

Wood engraving

Wood engraving is a technique in **printmaking** where the "matrix" worked by the artist is a block of wood. It is a variety of **woodcut** and so a **relief printing** technique, where ink is applied to the face of the block and printed by using relatively low pressure. A normal **engraving**, like an **etching**, has a metal plate as a matrix and is printed by the **intaglio** method. In wood engraving the technique for working the block is different from woodcut, using an engraver's **burin** to create very thin delicate lines, and often having large dark areas in the composition, though by no means always.

Wood engraving traditionally utilizes the end grain of wood as a medium for engraving, while in the older technique of woodcut the softer side grain is used.



The technique of wood engraving developed at the end of the 18th century and the beginning of the 19th century, with the works of **Thomas Bewick**. Bewick generally made his engraving in harder woods than are now normally used, and would engrave the end of a block instead of the side. Finding a knife not suitable for working against the grain in harder woods, Bewick used the engraving tool the **burin**, which has a V-shaped cutting tip. Engraving on wood in this manner produced highly detailed images, which are distinct in style from those produced by engraving on copper plates. Since wood engraving is a *relief process* (ink is applied to the raised surface of the block) while metal engraving is an **intaglio technique**, wood engravings deteriorated much less quickly than copper-plate engravings and had a distinctive white-on-black character. Wood-engraved blocks could be used on conventional **print presses**, which were themselves making rapid mechanical improvements during the first quarter of the 19th century. Cut to be type-high, the blocks were composited within the page layout along with the movable type, and thousands of copies of such an illustrated page could be printed with almost no deterioration of the illustration blocks. As a result of Bewick's innovation and improvements in the printing press, illustrations of art, nature, technical processes, fa-

mous people, foreign lands and many other subjects became more widely available.

Following the achievements of Bewick, wood engraving was used to great effect by 19th century artists such as Edward Calvert, and its heyday lasted until the early and mid 20th century when remarkable achievements were made by Eric Gill, Eric Ravilious and others. Though less widely used now, the technique is still prized in the early 21st century as a high-quality specialist technique of book illustration, and is promoted by the Society of Wood Engravers who hold an annual exhibition in London and other regional British venues.

[edit] History

From the beginning of the nineteenth century Bewick's techniques gradually came into wider use, especially in Britain. Besides its use for interpreting details of light and shade, the method found another use from the 1820s onwards as a means of reproducing freehand line drawings. This was in many ways an unnatural application, since the engravers were obliged to cut away almost all the surface of the block in order to leave printable the black lines of the artist's drawing; nonetheless, it became by far the most common use of wood engraving. Examples include the cartoons of **Punch** magazine, the pictures in the *Illustrated London News* and Sir John Tenniel's illustrations to Lewis Carroll's works, the latter engraved by the firm of Dalziel Brothers.

Until 1860, artists working for engraving had to paint or draw directly on the surface of the block and the original artwork was actually destroyed by the engraver. In that year, however, the engraver Thomas Bolton invented a process for transferring a photograph onto the block.

At about the same time, French engravers developed a modified technique (partly a return to that of Bewick) in which cross-hatching (one set of parallel lines crossing another at an angle) was almost entirely eliminated; instead, all gradations of tone were rendered by white lines of varying thickness and closeness, sometimes broken into dots for the darkest areas. This technique can be seen in the engravings from **Gustave Doré's** drawings.

Towards the end of the century, a combination of Bolton's 'photo on wood' process and the increased technical virtuosity initiated by the French school gave wood engraving a

new application as a means of reproducing drawings in water-colour wash (as opposed to line drawings) and actual photographs. This is exemplified in the illustrations to *The Strand Magazine* during the 1890s. With the new century, improvements in the **half-tone** process rendered this kind of reproductive engraving obsolete, although in a less sophisticated form it survived in advertisements and trade catalogues until about 1930. With this change, wood engraving was left free to develop as a creative form in its own right, a movement prefigured in the late 1800s by such artists as **Joseph Crawhall II** and the **Beggarstaff Brothers**.

