

# Polymer Photogravure: A New Method for Photographers and Graphic Artists

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## Chapter 2: Practice

Combines the photographic with hand-drawn material. A new world of tonal possibilities

Gravures: Tactile and attractive quality. Employs fine etching papers

A dialogue between light, ink and paper. Durable and light fast.

Technically there are no toxic chemicals, improving health and environmental considerations. No need for an expensive extractor hood and allegedly the polymer in the water causes no hazard (except Jan's physical nausea!).

Any kind of light passing membrane can be used as the original gravure. eg drawings on acetate. Hard wearing material (unlike copper) for large print runs. Ideal for bookbinding, collections and bound sheets.

Silk Screen: Transfer opaque layers of ink in one impression. High quality images on a variety of materials.

Photoetching: Uniform depth, unlike gravure.

The painterly quality of gravure prints can be compared to cyanotype, platinum, palladium, kallitype, carbon processes. But all are sensitive and cumbersome.

## The Printing Plate

(Toyabor) KM73R 0.73mm / 95mm

Polymer is used as film bases, printing inks, ink rollers. gelatine is a water-soluble polymer composed of different proteins. Gelatine is derived from bones, skin and tendons of animals (other polymers include cellulose and starch). Gum Arabic is obtained from the acacia family and defined as a polysaccharide (numerous sugars). Shellac is the resinous secretion of an insect and contains polyesters. since the 1950s, synthetic organic chemistry introduced new rubbers, plastics and resins.

1958 Du Pont introduced the Dycril photopolymer plate in the US: Nylon Resin Polymer. Used generally in typography and flexography. Plates must consist of a metal base, preferably steel. Toyobo manufactures Printight Water Washable Plate and carries code numbers to indicate the thickness of the metal base.

The standard thickness of the polymer coating is between 0.21mm and 1.48 mm. Extra large and thick plates are made to order.

UV wavelengths between 300 -400 nanometres is ideal for the light sensitivity of the polymer.

Material less than 150 lines per inch cannot be used for gravure work.

BASF Lacke + Farbe AG manufactures a plate called Nylonprint. Nylongrav contains a tougher sur-

face and a stiffer metal support. Though small and coarse work can be produced on photopolymer plates with a non-metal base.

Plates with the same serial no are best avoided in case of defects in a batch ( including lines ).

Unexposed plates should be stored in a dark place below 20 degrees Celsius and the relative humidity is less than 65%. Exposed plates also continue to harden so should be stored in a soft case and out of direct light.

Polymer dissolves in alcohol and may also be scratched into after exposure.

Du Pont also produces photopolymer as rolls in various thicknesses. It is cheaper than metal based plates but the printing surface consists of a thin transfer emulsion. Tonalities are reproduced according to the size of the dots, just as in photoetching and offset. Roll polymer has a narrower tonal range but the polymer is soluble in alcohol. Therefore if fixed to a metal base it can be worked on with traditional printmaking techniques. It is also harder so produces stronger highlights. Hairlines produce extremely well on roll polymer.

There are also ultraviolet sensitive positive and negative varnishes available in spray form. Kontakt Chemie has a product called 20 Plus Photo Copying Paint ( Photoresist ). Like roll polymer, the sprays are used in circuit board manufacturing but in printmaking it is difficult to produce a uniform thickness with them ( also more expensive ).

## Film Work

Arista ( American ) Cheaper than red continuous tone. Need to use a litho film with a soft developer.

Red side is placed faced down and exposed.

Pay attention to the focus over all areas.

Developer: Centrobrol using a dilute solution of 1:10 plus Dettol ( 1: 3 ) for a harder development.

A soft development means less contrast.

Stop bath was water

Fixer for film / paper at 1:3 ( or 1 : 5 ) for at least 3 mins and left in water for 8 minutes.

Eventually whilst softening the exposure, I over exposed and under developed. Therefore the aperture was 4 marks down for 20 - 35 secs and developed for 2 - 2.5 minutes. Does the aperture affect contrast or only time?

