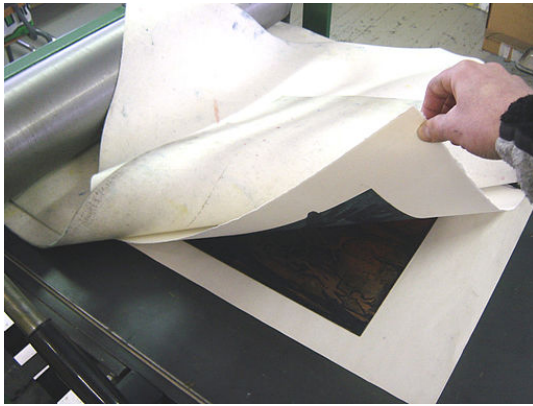


Intaglio Printing



A printing process in which the image is incised or etched into a surface using a variety of techniques and tools. Ink is applied to the recessed areas of the printing plate by wiping, dabbing, or a combination of both. The paper receives the ink from the incised marks and not from the top surface of the plate, although thin films of ink may be left on the surface to produce a variety of tonal effects (called plate tone). For intaglio printing, the paper is dampened so that under printing pressure it will be squeezed into all the inked recesses of the plate and around it (leaving a PLATE MARK if the plate is smaller than the paper).

One of the distinguishing characteristics of this type of printing is that the dried ink impression stands up from the paper in very slight relief, perceptible by touching with the fingers or by close inspection.

The smooth surface is wiped of ink before printing. Considerable pressure is used in the press to force the ink out of the lines and areas and, to an extent, to force the paper into them, so the final printed image will appear to be

Engraving

Lines are incised on a highly polished metal plate by means of a sharp-pointed instrument, diamond-shaped in cross section, called a burin or graver. The tool works like a plough cutting a furrow. The strength of the line may be increased by cutting deeper. The burin is held in a fixed position and, to produce a curved line, the plate itself is turned. This makes engraving a slow and painstaking technique producing controlled, formal results.

Drypoint

Lines are scratched into the metal plate using any sharp instrument with the same freedom as a pencil. The effect is spontaneous, not formal. Cutting into the plate throws up, on each side of the cut, ridges of displaced metal, which are called burr. In the printing of the plate, these ridges will also take some ink and print a kind of inky glow around the line.

Etching

Lines are bitten into the metal plate through the use of acid. To begin with, the plate is covered with a thin, acid-impervious coating called a ground which is smoked to a uniform black. Lines are drawn through the ground with a stylus baring the metal of the plate. Acid is then applied which eats into the exposed areas. The longer the plate is exposed to the acid, the deeper the bite and therefore the stronger the line. Different depths are achieved by covering some lines with acid-impervious varnish (stop-out) and biting others a second (or third) time. The appearance of etchings is usually free and spontaneous but the technique has occasionally been used to produce results almost as formal as engraving.

Soft-ground etching

One of the etching processes which aims to simulate the effects of a chalk or crayon drawing (see: crayon manner). The plate is initially covered with a soft ground. The drawing is made with a hard crayon on paper which has been pressed to the surface of the grounded plate; the ground adheres to the back of the paper where the crayon has left indentations in it, thereby creating an impression on the plate of the crayon marks. The paper with the attached ground is carefully removed and the plate is bitten. It is possible to reproduce any kind of texture with this method: textiles, rough papers, netting or leather can be pressed into a soft ground in a similar fashion.

Aquatint

A technique of acid-biting areas of tone rather than lines. A ground is used that is not completely impervious to acid, and a pebbly or granular texture (broad or fine) is produced on the metal plate. Stop-out, second and third bites are used to produce variations of darkness.

Carborundum

A very hard mixture consisting primarily of silicon carbide; it is used as an abrasive and, in powdered form, in a method of engraving invented by Henri Goetz. He used it to obtain a dotted effect by sprinkling it over a metal plate (usually duralumin) which was then pulled through a press, thereby causing the grains to penetrate the metal.