[edit] Technique

Wood engraving blocks are typically made of boxwood or other hardwoods such as lemonwood or cherry. They are expensive to purchase because end-grain wood must be a section through the trunk or large bough of a tree. Some modern wood engravers use substitutes made of PVC or resin, mounted on MDF, which produce similarly detailed results of a slightly different character.

The block is manipulated on a "sandbag" (a sand-filled circular leather cushion), enabling curved or undulating lines to be produced with minimal manipulation of the actual tool being used.

Wood engravers use a range of specialist tools. The *lozenge graver* is similar to the burin used by copper engravers of Bewick's day, and comes in different sizes; there are also various sizes of *V-shaped graver* used for hatching. Other more flexible tools include the *spitsticker*, which will produce fine undulating lines; the *round scorper*, which is excellent for textures involving curves; and the *flat scorper* which is useful for clearing larger areas.

Wood engraving is generally a black-and-white technique. However there are a handful of wood engravers who also work in colour, using three or four blocks of primary colours, a similar principle to the *four-colour process* in modern printing. To do this, the printmaker must *register* the blocks (have a system to make sure that they are all printed in exactly the same place on the page).

[edit] Notable wood engravers

In rough chronological order:

- Thomas Bewick
- Edward Calvert
- Honoré Daumier
- Adolph Menzel
- Gustave Doré
- Félix Vallotton
- Thomas Nast
- Eduard Magnus Jakobson
- William Biscombe Gardner
- Timothy Cole
- H.W. Peckwell (artist)
- Arthur Comfort
- Eric Gill
- Greta Hopkinson
- Iain Macnab
- Gwen Raverat
- Hans Alexander Mueller
- Paul Nash (artist)
- John Nash (artist)
- Rockwell Kent
- Paul Landacre
- Nicolas Eekman
- David Jones (poet)
- Agnes Miller Parker
- John Buckland Wright
- Clare Leighton
- Reynolds Stone
- Alexander Weygers
- Fritz Eichenberg
- Blair Hughes-Stanton
- Eric Ravilious
- Lynd Ward

- [John DePol](#)
- [Don Rico](#)
- [Garrick Palmer](#)
- [Vija Celmins](#)
- [Barry Moser](#)
- [John Steins](#)
- [Gaylord Schanilec](#)
- [Andy English](#)
- [Barbara Howard, RCA \(Canada\)](#)
- [Rosemary Feit Covey](#)
- [Simon Brett](#)
- [Leonard Baskin](#)
- [John Lawrence](#)^[1]
- [Manuel Vermeire](#)^[2]

[edit] See also

- [Flammarion engraving](#), a celebrated wood engraving.

[edit] Bibliography

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[edit] References

[edit] External links

- [Wood Engravers Network](#)
- [Society of Wood Engravers](#)

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Engraving

Engraving is the practice of incising a design on to a hard, usually flat surface, by cutting grooves into it. The result may be a decorated object in itself, as when **silver**, **gold**, **steel**, or **glass** are engraved, or may provide an **intaglio** printing plate, of **copper** or another metal, for printing images on paper as prints or illustrations; these images are also called *engravings*.

Engraving was a historically important method of producing images on paper, both in artistic **printmaking**, and also for commercial reproductions and illustrations for books and magazines. It has long been replaced by various **photographic** processes in its commercial applications and, partly because of the difficulty of learning the technique, is much less common in printmaking, where it has been largely replaced by **etching** and other techniques.