Far too long is spent in the dark room. Burning and dodging was necessary as filters could not be used. I think this could be solved if I brought Gravarex.

Fred the Norwegian photographer told Rita that Dettol at 1:20 dilute also becomes a soft developer that is more economical.

AGFA / C66 is better camera?

Room temp of 20 degrees should be maintained.

What is Tetanol?

For a large tonal range, sharpness on image and printability are best obtained with a low-contrast image positive made from the original negative. The positive is exposed in an ordinary enlarger and

developed with the standard paper developer. The negative is placed in the enlarger with the emulsion side facing down. The continuous tone film is exposed on a level surface with the emulsion facing up.

1. Darkest areas should read D1.8 on the densitometer.
2. Details in the areas of critical tonality increase the purity of tonal resolution and sharpness.
3. Contrast will increase in every stage of the process.

Rlta recommends 0.5 to 1.58 but the difference can be no more than 1.5 and the film should be softer than final ideal

As with other photogravure methods, the best original image to use for gravure is a rather dense, large negative.

“ Expose for the shadows, develop for the highlights “

You can also use the densitometer for measuring drawings in acrylic. An extender must be used and an aquatint procedure to follow.

If the range of density is too large you will loose some of the image.

Over development pushes highlights to the shoulder portion of the D log E curve, and the resultant fogging reduces their definition. Smooth surfaces tend to reveal faults. There should be detail throughout the area.

In general I was using a densitometer over a light box. The light read 0.3 so this was added to the ideal density. Although I spent alot of time trying different densities, over all i would agree that the tone must be between 0.7 and 2.2. Highlights should be darker than the recommended density as they can be pulled back on the plate but need to be exposed as clear areas.

The darks are harder to achieve than the light areas.

## Definition and Tonality

Gravure enhances both the softness and sharpness of an image. In gravure details in shadow are characteristically indistinct. hairlines in shadows tend to disappear, while those in highlights are enhanced.

Some pointers on definition and tonality:

Subjects with dense meshes, dots, hairlines and fine lines are ideal for gravure work.

Contours and outlines become sharpened and increases acutance.

Strong sense of texture and materail render well. But texture appearances may change in the print. eg plastic to velvet

Bold shapes and graphic effects.

Boundaries of low contrast areas become softened. Avoid large areas of uniform tonality

Details in shadow improve overall tonality and papers affect this range in the final print.

## Graphic Arts Film

Use a low contrast continuous tone film designed for the gravure work. eg Gravure Film by Kodak, Typtone by Typon, Helioquill by Guilleminot, or Cornalar by Du Pont. Agfa's Grevarex 230 P is a low-contrast variable gamma film whose contrast is adjusted by filtering the light. The greater the desired contrast, the stronger the colour separation filter that must be used; Yellow increases the contrast, blue lessens it. Grevarex is an excellent film, although it is sometimes reluctant to yield sufficient contrast. This problem can be solved using a harsh developer designed for high contrast lith films. A strong selenium toner can also be used to increase the contrast. ( Selenium is a toxic poison and should be used in ventilated areas ). To ensure good contact in printing, a film with a matt surface is recommended.

Grevarex should be handled under a dark red safety light. Unexposed areas of the film must remain completely clear. Films also deteriorate with age.

Density can be reduced by the local application of Farmer's reducer ( but note enhancement of changes in the final print ).

The Density Range should extend from D0.3 to D1.8. The tonal range of gravure is about D1.5. So the difference between high lights and shadows should not exceed that. In estimating exposure times, remember that doubling the exposure time with the negative will increase the density of the image positive by D0.3.

### The double positive technique

If a negative refuses to yield a usable image positive with one exposure. So use two different positives with different contrast properties. Conditions must be absolutely identical.

If the original is dull: The first positive should aim at capturing the greatest tonal range. The second positive should aim to produce a high contrast from the shadows. Any high-contrast lith film developed in paper developer can be used.

The two positives are taped together with positive no.2 placed on top. Proper alignment is crucial.

Therefore combine:

A low contrast film for the first positive  
A high contrast film for the second positive

Exposure time for the second can be shortened considerably to ensure no greys develop. The smallest increase in exposure time can make a noticeable difference in the final print.