Mezzotint

The only intaglio technique that proceeds from dark to light rather than the opposite. The metal plate is totally abraded with an instrument called a rocker. Were it inked and printed at this point, it would produce an even, rich black. The design, in areas of tone rather than lines, is produced entirely by smoothing areas of the plate with a scraper or a burnishing tool. The more scraping and burnishing done, the lighter the area.

Photogravure

Sometimes known as heliogravure (particularly hand photogravure), this technique is one of the most important methods of industrial printing (the others being letterpress and offset lithography). It is an intaglio process which can be divided into two procedures: (1) Hand photogravure, a derivation of the aquatint in its method of obtaining tone. After sensitizing a copper plate and exposing it to light to form the image, resin or bitumen grain was scattered over it. The procedure continued as for a normal aquatint plate. This technique subsequently developed into a totally photomechanical process: (2) Machine photogravure, in which the tone is supplied by a cross-line screen. It was discovered that the plate could be bent into the form of a cylinder, a development which allowed very fast printing speeds (rotogravure). The technique is used more for magazines and catalogues than for print-making itself.

PRINTING INTAGLIO PLATES

Variety of Effects from One Plate

Wiping an intaglio plate is like conducting the score for an orchestral work. The information is all in the plate, but the director, or in this case the printer, has many choices to make about what to emphasize and what to de-emphasize. While learning to print I will ask that you wipe the plate as a whole. Leaving excess ink on the plate to create tone is not unethical, but it is a shortcut that avoids learning to make the plate carry all of the information needed. In general, if the direction of your hand's movement is visible in the print, it is not well printed.

Making Ink from Scratch:

The ink used for intaglio printing is oil-based. Traditionally it is made from plate oil, vine black, and bone black pigments.

These pigments are truly made out of burnt bone and burnt vine. Plate oil is linseed oil that has been heated in a closed chamber beyond its burning point. Under these conditions it changes character and becomes a bit more rope-like and clings to itself. Each printer will have his or her favorite mixture for ink and may select different characteristics for each print, or even for specific areas within one plate.

Mixing ink from scratch: By starting with the actual pigment and oil one can make their own ink from scratch, however, it improves with age and is best used after being allowed to sit for up to two weeks. Starting on a glass surface with bone black and vine black one should put out quantities of pigment approximately equal to a golf ball in volume for each pigment. These piles of pigment (usually conical) should be mixed with an amount of oil comparable to yet another golf ball. In other words, there are two volumes of pigment for one volume of oil. One then should take a putty knife and, tentatively at first, begin to paw or simply manipulate the pigment inside the oil and fold it over onto itself. Push down and pull until the pigment begins to bind with the oil. Repeat this folding over and pulling until all of the pigment is consumed. The goal at this point is to make the stiffest possible combination of oil and ink.

You will soon discover that if you stop mixing the ink that its appearance will change. While you are mixing the ink with the knife, it may have a granular appearance. As soon as it is allowed to settle, a gloss will come over the surface. This is because the oil has not been thoroughly integrated into the pigment. Working with a larger volume of ink this stage will eventually develop ink with a distinctive property. As you pull the knife towards yourself the shine, or gloss, will follow the knife approximately 1/2 inch behind. Hand made ink should be set to one side once it reaches this condition.

The next step in making one's own ink is grinding or mulling. The glass muller is usually shaped like a very large Hershey's kiss. Mulling begins by... placing a smaller volume of ink, perhaps a quarter of the volume discussed above, on the glass slab... placing the muller on top of the ink gripping it in two hands... then beginning to force the muller back and forth across the glass. This action tears the ink into smaller components and reassembles it. If it is one's intention to print the same day the ink is mixed, the majority of one's time should be spent mulling this is where the ink reaches its finish. To assure consistent results the printer might count fifty or a hundred strokes, back and forth, tearing and reassembling the ink.

Characteristics of Ink:

The major difference between commercially made inks and its handmade counterpart becomes evident when ink is allowed to stand overnight. The handmade ink will still be usable the next day and will, if anything, improve. The commercially made inks will have, at least, a dry skin over the surface and will be unusable.