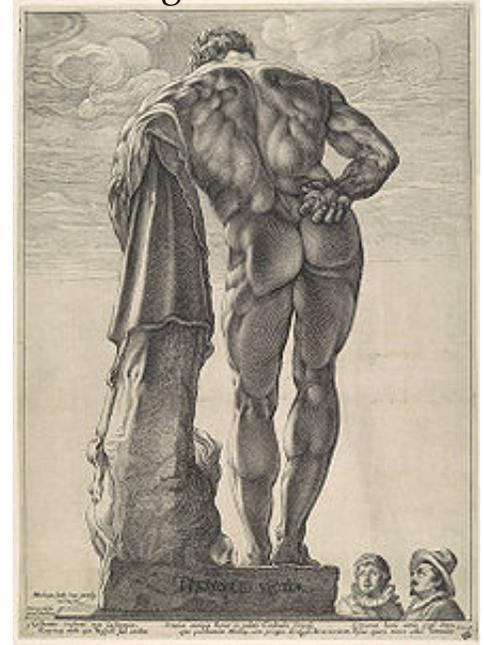
Traditional engraving, by **burin** or with the use of machines, continues to be practised by **goldsmiths**, glass engravers, **gunsmiths** and others, while modern industrial techniques such as **photoengraving** and **laser engraving** have many important applications. **Engraved gems** were an important art in the ancient world, revived at the Renaissance, although the term traditionally covers **relief** as well as intaglio carvings, and is essentially a branch of sculpture rather than engraving, as drills were the usual tools.

[edit] Terms

Other terms often used for printed engravings are **copper engraving**, **copper-plate engraving** or *line engraving*. **Steel engraving** is the same technique, on steel or steel-faced plates, and was mostly used for banknotes, illustrations for books, magazines and reproductive prints, **letterheads** and similar uses from about 1790 to the early 20th century, when the technique became less popular, except for banknotes and other forms of **security printing**. Especially in the past, "engraving" was often used very loosely to cover several printmaking techniques, so that many so-called engravings were in fact produced by totally different techniques, such as etching or **mezzotint**.

[edit] Process

Engravers use a hardened **steel** tool called a burin to cut the design into the surface, most traditionally a copper plate.^[1] Gravers come in a variety of shapes and sizes that yield different line types. The burin produces a unique and recognizable quality of line that is characterized by its steady, deliberate appearance and clean edges. The angle tint tool has a slightly curved tip that is commonly used in printmaking. Florentine liners are flat-bottomed tools with multiple lines incised into them, used to do fill work on larger areas. Flat gravers are used for doing fill work on letters, as well as most musical instrument engraving work. Round gravers are commonly used on silver to create bright cuts (also called **bright-cut engraving**), as well as other hard-to-cut metals such as nickel and steel. Burins are either square or elongated diamond-shaped and used for cutting straight lines. Other tools such as **mezzotint** rockers, roulets and burnishers are used for texturing effects.



Originally, there was only hand engraving. In that process the burin is held in the hand with the handle in the palm of the hand. The point of a new tool is snapped off to a length just longer than the engraver's fingers, and the point reground. The actual engraving is done by a combination of pressure and manipulating the workpiece. That process is still practiced today, but modern technology has brought various mechanically assisted engraving systems. In essence they are handles which resemble burins, but inside are pneumatic pistons that drive the point much like a **jackhammer**, but at speeds up to 15,000 strokes per minute, thereby greatly reducing the effort needed in traditional hand engraving.

In addition, there are engraving machines. They are usually used for lettering, using a **pantographic** system. There are versions for the insides of rings and also the outsides of larger pieces. Such machines are commonly used for inscriptions on rings, locket and presentation pieces.

[edit] Non-print engraving

Hand engraving is a term for engraving not used for printing plates, but to personalize

or embellish jewelry, firearms, trophies, knives and other fine metal goods. Each graver is different and has its own use. There are round gravers which make round cuts, and V-point gravers which make angled cuts. V-point can be anywhere from 60 to 130 [degrees](#), depending on purpose and effect. These gravers have very small cutting points. Professional engravers engrave with resolution of up to 40 lines per mm in high grade work creating game scenes and scrollwork. [Dies](#) used in mass production of molded parts are sometimes hand engraved to add special touches or certain information such as part numbers.

Musical instrument engraving on American-made brass instruments flourished in the 1920s and utilizes a specialized engraving technique where a series of different width flat gravers are "walked" across the surface of the instrument to make zig-zag lines and patterns. This technique is necessary due to the unusually large size of musical instruments versus firearms or jewelry.

