printing Revolution in Early Modern Europe*. Cambridge: Cambridge University Press, 1983.
- Faietti, Marzia and Konrad Oberhuber. *Bologna e l'umanesimo 1490-1510*. Exh. cat. Bologna: Pinacoteca Nazionale di Bologna and Graphische Sammlung Albertina, 1988.
- Geisberg, Max. *Der deutsche Einblatt-Holzschnitt in der ersten Hälfte des XVI. Jahrhunderts*. 37 vols (Munich: H. Schmidt, 1923-30). Revised, edited, and reissued by Walter L. Strauss, *The German Single-Leaf Woodcut 1500-1550*. 4 vols. New York: Hacker, 1974.
- Goddard, Stephen, ed. *The World in Miniature: Engravings by the German Little Masters, 1500-1550*. Exh. cat. Spencer Museum of Art, University of Kansas, 1988.
- Griffiths, Antony. *Prints and Printmaking: An Introduction to the History and Techniques*. London: British Museum, 1996.
- Hernad, Béatrice, and Karl Dachs. *Die Graphiksammlung des Humanisten Hartmann Schedel*. Exh. cat. Bayerische Staatsbibliothek, Munich; Munich: Prestel-Verlag, 1990.
- Hind, Arthur M. *A History of Engraving and Etching from the 15th Century to the Year 1914*. New York: Dover, 1963.
- \_\_\_\_\_. *An Introduction to a History of Woodcut with a Detailed Survey of Work Done in the Fifteenth Century*. 2 vols. New York: Dover, 1963.
- Hindman, Sandra and James Douglas Farquhar. *Pen to Press: Illuminated Manuscripts and Printed Books in the First Century of Printing*. Exh. cat. University of Maryland and The Johns Hopkins University; College Park: University of Maryland, 1977.
- Hinterding, Erik, Ger Luijten, and Martin Royalton-Kisch. *Rembrandt the Printmaker*. Exh. cat. London: British Museum, 2000.

- Hults, Linda C. *The Print in the Western World: An Introductory History*. Madison: University of Wisconsin Press, 1996.
- Hunter, Dard. *Papermaking. The History and Technique of an Ancient Craft*. New York: Dover, 1978.
- Ivins, William M. *How Prints Look: Photographs with a Commentary*. Revised by Marjorie B. Cohn. Boston: Beacon Press, 1987.
- \_\_\_\_\_. *Notes on Prints*. Cambridge, MA: MIT Press, 1930.
- \_\_\_\_\_. *Prints and Visual Communication*. Cambridge, MA: MIT Press, 1978.
- \_\_\_\_\_. "Notes on Three Dürer Woodblocks." *Metropolitan Museum Studies* 2, no. 1 (1929): 102–11.
- Koschatzky, Walter. "Adam von Bartsch: An Introduction to his Life and Work." In *The Illustrated Bartsch*, edited by Walter Strauss, L.1:vii–xvii. New York: Abaris, 1978–.
- Landau, David and Peter Parshall. *The Renaissance Print, 1470-1550*. New Haven, CT: Yale University Press, 1994.
- Lehrs, Max. *Late Gothic Engravings of Germany and The Netherlands*. New York: Dover, 1969.
- \_\_\_\_\_. *Geschichte und Kritischer Katalog des deutschen, niederländischen und französischen Kupferstichs im XV. Jahrhundert*. 9 vols. Vienna, 1908-1934.
- Levenson, Jay A., Konrad Oberhuber, and Jacquelyn L. Sheehan. *Early Italian Engravings from the National Gallery of Art*. Exh. cat. Washington, DC: National Gallery of Art, 1973.
- Lincoln, Evelyn. *The Invention of the Italian Renaissance Printmaker*. New Haven, CT: Yale, 2000.
- McDonald, Mark P. *Ferdinand Columbus: Renaissance Collector (1488-1539)*. London: British Museum, 2005.
- \_\_\_\_\_. *The Print Collection of Ferdinand Columbus (1488-1539): A Renaissance Collector in Seville*. 2 vols. London: British Museum, 2004.
- Parshall, Peter and Rainer Schoch. *Origins of European Printmaking: Fifteenth-Century Woodcuts and their Public*. Exh. cat. Washington, DC: National Gallery of Art, 2005.
- Pon, Lisa. *Raphael, Dürer, and Marcantonio Raimondi: Copying and the Italian Renaissance Print*. New Haven, CT: Yale University Press, 2004.
- Rainwater, Robert. *On Paper. The History of an Art*. Exh. cat. New York: The New York Public Library, 1990.
- Schedel, Hartmann. *Die Schedelsche Weltchronik*. Afterword by Rudolf Pörtner. Dortmund: Harenberg Kommunikation, 1978.
- Schmidt, Suzanne Kathleen Karr. "Art: A User's Guide; Interactive and Sculptural Printmaking in the Renaissance." Ph.D. diss., Yale University, 2006.
- Scribner, R. W. *For the Sake of Simple Folk: Popular Propaganda for the German Reformation*. Oxford: Clarendon Press, 1994.
- Shoemaker, Innis H., and Elizabeth Broun. *The Engravings of Marcantonio Raimondi*. Exh. cat. Spencer Museum of Art, University of Kansas, Lawrence, and The Ack-