The qualities that can be made in the ink can be determined by oil content. They can be extremely oily which results in an overall gray film, or they can be extremely stiff in which case the results is a relatively clean print.

The more bone black that is in the ink the greater the contrast. This is caused by the abrasive quality of bone pigment.

Vine pigment is a finer pigment that clings to the surface.

Thus, oil will cling to a surface and vine by itself will cling to a surface and the resulting ink, if they dominate, tends to create a brownish coat over the entire plate regardless of how the plate is wiped.

The artist can make their decisions after printing proofs as to the quality they find desirable.

Traditional "Run and Break" Consistency:

A traditional way of mixing ink for printing is to add #3 plate oil with a knife until a consistency is reached at which a string of ink flows from the knife when held aloft. A guiding standard consistency will run and break in a rhythm comparable to one calmly saying "run" and "break".

The choice of oils with which one mixes the ink will have an impact also. Number 3 plate oil has a specific syrupy consistency. Lower numbers including those with 0000 are more like water and ink mixed with them is shorter and comes off the plate quicker. Higher, numbers all the way up to #8, become increasingly stiff and sticky. This makes more work for the printer but the result is a darker plate overall.

Inks Supplied in Class:

Commercial inks that will be available in this shop include for the most part graphic chemicals etching black #514 which is a bone black. Other inks you may find in the shop will be Organic Black from Daniel Smith and occasionally Portland Black by Gamblin. Unlike the handmade ink all of these commercial inks will dry and coagulate within themselves overnight on the ink slab.

WIPING AN INTAGLIO PLATE

Applying Ink

An intaglio plate takes time to print. The first step in wiping the plate is to place the plate on the hot plate designated for this purpose. The plate should be allowed to warm to a "blood heat."

Coat the plate evenly with ink and through the use of rollers, cards or something called a dauber assure that ink is in every crevice. The ink is picked up from the mixing slab on a roller and spread over the warmed intaglio plate. At this point it might be helpful to take a card a stiff piece of matt board, or even a plastic squeegee and squeegee the ink into the tiny crevices of the plate. Any small places that have not been inked will show themselves against an even black coat of ink.

Remaining areas can then be worked with the card or the dauber.

The dauber is a rolled piece of felt which is taped into a hard cylinder. It is most useful after it has been aged and coated with dry ink.

Initial Wiping:

Once coated the plate has to be wiped with tarlatan. The first tarlatan should be a relatively dirty one and the printer works his or her way toward cleaner tarlatons. The most efficient tarlatons are actually somewhere in between clean and clogged. They have some dried ink already coating them, but remain open. These tarlatons attract ink better than brand new ones. When tarlatons are first brought out they contain a great deal of starch. Depending on one's preference, much of the starch must be removed by rumpling the tarlatan up between your hands or rubbing it across a sharp edge of the press, pulling from one end to the other, as if one were pulling a bath towel behind one's back. This breaks the starch and loosens the fabric. You can actually see white powdery starch falling from the tarlatan when you do this.

One begins printing by wiping the tarlatan over the plate while it is warm. The tarlatan is passed across the plate with down force or pressure fairly minimal. Most beginners over-estimate the amount of pressure used. Comparing the down force to stroking a cat sitting in one's lap is perhaps a good description of the maximum down force. The lightest force used near the end might be comparable to stroking the hairs on one's forearm.

The first tarlatan used should be one that is well aged and coated with ink. Ideally, it should not have completely clogged areas. one can examine the tarlatan by looking through it to see that the pores are still open. Tarlatan should not be torn in to small scraps. Pieces roughly a yard square should be balled up so that no loose edges are showing. Generally wiping proceeds while the plate is hot until the image is half visible. At that point the plate is moved off the hot plate to a cooler surface where the ink begins to set up.

Wiping continues with progressive cleaner tarlatons and may conclude with the heel of the hand or combination of the hand and the tarlatan. Students should avoid the temptation to leave selected areas of ink on the plate. Instead the entire surface.