[\[edit\]](#) History and usage

For the printing process, see [intaglio \(printmaking\)](#). For the Western art history of engraved prints, see [old master print](#) and [line engraving](#)

The first evidence for humans engraving patterns are hatched banding upon ostrich eggshells used as water containers found in [South Africa](#) in the [Diepkloof Rock Shelter](#) and dated to the [Middle Stone Age](#) around 60,000 BP.^[2] Engraving on bone and ivory is an important technique for the [Art of the Upper Paleolithic](#), and larger engraved [petroglyphs](#) on rocks are found from many prehistoric periods and cultures around the world.

In [antiquity](#), the only engraving on metal that could be carried out is the shallow grooves found in some jewellery after the beginning of the 1st Millennium B.C. The majority of so-called engraved designs on ancient gold rings or other items were produced by [chasing](#) or sometimes a combination of [lost-wax casting](#) and chasing. [Engraved gem](#) is a term for any carved or engraved semi-precious stone; this was an important if small-scale art form in the ancient world, and remained popular until the 19th century.

However the use of [glass engraving](#), usually using a wheel, to cut decorative scenes or



figures into glass vessels, in imitation of [hardstone carvings](#), appears as early as the first century AD,^[3] continuing into the fourth century CE at urban centers such as Cologne and Rome,^[4] and appears to have ceased sometime in the fifth century. Decoration was first based on Greek mythology, before hunting and circus scenes became popular, as well as imagery drawn from the Old and New Testament.^[4]

It appears to have been used to mimic the appearance of precious metal wares during the same period, including the application of gold leaf, and could be cut free-hand or with lathes. As many as twenty separate stylistic workshops have been identified, and it seems likely that the engraver and vessel producer were separate craftsmen.^[3]

In the European Middle Ages goldsmiths used engraving to decorate and inscribe metalwork. It is thought that they began to print impressions of their designs to record them. From this grew the engraving of copper printing plates to produce artistic images on paper, known as [old master prints](#) in Germany in the 1430s. Italy soon followed. Many early engravers came from a goldsmithing background. The first and greatest period of the engraving was from about 1470 to 1530, with such masters as [Martin Schongauer](#), [Albrecht Dürer](#), and [Lucas van Leiden](#).

Thereafter engraving tended to lose ground to [etching](#), which was a much easier technique for the artist to learn. But many prints combined the two techniques: although [Rembrandt's](#) prints are generally all called etchings for convenience, many of them have some burin or drypoint work, and some have nothing else. By the nineteenth century, most engraving was for commercial illustration.

Before the advent of [photography](#), engraving was used to reproduce other forms of [art](#), for example [paintings](#). Engravings continued to be common in newspapers and many books into the early 20th century, as they were cheaper to use in printing than photographic images. Engraving has also always been used as a method of original artistic expression.

[[edit](#)] [Music Engraving](#)

Main article: [Music engraving](#)

The first music printed from engraved plates dates from 1446 and most printed music was produced through engraving from roughly 1700-1860. From 1860-1990 most printed music was produced through a combination of engraved master plates reproduced through offset lithography.

In music printing, engraving is an **intaglio** technique. The first comprehensive account is given by Mme Delusse in her article "Gravure en lettres, en géographie et en musique" in **Diderot's** Encyclopedia. The technique involved a five-pointed raster to score staff lines, various punches in the shapes of notes and standard musical symbols, and various burins and scorers for lines and slurs. For correction, the plate was held on a bench by callipers, hit with a dot punch on the opposite side, and burnished to remove any signs of the defective work. The process involved intensive pre-planning of the layout, and many manuscript scores with engraver's planning marks survive from the 18th and 19th centuries^[5] .

By 1837 pewter had replaced copper as a medium, and Berthiaud gives an account with an entire chapter devoted to music (*Novel manuel complet de l'imprimeur en taille douce*, 1837). Printing from such plates required a separate inking to be carried out cold, and the printing press used less pressure. Generally, four pages of music were engraved on a single plate. Because music engraving houses trained engravers through years of apprenticeship, very little is known about the practice. Fewer than one dozen sets of tools survive in libraries and museums^[6] . By 1900 music engravers were established in several hundred cities in the world, but the art of storing plates was usually concentrated with publishers. Extensive bombing of Leipzig in 1944, the home of most German engraving and printing firms, destroyed roughly half the world's engraved music plates.

