

A Glossary of Printmaking

Printmaking is the process of making artworks by an indirect transfer process, where a design is created on one surface and then printed onto paper. Except in the case of monotypes, the process is capable of producing multiples of the same piece, which is called a print. Each piece is known as an impression and is not a copy but an original since it is not a reproduction of another work of art. Painting or drawing, on the other hand, can only create individual pieces of artwork.

Prints are created from a 'matrix', a single original surface. Common types of matrices include: plates of metal, usually copper or zinc for engraving or etching; stone, used for lithography; blocks of wood for woodcuts, linoleum for linocuts and fabric plates for screen-printing. Works printed from a single plate create an edition, each one of which is signed and numbered. Prints may also be published in book form, as artist's books. A single print could be the product of one or multiple techniques.

Overview

Printmaking techniques can largely be divided into the following basic families or categories:

Relief printing: Recessed areas are created in the original surface of the matrix, leaving the raised areas to be inked and produce the print. Relief techniques include woodcut or woodblock, wood engraving, linocut and metalcut.

Intaglio: Taken from the Italian *intagliare* 'to incise'; certain areas of the matrix are incised to hold the ink. Techniques include engraving, etching, mezzotint, aquatint, drypoint and planographic. Planographic techniques include lithography, monotyping and digital techniques and stencil including screen-printing.

Other types of printmaking techniques outside these groups include collagraphy and foil imaging. Rather confusingly, collagraphs can be either relief or intaglio while monotypes are neither. Modern printing technology may be included such as digital printing, photographic mediums and combination of both digital process and conventional processes.

Many of these techniques can also be combined, especially within the same family. For example Rembrandt's prints are usually referred to as "etchings" for convenience, but very often include work in engraving and drypoint as well, and sometimes have no etching at all.

A **printing press** is a device for applying pressure to an inked surface resting upon a print medium (such as paper or cloth), thereby transferring the ink, something not used in earlier methods of printing. When used for text, the invention and spread of the printing press are widely regarded as the most influential events in the second millennium AD, revolutionising the way people conceived and described the world they lived in, and ushering in the period of modernity.

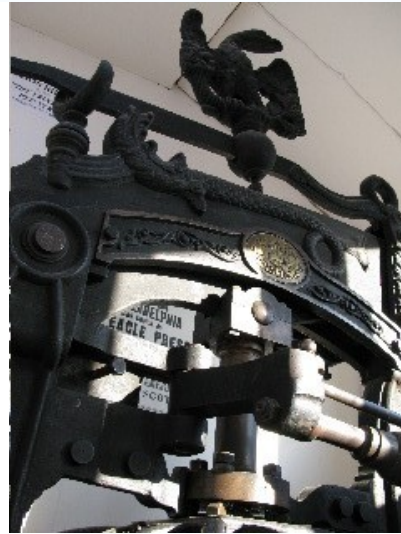
Description of techniques

Woodcut, a type of relief print, is the earliest printmaking technique, and the only one traditionally used in the Far East. It was probably first developed as a means of printing patterns on cloth, and by the 5th century was used in China for printing text and images on paper. Woodcuts of images on paper developed around 1400 in Europe and slightly later in Japan. These are the two areas where woodcut has been most extensively used, purely as a process for making images without text.

The artist draws a sketch either on a plank of wood or on paper which is transferred to the wood. Traditionally the artist then hands the work to a specialist cutter, who uses sharp tools to carve away the parts of the block that he/she does not want to receive the ink. The remaining raised parts of the block are inked with a brayer and then a sheet of paper, perhaps slightly damp, is placed over the block. The

block is then rubbed with a baren or spoon, or is run through a press. If in colour, separate blocks are carved and used for each colour.

Linocut is a similar process to woodcut, but a block of linoleum instead of wood is used.



An *Eagle* press

Engraving was developed in Germany in the 1430s from the engraving used by goldsmiths to decorate metalwork. Engravers use a hardened steel tool called a burin to cut the design into the surface of a metal plate, traditionally made of copper. Engraving using a burin is a difficult skill to learn.

Gravers, sharp tools, 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. Other tools such as mezzotint rockers, roulets and burnishers are used for texturing effects.