### The Aquatint screen

In order to be able to print a photographic tonal scale, a very fine aquatint screen must be used. The irregular pattern is fundamentally different from the reticular pattern of the screen used in rotogravure. Hand wiping will improve the sharpness of the image the longer the plate is wiped, so that the screen must be as fine as possible.

\*\*\* Images of different screens \*\*\*

Aquatint screens can be made using matt glass, a matt film or a dusted glass plate.

Ideal method:

4mm thick glass with bevelled edges.  
Ground asphaltum to a very fine dust.  
A thick cardboard base  
White paper for laying underneath the glass.

After disturbing the dust box and allowing the larger particles to settle place the glass into the box. Dusting is repeated several times. When the deposit is thick enough, transfer to an ordinary electric oven and fire at 250 degrees Celsius. Allow the glass to cool.

Use a lith film to expose the glass plate. The screen copy should be developed with a harsh developer to ensure a compact dot. The fixing bath should contain a hardener to improve the durability of the film screen. A suitable screen density is between D0.5 to D0.8. Use a loupe to check the density of the dot.

Handling the plate

Before exposure, the plate is cut to the right size using a guillotine with a curved blade.

First, remove the protective layer of acetate, place the image positive onto the plate with the emulsion side down and the plate is exposed to ultraviolet light. A sun lamp or wooden exposure unit can be used. The distance between plate and light should be greater than the diameter of the plate. A vacuum bed exposure unit is ideal.

A double positive creates a total of seven surfaces which can attract dust particles and uneven contact with the plate. This may be solved by placing a sheet of tracing paper between the glass frame and the film.

#### **Factors affecting time and density:**

The intensity and distance from the light source  
The density and tonal range of the image positive  
The granularity and density of the aquatint screen  
The desired impression on the final print  
The temperature during both exposure and development  
Effects of proofing and printing

In practice, exposure times vary between 30 secs and a few minutes. If the light source is weak time may be as long as 10 or even 20 minutes. Keep a careful record of exposure times.

### **The Screen Exposure**

This is made with the aquatint screen face up on top of the plate, emulsion side down. The longer the exposure the deeper the polymer hardens. Over exposure results in a loss of contrast and makes the screen pattern visible in the print. It also makes the plate too smooth. Underexposure results in over etching and loss of detail. The best results are usually obtained with the shortest possible screen exposure time. The relief like structure of the ink hollows does not affect printing

**\*\* Josefin Technique \*\***

Expose the aquatint into the film first. This is followed by a stocastic screen during the plate exposure. This brings out detail and adds sharpness to the plate.

## Test Exposure

When using new materials or a new exposure frame, a test exposure is always necessary to determine the correct exposure time. The film should be a full scale continuous tone image positive. First a series of vertical strip exposures is made with the image positive, perhaps using times of 2,4,6,8 and 10 minutes. Next a series of similar horizontal exposures is made with the film screen, using exposure times of 1,2,3,4, and 5 minutes. The plate is then developed and proofed normally. Areas where the print is too dark or the surface is just a formless hollow are under exposed. Areas which seem too light are over exposed. A well made test exposure will yield several more or less similar areas with different combinations of screen and image exposure times. The best combination is usually one where the screen exposure time is as short as possible. If conditions change, a new test exposure must be made.

A test exposure needs to be done before every main plate as the exposing unit will differ time depending on how long it has been warming up for. Make sure the glass is cleaned with alcohol and beware that the backing rubber can leave an impression on the glass and aquatint screen that then affects the image. Therefore a sheet of white paper was placed underneath the plate for the screen exposure. Rita also suggests a border of black paper around the edge of the plate. This is fiddly and worked well for the first photopolymer but didn't seem necessary for the second plate. To ensure good vacuum, cut the arista to the smallest size possible without cutting into the positive. The plate should also be a few mm shorter in width and height than the positive. So this should be noted when making the original positive either in the darker room or on the computer. I suggest using a mask of 2mm around the edge of the image when using digital work.