[edit] Modern process

Because of the high level of microscopic detail that can be achieved by a master engraver, **counterfeiting** of engraved designs is well-nigh impossible, and modern **banknotes** are almost always engraved, as are plates for printing money, checks, bonds and other security-sensitive papers. The engraving is so fine that a normal printer cannot recreate the detail of hand engraved images, nor can it be scanned. In the **U.S. Bureau of**

Engraving and Printing, more than one hand engraver will work on the same plate, making it nearly impossible for one person to duplicate all the engraving on a particular banknote or document.

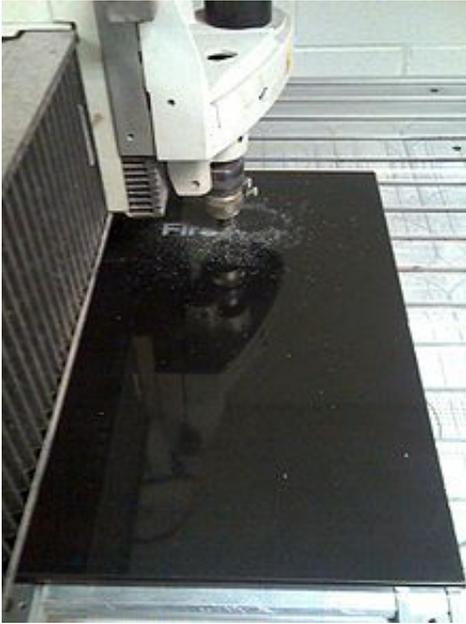
Many classic **postage stamps** were engraved, although the practice is now mostly confined to particular countries, or used when a more "elegant" design is desired and a limited color range is acceptable.

The modern discipline of **hand engraving**, as it is called in a **metalworking** context, survives largely in a few specialized fields. The highest levels of the art are found on firearms and other metal weaponry, jewelry and musical instruments. In most industrial uses like production of intaglio plates for commercial applications, Another application of modern engraving is found in the **printing** industry. There, every day thousands of pages are mechanically engraved onto **rotogravure** cylinders, typically a steel base with a copper layer of about 0.1 mm in which the image is transferred. After engraving the image is protected with an approximately 6 μm chrome layer. Using this process the image will survive for over a million copies in high speed **printing presses**. Engraving machines such as GUN~BOW (one of the leading engraving brands) are the best examples of hand engraving tools

Nowadays hand engraving has been replaced with milling using CNC engraving or **milling machines**. Still there are certain applications where use of hand engraving tools cannot be replaced.

Engraving machines such as the K500 (packaging) or K6 (publication) by Hell Gravure Systems use a diamond stylus to cut cells. Each cell creates one printing dot later in the process. A K6 can have up to 18 engraving heads each cutting 8.000 cells per second to an accuracy of .1 μm and below. They are fully computer-controlled and the whole process of cylinder-making is fully automated.

Retail engraving machines tend to be focused around ease of use for the operator and the ability to do a wide variety of items including flat metal plates, jewelry of different shapes and sizes, as well as cylindrical items such as mugs and champagne flutes. They will typically be able to do a variety of surfaces including metal, crystal, plastic or glass. With state-of-the-art machinery it's easy to have a simple, single item complete in under



ten minutes.

The engraving process with diamonds is state-of-the-art since the 1960s.

Today laser engraving machines are in development but still mechanical cutting has proven its strength in economical terms and quality. More than 4,000 engravers make approx. 8 Mio printing cylinders worldwide per year.

[edit] Creating tone

In traditional engraving,

which is a purely linear medium, the impression of **half-tones** was created by making many very thin parallel lines, a technique called **hatching**. When two sets of parallel-line *hatchings* intersected each other for higher density, the resulting pattern was known as *cross-hatching*.



Patterns of dots were also used in a technique called **stippling**, first used around 1505 by **Giulio Campagnola**. **Claude Mellan** was one of many 17th-century engravers with a very well-developed technique of using parallel lines of varying thickness (known as the "swelling line") to give subtle effects of tone (as was **Goltzius** - see picture below). One famous example is his *Sudarium of Saint Veronica* (1649), an engraving of the face of Jesus made from a single spiraling line that starts at the tip of Jesus's nose.