To make a print, the engraved plate is inked all over, then the ink is wiped off the surface, leaving the ink only in the engraved lines. The plate is then put through a high-pressure printing press together with a sheet of paper (often dampened to soften it). The paper picks up the ink from the engraved lines, making a print. The process can be repeated until the plate shows signs of wear. This will depend on the metal used, for example copper is softer than steel so the plate will not cope with as many 'pressings'.

Etching is believed to have been invented by Daniel Hopfer (circa 1470-1536) of Augsburg, Germany, who decorated armour in this way, and applied then applied a similar method to printmaking. Etching soon came to challenge engraving as the most popular printmaking medium. Its great advantage was that, unlike engraving which requires special skill in metalworking, etching is relatively easy to learn for an artist trained in drawing.

Etching prints are generally linear and often contain fine detail and contours. Lines can vary from smooth to sketchy. Like engraving, an etching is the opposite of a woodcut in that the raised portions of an etching remain blank while the crevices hold ink. In pure etching, a metal (usually copper, zinc or steel) plate is covered with a waxy ground (an acid-resistant compound). The artist then scratches off the ground with a pointed etching needle where he wants a line to appear in the finished piece, so exposing the bare metal. The plate is then dipped in a bath of acid, or has acid washed over it. The acid "bites" into the metal where it is exposed, leaving behind lines in the plate. The remaining ground is then cleaned off the plate, and the printing process is then just the same as for engraving.

Mezzotint is a variant of engraving where the plate is first roughened evenly all over. The surface is then scraped and polished to varying degrees of smoothness, creating the image by working from dark to light. It is possible to create the image by only roughening the plate selectively, so working from light to dark.

Mezzotint is known for the luxurious quality of its tones: first, because an evenly, finely roughened surface holds a lot of ink, allowing deep solid colors to be printed; secondly because the process of smoothing the texture with burin, burnisher and scraper allows fine gradations in tone to be developed. The mezzotint printmaking method was invented by Ludwig von Siegen (1609-1680). The process was especially widely used in England from the mid-eighteenth century, to reproduce portraits and other paintings.

Aquatint: A variant of etching. Like etching, aquatint technique involves the application of acid to make marks in a metal plate. Where the etching technique uses a needle to make lines that retain ink, aquatint relies on powdered resin (which is acid resistant) in the ground to create a tonal effect. The tonal variation is controlled by the level of acid exposure over large areas, and thus the image is shaped by large sections at a time.

Goya used aquatint for most of his prints.

Drypoint: A variant of engraving, done with a sharp point, rather than a v-shaped burin. While engraved lines are very smooth and hard-edged, drypoint scratching leaves a rough burr at the edges of each line. This burr gives drypoint prints a characteristically soft, and sometimes blurry, line quality. Because the pressure of printing quickly destroys the burr, drypoint is useful only for very small editions; as few as ten or twenty impressions. To counter this, and allow for longer print runs, electro-plating (usually called steelfacing) has been used since the nineteenth century to harden the surface of a plate.

Lithography is a technique invented in 1798 by Alois Senefelder and based on the chemical repulsion of oil and water. A porous surface, normally limestone, is used. The image is drawn on the limestone with a greasy or oil-based medium. Acid is applied, transferring the grease to the limestone, leaving the image 'burned' into the surface. Gum arabic, a water soluble substance, is then applied, sealing those parts of the surface of the stone not covered with the drawing medium. The stone is wetted, with water staying only on these sealed parts of the surface. The stone is then 'rolled up', meaning oil ink is applied with a roller covering the entire surface; since water repels the oil in the ink, the ink adheres only to the greasy parts, perfectly inking the image. A sheet of dry paper is placed on the surface, and the image is transferred to the paper by the pressure of the printing press. Lithography is known for its ability to capture fine gradations in shading and very small detail.

A variant is photo-lithography, in which the image is captured by photographic processes on metal plates; printing is carried out in the same way.

Monotype is a technique invented in the 17th century, but rarely used until Degas revived the process in the late 19th century. A monotype print is made by drawing or painting on to a smooth metal or glass plate. The plate is then run through the printing press. Unlike other processes, each print made is unique, as most of the ink is removed during the first press. Further prints could in theory be made but would be inferior in quality. Monotypes and **monoprints** should not be confused. Monotype plates are in effect blank canvases from which the inked design can be transferred. Monoprints are created from plates with permanent lines or textures in them that can be reused; these permanent features will appear in each print although no two prints are alike as the type, colour, and pressure of the ink can be altered, different layers built up and handpainted additions made.