The aquatint screen was a crystal ruler stocastic screen but the resolution was unknown. Finer detail but thinner ink! As I forgot the exposure time I had to learn by mistakes of under exposure where dark areas would start to wash away. eventually the ideal became 7 minutes if the positive exposure was 4 minutes. This maybe less if using digital printouts as Steina was only exposing the screen for 3 minutes.

The largest positive is limited by the exposing unit ( 63 x 81 cm )

n.b I am wondering if the grain in the 400 film was an advantage to the positive. This would help create a natural aquatint in the positive and could explain why my first photopolymer was so clear.

In the dark room: The longer the exposure, the darker the image.

In the exposing Unit: The longer the exposure, the lighter the image.

Use a yellow light to be safe ( though a white light is also OK ). ie You don't need a red light

## Development

The exposed plate is developed in warm water, at around 25 degrees celsius.

The plate is first immersed in standing water and allowed to soak for about a minute. Next the surface is rubbed gently for a minute under running water. The unexposed parts of the polymer dissolve in water.

Using a decorators paste brush, brush gently over the plate for one minute. Ensure the strokes

are repeated for the test plate as for the final plate. Wash residue after one minute and dry as quickly as possible using a leather cloth that is dampened and dabbed onto the plate.

The best tool to use is the type of brush with short bristles used to wash offset plates, but the hand can be used as well. Rubbing motions should be constant and identical, taking care not to scratch the surface. The plate is then rinsed with cold water and the rubbing action is continued to remove any residual polymer from the depressions.

## Drying and After treatment

The plate should be dried evenly across its surface. Drops and excess moisture can be removed by carefully dabbing with a soft piece of chamois leather. The plate is dried in a cold air stream, preferably one with a circular motion. eg a fan

We used a hot fan heater that I could not use again as drying is very quick and this could slightly distort the image.

Finally the plate is hardened under UV light for at least 5 minutes

\*\* use the protective acetate again to protect the polymer from sticking to the glass \*\*

## Paper

High quality pure rag normally made from cotton fibre or a combination of flax and cotton. Quality paper should contain long fibres that enhance the durability and a neutral pH. It will also be bulky compared to the weight to allow a large amount of water filling air spaces when the paper is damp.

## Factors Affecting the Durability of Paper

Polymerizing oil does not damage paper, whereas turpentine does. The use of turpentine as an ink conditioner should be avoided in archive-proof documents.

The large unprinted margins of the paper and protective interleaves of tissue also prolong the life of the gravure. The utmost care must be observed to ensure lighting, humidity and temperature conditions are correct when handling and storing prints.

Hahnemule is great for working quickly. It only needs to soak for about 10 minutes and left in a plastic bag ready for use. The Fabriano and Somerset need a longer soak and left over night to dissolve the sizing. I found that if used too quickly it is difficult to blot the paper and then it tends to stick to the plate.

If paper to be kept wet is not going to be used, it is possible to freeze it until it is needed!

## Dampening the Paper

Immerse in clean warm water ( not too hot or the sizing will dissolve ). Rives requires many hours, whilst the German Hahnemule and Japanese papers do not stand prolonged soaking. Weakly sized thin papers absorb moisture quickly and are ideal for proofing as they show all the details in the plate ( but reduce contrast in the print due to a faithful reproduction of lighter tones ).

After soaking the paper is placed between blotting paper or cotton fabric. Damp sheets can be stored in a plastic bag or between plates of Plexiglass. Mould can be prevented by adding a small amount of formaldehyde to the soaking bath.

Printing on slightly damp paper increases the contrast.

Soaking has a considerable effect on the outcome.

Good proofs using lithographic paper include: Swedish Tumba Daumier ( third of the price of etching paper )

An alternative is printing on thin japanese paper which is then mounted on a sheet of thicker paper.

French Arches is a coarse paper that reproduce details well since the irregularities of the papers are flattened under pressure.

Fabriano is a good smooth paper from Italy or Guarro from Spain. Guarro is inexpensive and popular with gravure printers.