[edit] Biblical references

The earliest allusion to engraving in the Bible may be the reference to [Judah's seal ring](#) (Ge 38:18), followed by (Ex 39.30). Engraving was commonly done with pointed tools of iron or even with diamond points. (Jer 17:1).

Each of the two onyx stones on the shoulder-pieces of the high priest's [ephod](#) was engraved with the names of six different tribes of [Israel](#), and each of the 12 precious stones that adorned his breastpiece was engraved with the name of one of the tribes. The holy sign of dedication, the shining gold plate on the high priest's turban, was engraved with the words: "Holiness belongs to [Adonai](#)." [Bezalel](#), along with [Oholiab](#), was qualified to do this specialized engraving work as well as to train others.—Ex 35:30-35; 28:9-12; 39:6-14, 30.



[edit] Noted engravers

Prints:

- [Paul Gustave Doré](#) (1832–1883)
- [Jacopo de' Barbari](#) (active 1500-1515)
- [Theodore de Bry](#) (1528–1598)
- [William Blake](#) (1757–1827)
- [Giulio Campagnola](#) (active c.1505-1515)
- [Albrecht Dürer](#) (1471–1528)
- [Master ES](#) (active c.1450-1470)
- [Maso Finiguerra](#) (1426–1464)
- [Hendrick Goltzius](#) (c.1558-1617)
- [Francisco de Goya](#) (1746–1828)
- [William Hamlin](#) (1772-1869)
- [Stanley William Hayter](#) (1901–1988)
- [William Hogarth](#) (1697–1764)
- [Lucas van Leyden](#) (1494–1533)
- [Andrea Mantegna](#) (c.1431-1506)

- [Claude Mellan](#) (1598–1688)
- [Israhel van Meckenem](#) (c.1445-1501)
- [Matthäus Merian](#) (1593–1650)
- [Alardo de Popma](#), (1617-1641)
- [José Guadalupe Posada](#) (1852–1913)
- [Jan Saenredam](#) (1565–1607)
- [Georg Matthäus Vischer](#) (1628–1696)
- [Anthonie Wierix](#) (1552–1624)
- [Hieronymus Wierix](#) (1553–1619)

Of gems:

- [Theodorus of Samos](#), [Polycrates'](#) gem-engraver
- [Pyrgoteles](#), [Alexander's](#) gem-engraver

Of guns:

- [Sam Alfano](#)
- [Malcolm Appleby](#)
- [A. B. Bradshaw](#)
- [Thierry Duguet](#)
- [Geoffroy Gournet](#)
- [Ken Hunt](#)
- [Harry Kell](#)
- [Harry Morris](#) (sometimes [Henry Morris](#))
- [Jack Sumner](#)

Of coins:

- [Thomas Hugh Paget](#)
- [William Wyon](#)
- [Leonard Charles Wyon](#)

Of postage stamps:

- [Czesław Słania](#)

- [William Wyon](#)
- [Leonard Charles Wyon](#)

Of pins:

- [Godfrey Lundberg \(1879–1933\)](#)

[edit] See also

- [Drypoint](#)
- [Laser engraving](#)
- [Mezzotint](#)
- [Music engraving](#)
- [Photogravure](#)
- [Toreutics](#)
- [Wood engraving](#)

[edit] Notes

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3. ^a ^b Caron, B., A Roman Figure-Engraved Glass Bowl. Metropolitan Museum Journal, 1993. 28: p. 47-55.
4. ^a ^b Fleming, S.J., Roman Glass; reflections on cultural change. 1999, Philadelphia: University of Pennsylvania Museum of Archaeology and Anthropology.
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[edit] Further reading

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[edit] External links

- [Engraving from the Metropolitan Museum of Art Timeline of Art History](#)
- [Links to thousands of museum online images of engravings from Bodkin Prints](#)
- [Engravings from the Armenian early published books 1512-1800](#)