

Engraving

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Engraving is the practice of incising a design onto a hard, flat surface, by cutting grooves into it. The result may be a decorated object in itself, as when silver, gold or steel are engraved, or may provide an intaglio printing plate, of copper or another metal, for printing images on paper, which are 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 It has long been replaced by photography in its commercial applications and, partly because of the difficulty of learning the technique, is much less common in printmaking, where it has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. Other terms often used for engravings are *copper-plate engraving* and *Line engraving*. These should all mean exactly the same, but especially in the past were 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.



Hercules fighting the Centaurs, engraving by Sebald Beham

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An assortment of hand engraving tools

The engraving process

Engravers use a hardened steel tool called a burin to cut the design into the surface, most traditionally a copper plate.[1] (<http://expositions.bnf.fr/bosse/grand/214.htm>) 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.

History and usage

For the printing process, see printmaking. For the Western art history of engraving prints, see old master print and line engraving

In antiquity, the only engraving that could be carried out is evident in 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.

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 long cheaper to use in printing than photographic images. Engraving has also always been used as a method of original artistic expression.



St Jerome by Albrecht Dürer 1514

Traditionally, engravers created darker areas by making an area of many very thin parallel lines (called *hatching*). When two sets of parallel line *hatchings* intersected each other for higher density, the resultant pattern was known as *cross-hatching*. Claude Mellan is well-known for his technique of using parallel lines of varying thickness. One notable example is his *Sudarium of Saint Veronica* (1649), an engraving of the face of Jesus from a single spiralling line that starts at the tip Jesus's nose.

making

Modern engraving

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

The modern discipline of hand engraving 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 of industrial uses like production of Intaglio plates for commercial applications hand engraving was replaced with milling using CNC engraving/milling machines.



Sudarium of Saint Veronica by Claude Mellan (1649)

Another application of modern engraving is found in printing industrie. There, every day thousands of pages are engraved in rotogravure cylinders, typically a steel base with a copper layer of about .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 million plus copies in high speed printing presses.

Typically the image is created in some PDF like format and enters a workflow where it is processed and automatically imposed to the huge printing cylinders. Today up to 192 pages can be engraved on the same cylinder. Since the cylinder serves to print one color, four cylinders are typically used to print one side of the substrate. Rotogravure has a major share in publication, packaging and decorative printing.

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 of course fully computer controlled and the whole process of cylinder making is fully automated.

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

Today laser engraving machines are in development but as per today still the 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.

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 Jehovah." 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.

Noted engravers

Prints (see also List of Printmakers):

- Jacopo de' Barbari active 1500-1515
- William Blake (1757 - 1827)
- Giulio Campagnola active c1505-15
- Albrecht Dürer (1471 – 1528)
- Master ES active c1450-70
- Maso Finiguerra (1426-1464)
- Hendrick Goltzius (c.1558-1617)
- William Hogarth (1697 – 1764)
- Lucas van Leyden
- Andrea Mantegna
- Claude Mellan (1598-1688)
- Israhel van Meckenem d.1501
- Matthäus Merian (1593 - 1650)

- Paul Revere
- Jan Saenredam (1565-1607)
- Bertil Schmöll
- Martin Schöngauer (c.1450-1491)
- Czesław Słania
- Maerten de Vos (1532-1603)
- Anthonie Wierix (1552-1624)
- Hieronymus Wierix (1553-1619)
- Hristofor Zhefarovich (unknown-1753)
- Gustave Doré (1832 – 1883)

Of Guns:

- A. B. Bradshaw (Firearm Engraver)
- Thierry Duguet
- Ken Hunt (engraver)
- Harry Kell
- Harry Morris (sometimes Henry Morris)
- Jack Sumner

See also

- Toreutics
- Laser engraving
- Drypoint
- Music engraving
- Photogravure
- Photoengraving
- Printmaking
- Relief engraving
- Resingrave
- Steel engraving
- Chalcography
- Sugar lift
- Line engraving
- Wood engraving
- Etching

References

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- A. Gross (1970). *Etching, Engraving, and Intaglio Printing*.
- G. Duplessis (1989). *Wonders of Engraving*.

External links

- Engraving from the Metropolitan Museum of Art Timeline of Art History (http://www.metmuseum.org/toah/hd/engr/hd_engr.htm)
- Links to thousands of museum online images of engravings from Bodkin Prints



The *Farnese Hercules* by Hendrik Goltzius 1591

(<http://www.bodkinprints.co.uk/links.php>)

- [Blog on Old Master Engravings and Etchings \(http://oldprints.wordpress.com/\)](http://oldprints.wordpress.com/)



Metalworking:

Jewellery making: Casting | Centrifugal casting | Cloisonné | Doming technique | Draw plate | **Engraving** | Filigree | Findings | Fretwork | Goldwork | Lapidary | Metal clay | Millesimal fineness | Omega chain | Persian weave | Relief | Repoussé and chasing | Soldering | Vacuum casting | Water torch | Wire wrap jewellery