## Printing

'le coupe de main' - The impression of the printer's hand is required through long practice.

## The Press

gravures are printed in an etching press under heavy pressure from the rollers, inked from the etched areas of the plate are transferred to the paper smoothly and evenly.

Take a blind proof first to check the pressure is evenly distributed across the bed of the press. Remember to oil the plate first.

## Inks

Etching inks are quite suitable: dry point ink has the perfect consistency. The best commercial inks for gravure are those made for aquatint because the pigment they contain is sufficiently fine grained.

Magnesium and Plate Oil 7 plus Graphic Chemical Easy Wipe. It should be of a thick consistency but still shiny and not too sticky. Use a roller to roll the plate up. This ink sits very well in the plate and therefore wiping is very quite straight forward. If using two different colours wipe the dark first and little will extend into the empty area allowing a second colour to be wiped. The Typolin worked well but Rita used vaseline and easy wipe. Maybe it is cheaper. But probably personal preference.

The ink should have a looser body than ordinary etching inks, because ink lifts more reluctantly from a plastic than a metal. A conditioner, such as Typolin, is almost invariably added. It does not alter the quality of the ink, rather it makes the ink easier to wipe. Plate oil can be added to reduce its body and to make the ink looser yet stickier. Oil should be added one drop at a time.

Proper consistency makes the plate easier to print from. It also saves ink, enabling large print runs. Use glass as a mixing ink. Spray antioxidantizing agent on the surface to prevent the tin forming a skin

ontop of the ink.

## Inking and Wiping

The plate is inked with a dabber, cardboard spatula or an inked roller. Use ink liberally and place over a hotplate to settle the ink into the hollows.

Wipe off all excess ink with a soft balde that does not scratch the surface or using a piece of paper.

It is important from the start not to wipe the shadows too vigorously. Ink can be added by dabbing locally and quite alot of ink can be left in the darkest areas of the plate.

Wiping can be used to transfer ink from highlights to low lights.

The first proof is usually pulled from an evening wiped plate and further proofs can be adjusted to suit the properties of hte plate.

The last wipe is done by hand or a piece of paper. After each pass the hand is carefully passed ona piece of cloth.

Paper can absorb too much oil fromthe pigment altering the consistency of the ink. Too stiff a wiping paper or prolonged wiping can also cause graininess. The best paper to use for wiping is a firm tissue or a thin japanese paper.

Tarlatan can also be used from wiping, although it is often too coarse for the purpse. If done judiciously, wiping with tarlatan can produce excellent effects. The important details become clear at the wiping stage.

The greater the variation in lights and darkes the easier it is for the ink to settle into the hollows. At best the resist disappears completely and wiping becomes straightforward and a quick operation.

Wiping can be accentuated in the high lights usin a cotton bud. Whitening is an abrasive, like tooth paste, it shouldbe used carefully. Wiping souhld not lift hte ink from the pockets on the plate, although ink that has lost its stickiness is easily lifted out during wiping.

Transparent white increases the translucency of the ink and brightens the highlights.

**\*\* I think Rita uses a saucer of talc and a cotton bud \*\***

**Wiping more using non absorbant tissue paper will clear white areas whilst defining dark areas.**

**Ritas method:**

**Take a pile of newspaper or telephone directory and cover one corner of the plate with the palm of your hand. But ensure that the heat of your hand does not get through to the plate as this will lift the ink. Wipe quite aggressively away from the plate using a soft tarlatan rag. Every time you turn the palte round replace the paper covering the corner and continue to wipe. Move to a cleaner cloth if necessary and eventually use the tissue paper to highlight. Pay attention to the corners.**

**The cotton wool bud is very affective but should be used sparingly and be careful not to sprinkle talcum onto the plate. Hand wiping is also a possibly but I need to learn a good technique as I keep smudging the image!**

I tried filing the edges but used a file rather than a craft knife, which on reflection would have been better

Never the less i think this is easier than wiping the edges at right angles. I should also try to find a liquid to add to help polish the edges as this seems to be a difficult issue to tackle.