- land Art Museum, University of North Carolina, Chapel Hill; Lawrence, KS: Spencer Museum of Art, 1981.
- Silver, Larry and Elizabeth Wyckoff. *Grand Scale: Monumental Prints in the Age of Dürer and Titian*. Exh. cat. Davis Museum and Cultural Center, Wellesley College; New Haven, CT: Yale University Press, 2008.
- Snyder, James. *Northern Renaissance Art: Painting, Sculpture, the Graphic Arts from 1350 to 1575*. Revised by Larry Silver and Henry Luttikhuizen. Upper Saddle River, NJ: Prentice-Hall, 2005.
- Stewart, Alison G. *Before Bruegel: Sebald Beham and the Origins of Peasant Festival Imagery*. Aldershot, UK: Ashgate, 2008.
- \_\_\_\_\_. "Early Woodcut Workshops." *Art Journal* 39, no. 3 (Spring 1980): 189-94.
- \_\_\_\_\_. *Unequal Lovers: A Study of Unequal Couples in Northern Art*. New York: Abaris, 1978.
- \_\_\_\_\_. "Woodcuts as Wallpaper: Sebald Beham and Large Prints from Nuremberg." In *Grand Scale: Monumental Prints in the Age of Dürer and Titian*, edited by Larry Silver and Elizabeth Wyckoff, 72-84. New Haven, CT: Yale University Press, 2008.
- Strauss, Walter L., general ed. *The Illustrated Bartsch*. 104 vols. to date. New York: Abaris, 1978- .
- Talvacchia, Bette. *Taking Positions: On the Erotic in Renaissance Culture*. Princeton, NJ: Princeton University Press, 1999.
- Twyman, Michael. *The British Library Guide to Printing: History and Techniques*. London: The British Library, 1998.
- Weekes, Ursula. *Early Engravers and their Public: The Master of the Berlin Passion and Manuscripts from Convents in the Rhine-Maas Region, ca. 1450-1500*. Turnhout, Belgium: Brepols, 2004.
- Wilson, Adrian. *The Making of the Nuremberg Chronicle*. Amsterdam: A. Asher, 1976.