Screen printing (also known as screenprinting, silk-screening, or serigraphy) creates bold color using a stencil technique. Stencil printing is arguably the oldest form of the graphic arts.

Around 500 BC in Japan, artists were gluing human hair between pieces of paper to create floral stencils which were used with brushes to tamp colour onto paper. The hair was later replaced with a silk mesh (hence the name "silk screen"). It wasn't until the start of the twentieth century that silk screen printing became industrialized and was used in the printing of fabrics and textiles throughout the western world. Artists such as Roy Lichtenstein, Robert Rauschenberg, and Andy Warhol then began to experiment with the technique for their artistic means.

In **screen printing** the artist draws or paints an image on a piece of paper or plastic (film can also be used). The image is cut out creating a stencil (the pieces that are cut away are the areas that will let ink

through). A screen is made of a piece of fabric (originally silk) stretched over a wood or aluminum frame. The stencil is fixed to the screen. The screen is then placed on top of almost any substrate, paper, glass, fabric, golf balls, etc. Ink is then placed across the top length of the screen. A squeegee (rubber blade) is used to spread the ink across the screen, over the stencil, and through onto the paper/fabric below. The screen is lifted once the image has been transferred onto the paper/fabric, which is replaced with the next, unprinted, substrate. Colours are added layer by layer and each colour requires a separate stencil on a separate screen. The screen can be re-used after cleaning.

Modern technology uses direct and indirect photo emulsions which are UV sensitive. This means that the artist's renderings on transparent film can be exactly reproduced on the nylon screen coated with light sensitive (UV) emulsion. The light sensitive emulsion fills in the entire screen, the transparent film upon which the artist has drawn is laid upon the screen and both are placed in the exposure unit. Where the light passes through the transparent film, the emulsion is exposed and hardens. Where the artist's markings on the film stop the light, the emulsion is NOT exposed and releases upon washing, creating a stencil on the screen that exactly reproduces the artist's markings to the finest detail.

Digital prints refers to images created with a computer using drawings, other prints, photographs, light pen and tablet, and so on. These images can be printed to a variety of substrates including paper and cloth or plastic canvas. Accurate colour reproduction is key to distinguishing high quality from low quality digital prints. Metallics (silvers, golds) are particularly difficult to reproduce accurately because they reflect light back to digital scanners. High quality digital prints typically are reproduced with very high-resolution data files with very high-precision printers. The substrate used has an effect on the final colours and cannot be ignored when selecting a colour palette.

Digital images can be printed on standard desktop-printer paper and then transferred to traditional, heavy art papers. One way to transfer an image is to place the printout face down upon the art paper and rub Wintergreen oil upon the back of the print, and pass it through a press.

Collagraphs are built up in a collage-like process onto a rigid base. The resulting plate is then inked and printed onto paper. Collagraphy is a very free form of printmaking and achieves very vibrant colours and a great depth of tone. Collagraphs can either be relief (where the ink is applied to the upper layers of the plate) or intaglio (ink is applied to the whole plate and then removed from the upper layers, left only in the recesses.)

Carborundum printmaking is a collagraph printmaking technique in which the image is created by adding light passages to a dark field. It is a relatively new process invented in the US during the 1930s that allows artists to work on a large scale. Normally, cardboard or wood plates are coated in a layer of carborundum, and the light areas are created by filling in the texture with screen filler or glue. Carborundum prints may be printed as intaglio plates. Carborundum, a compound of silica and carbon, was originally used by printmakers as an abrasive to grind down lithography stones and is now used in collagraph prints to create gradients of tone and a sandy texture. Carborundum, in partnership with glue, can be applied to the plate in several different ways. To print a carborundum print, the surface is covered in ink, and then the surface is wiped clean with *tarlatan* cloth or newspaper, leaving ink only in the texture of the screen or carborundum. A damp piece of paper is placed on top, and the plate and paper are run through a printing press that, through pressure, transfers the ink from the recesses of the plate to the paper. Very large editions are not possible as a small amount of carborundum comes off every time it is wiped down.

Compiled by P. de Burlet
Sourced from Devon Guild printmakers, Wikipedia and MoMA.