Use medical gloves rather than cleaning gloves as this won't leave a mark. Use talcum powder to allow easy access.

If the ink is remaining in the plate and is not adhering to the plate, the problem can be solved by making the ink dryer. This done by adding some chalk carefully and is only required with deeply etched plates.

### Viscosity

This was a problem that took a week to solve. When adding a layer of colour over the top transparent ink must also be used where there will be no additional ink.

Use linseed oil or litho plate or ( NOT etching plate oil ) to thin the ink and lower the viscosity.

The ink should be very thin. Over ink the roller first and then remove the ink on the glass. A medium roller should be used if the overlaying colour is lower in viscosity than the intaglio ink. Colour can be built up by continually rolling the plate with thin ink. The plate needs at least two rolls to ensure an even coverage and no speckles.

When rolling the ink use a low table and little pressure over the plate. Rolling up should be fast and even so that no line is created.

Although in theory it is possible to reverse the viscosity, I failed! This was probably due to using the wrong plate oil BUT even when it should have worked, it would remain on the plate but pick up the ink of the lower viscosity onto the roller. I couldn't lower the viscosity of the intaglio ink any further as it would wipe away from the plate and leave little ink to be printed.

### Painting Ink

I painted the ink onto the plate by thinning with white spirit. I don't know what this does for the longevity of the ink but worked well with the viscosity technique. Created a light grey that would be difficult to produce with transparency as this tends to create blotches. It was also easy to create a variety of grey tones depending on how thin the ink was.

### Dabbing Ink

Very successful. I used a paint brush and ink painted in detail on to the plate. Add the dark tones first, wipe and then the highly saturated tones second etc. This stops the inks from mixing together too much during wiping. Highlights in saturated colours can be added individually and gently wiped. Be careful not to wipe the dark ink too much when wiping the additional layers of colour. Apparently it is possible to create a similar effect of a painting if ink is added using a cotton bud. The plate absorbs ink very well and therefore it is not necessary to flood the plate with ink to ensure a good coverage.

### Masking

Very successful using paper but acetate sticks to the roller. Must try Mylar as the mask can be repeated. There is the risk that the mask will cut the plate but the paper mask did not do this and

created a clean empty areas. Ideas include inkign up the same palte in differnt colours and then masking off the areas to provide two seperate images.

## Colour Printing

Those of black or blue tint give a greatercontrast that brownish and greenish ones. Tinting a neutral colour enhances the tonality of the image.

Colour of the paper is also importnat for tonal impressions. The densest opaque areas will appear to have a rather neutral black where as the highlights, where the ink is spread thin, will hav more colour owing to the transparency of the ink. the effect is stronger with mixed inks that contain pigments of different grain sizes!!!!

The same can be achieved with offset using multiple imprints, for instance using cold tomes for the shadows nad warm for the highlights, or vice versa.

Unlike most other methods, gravure prints seem to grow draker when they are dry. Drying empha-sizes the defects of tonality in highlights. it takes about a week for hte ink to dry and with stand gentle rubbing.

## Masking the Edges

This allows the printer to five only a cursory wipe to the edges of the plate. A mask is a thin sheet of paper, larger that the printing sheet, with a hole in its centre that corresponds exactly to the image area on the plate. A paper mask is easy to measure by punching holes through a damp proof with pins at the corners. The mask can also be used to reframe the image.

If no mask is used the edges of hte plate must be cleaned extremely well. Cutting the edges of the plate completely can solve this problem especially for printing simultaneously on one sheet.

## Problems

Tearing results in an uneven or broken impression and can be caused by a number of reasons:

- A thick paper printed under great pressure.
- Shallow intaglio due to over exposure with the aquatint screen.
- undersized or dry paper and excessive wiping.
- The plate may be too cold
- The ink has had time to dry on the plate.

## Solutions

- Adding some oil to the ink and ensure correct dampness.
- Heat reduces tearing and makes printing easier.
- The print must be pulled off the plate slowly and carefully. it can also be left on the plate for a while.
- When it has become stiffer the paper is easier to life from the plate without tearing.