Supplement: Other prints referenced in the text

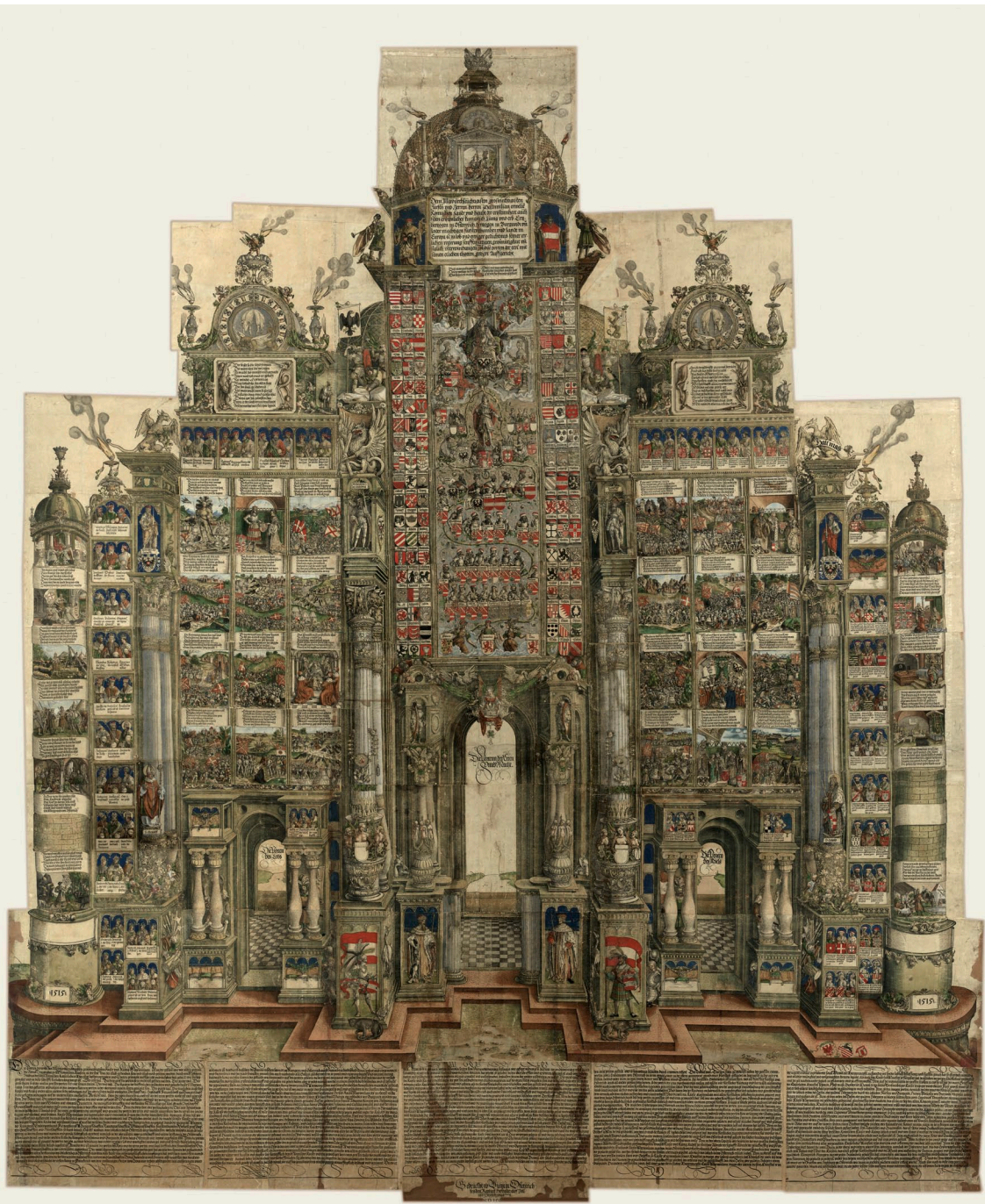


Bavarian *St. Dorothy* from ca. 1410



From Anton Koberger, *Nuremberg Chronicle (Weltchronik)*, 1493.





Albrecht Dürer, *Triumphal Arch of Emperor Maximilian I*, 1515, 3.57 × 2.95 meters



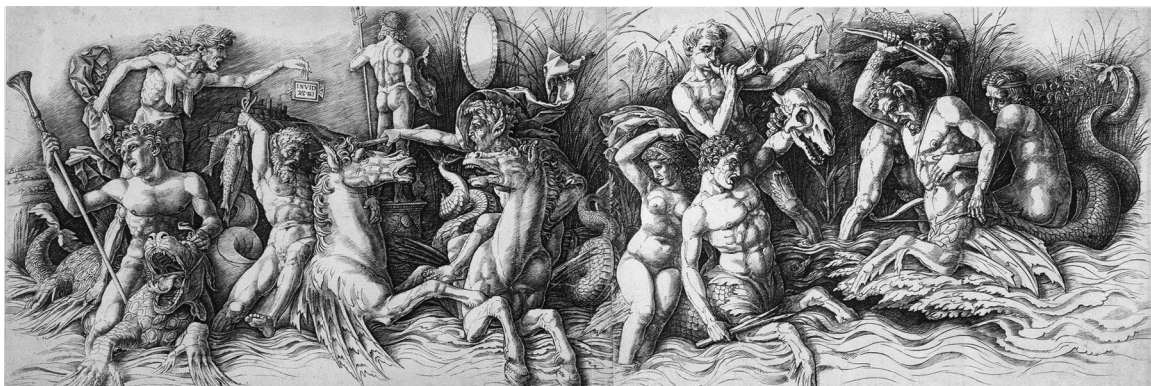
Ugo da Carpi after Titian, *The Submersion of Pharaoh's Army in the Red Sea* (ca. 1513-16), 1.18 × 2.15 meters