Metalworking topics: Casting | CNC | Cutting tools | Drilling and threading | Fabrication | Finishing | Grinding | Jewellery | Lathe (tool) | Machining | Machine tooling | Measuring | Metalworking | Hand tools | Metallurgy | Milling | Occupations | Press tools | Smithing | Terminology | Welding

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search	http://en.wikipedia.org/wiki/Engraving#searchInput
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gold	http://en.wikipedia.org/wiki/Gold
steel	http://en.wikipedia.org/wiki/Steel
intaglio	http://en.wikipedia.org/wiki/Intaglio_(printmaking)
copper	http://en.wikipedia.org/wiki/Copper
printmaking	http://en.wikipedia.org/wiki/Printmaking
photography	http://en.wikipedia.org/wiki/Photography
etching	http://en.wikipedia.org/wiki/Etching
Line engraving	http://en.wikipedia.org/wiki/Line_engraving
	http://en.wikipedia.org/wiki/Image:Hercules_fighting_the_Centaurs.jpg
Hercules	http://en.wikipedia.org/wiki/Hercules
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edit	http://en.wikipedia.org/w/index.php?title=Engraving&action=edit&ion=1
burin	http://en.wikipedia.org/wiki/Burin_(tool)
[1]	http://expositions.bnf.fr/bosse/grand/214.htm
	http://en.wikipedia.org/wiki/Image:Albrecht_Durer-St_Jerome_in_his_study.jpg
Albrecht Dürer	http://en.wikipedia.org/wiki/Albrecht_Dürer
edit	http://en.wikipedia.org/w/index.php?title=Engraving&action=edit&ion=2
old master print	http://en.wikipedia.org/wiki/Old_master_print
antiquity	http://en.wikipedia.org/wiki/Ancient_history
chasing	http://en.wikipedia.org/wiki/Chasing_(metalworking)

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lost-wax casting	http://en.wikipedia.org/wiki/Lost-wax_casting
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Lucas van Leiden	http://en.wikipedia.org/wiki/Lucas_van_Leiden
Rembrandt	http://en.wikipedia.org/wiki/Rembrandt
art	http://en.wikipedia.org/wiki/Art
paintings	http://en.wikipedia.org/wiki/Painting
20th century	http://en.wikipedia.org/wiki/20th_century
	http://en.wikipedia.org/wiki/Image:Mellan_Sudarium_of_Saint_Veronica.jpg
Claude Mellan	http://en.wikipedia.org/wiki/Claude_Mellan
Sudarium of Saint Veronica	http://en.wikipedia.org/wiki/Veil_of_Veronica
edit	http://en.wikipedia.org/w/index.php?title=Engraving&action=edit&ion=3
counterfeiting	http://en.wikipedia.org/wiki/Counterfeit
banknotes	http://en.wikipedia.org/wiki/Banknote
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CNC	http://en.wikipedia.org/wiki/CNC
milling machines	http://en.wikipedia.org/wiki/Milling_machine
Rotogravure	http://en.wikipedia.org/wiki/Rotogravure
edit	http://en.wikipedia.org/w/index.php?title=Engraving&action=edit&ion=4
Judah	http://en.wikipedia.org/wiki/Judah_(Biblical_figure)
ephod	http://en.wikipedia.org/wiki/Ephod
Israel	http://en.wikipedia.org/wiki/Israel
Jehovah	http://en.wikipedia.org/wiki/Jehovah
Bezalel	http://en.wikipedia.org/wiki/Bezalel
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Farnese Hercules	http://en.wikipedia.org/wiki/Farnese_Hercules
Hendrik Goltzius	http://en.wikipedia.org/wiki/Hendrik_Goltzius
List of Printmakers	http://en.wikipedia.org/wiki/List_of_Printmakers
Jacopo de' Barbari	http://en.wikipedia.org/wiki/Jacopo_de'_Barbari
William Blake	http://en.wikipedia.org/wiki/William_Blake
1757	http://en.wikipedia.org/wiki/1757
1827	http://en.wikipedia.org/wiki/1827
Giulio Campagnola	http://en.wikipedia.org/wiki/Giulio_Campagnola
1471	http://en.wikipedia.org/wiki/1471
1528	http://en.wikipedia.org/wiki/1528

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Maso Finiguerra	http://en.wikipedia.org/wiki/Maso_Finiguerra
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Contact us	http://en.wikipedia.org/wiki/Wikipedia:Contact_us
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Special pages	http://en.wikipedia.org/wiki/Special:Specialpages
Printable version	http://en.wikipedia.org/w/index.php?title=Engraving&printable=yes
Permanent link	http://en.wikipedia.org/w/index.php?title=Engraving&oldid=137326838
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Česky	http://cs.wikipedia.org/wiki/Rytina
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Polski	http://pl.wikipedia.org/wiki/Miedzioryt
Português	http://pt.wikipedia.org/wiki/Gravura
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