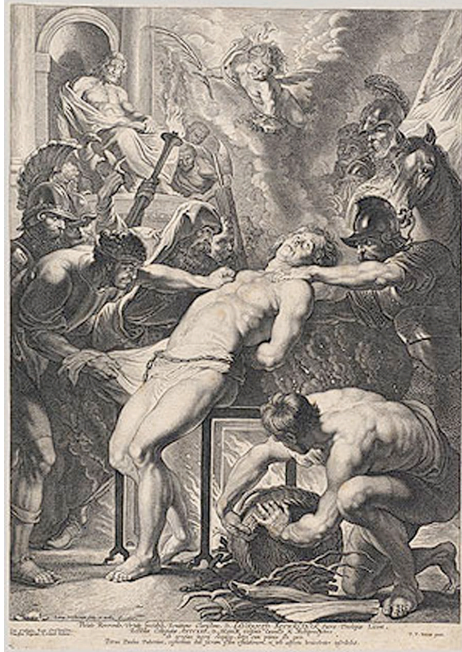
The Master of the Playing Cards' *King of Wild Men*, ca. 1435-40



Martin Schongauer (d. 1491), *Carrying of the Cross to Calvary*, ca. 1475, 28.8 × 43.4 centimeters



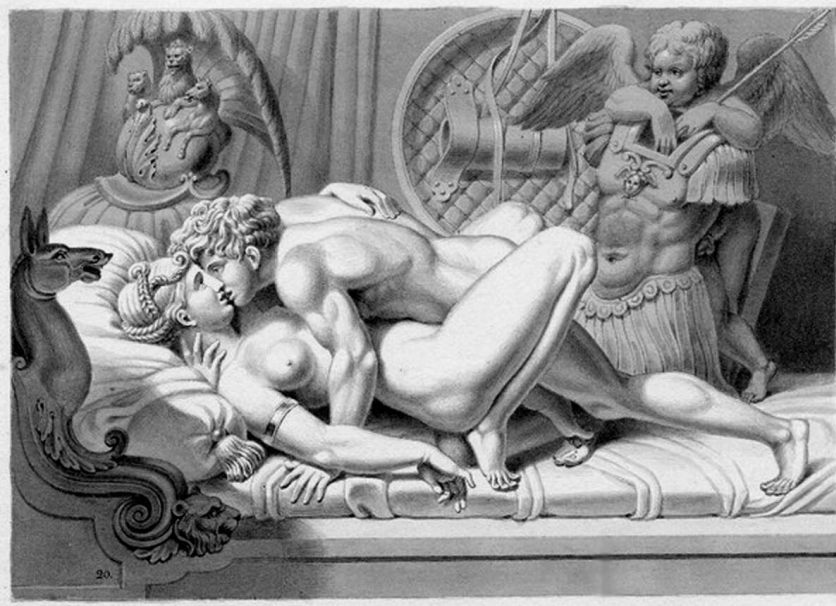
Andrea Mantegna, *Battle of the Sea Gods*, ca. 1480, 82.6 cm. wide



Rubens (left) and Lucas Vorsterman (right), *Martyrdom of St. Lawrence*, ca. 1613-14



Jacques Callot, *The Hanging (Miseries and Misfortunes of War, # 11)*, 1632



Marcanonio, *I Modi*, #12, 1524



Lucas Cranach, *Law and Grace*, woodcut, ca. 1530