Blankets must be clean, soft and resilient. The thickest blanket is placed closest to the roller, while the thinnest one, which must be absolutely clean, is laid on top of the plate.

Several proofs are taken before the 'bon a tirer' ( ready for print stage ). It is seldom necessary to clean the plate between impressions: it is usually sufficient to ensure no impurities are transfered to the printing surface.

After the plate is printed, it is cleaned with turpentine or some other appropriate solvent.

Cleaning of hands should not be done too often because the solvents remove the protective fat from the skin. It is best to apply hand cream before printing as this gives the skin protection from both frequent washing and the solvents used. The hands need not be washed so often if protective gloves are used for handling printing and masking paper.

## Drying and Finishing

Prints can be dried either on a drying rack or between clean sheets of paper.

Drying can also be accelerated by adding siccativ to the ink or run through a heated dry mounting press.

High quality print paper can be cleaned with a good eraser or fine sandpaper. The fibres will peel off the print in thin layers; this will leave no visible marks.

Watercolours should be used to retouch white spots created from removing opaque ink spots.

gravures can also be tinted. Skilful tints with watercolours can yield results that bear an uncanny resemblance to the turn of the century tinted postcards and art reproductions.

Another way to finish prints is to varnish them. The black on a dry point becomes darker following a thin coat of offset varnish or transparent ink. Most varnishes impart a warm, yellowish hue to the highlights, but of course the varnish itself can be tinted too.

The best method is to spread the varnish on a glass plate and thin it to the right consistency - with oil, for example. The prepared varnish is spread evenly on the print with a composition roller. The edges of the print can be kept clean with a paper mask.

## Signing and numbering

This goes back 150 years. Editions have been numbered for around 60 years.

'à tergo' - Signing at the back, such as is common with photographs

Gravures - signed outside the plate mark or in its lower right - hand corner of the work.

If signature and titles is placed at the bottom of the page, this is a clear sign that the print must be box framed, leaving the decorative deckle edge of the paper uncovered.

If the artist is the printer, this is indicated after the edition number by using the phrase tirée par l'artiste or t.p.l'a ( pulled by the artist ).

'Tirage' - Edition. Applied to portfolios.

If the edition is printed over a number of sessions, these are indicated in roman numerals. eg II 13 / 25.

Individual prints in a portfolio are not usually signed. An emboss or another means should indicate the order.

Epreuve d'essai - Trial Proof: T.P also called Working Proof

Etat - I Etat, II Etat : Different stages of etching to progress the plate

Epreuve d'Etat - Trial Proof, is a progress report.

Epreuve de passe - The reserve proof taken after the edition has been printed. These can be used to replace damaged prints.

Hors tirage - Presentation proof are prints made outside the actual edition.

The printer is entitled to one proof of the plate and bear a dedication from the artist or marked:

Prova do Stampatore ( Why Italian and not French ??! ) - Printers proof

Bon à tirer - Good to print: Proof pulled by artist as a guide to the printer to follow

Prints taken from a photopolymer plate are gravures ( abbreviated to 'grav' ).

To emphasize the photographic nature of the work the term 'photosculpsit' or 'ph.sc' ( engraved by light ) can be used.

Exc, exct, excudit - made: the term which refers primarily to publishing or indicates that the work belongs to a series.

Faciebat, f, fec., fect., or fecit, is used in works where the artist has both prepared the plate and printed it.

#### Artist's Proof

Epreuve d'artiste, E.A - Artist's proof can be signed as a separate edition. This reflects the old practice whereby the engraver received part of the edition as compensation for the engraving work. Today it is customary to take 5 artist's proofs and number them with Roman numerals. These are the prints artists give away as presents or exchange amongst themselves.

Hors de commerce H.C - Used for proofs that were not for sale and is now applied to proofs when the artist wants to emphasize the artistic rather than the commercial value of the print. In time this tends to have the complete opposite effect and prints marked H.C or E.A are considered most valuable

Epreuve avant la lettre - Experimental proofs taken outside of the edition

Dono Dedit Dedicavit, D.D.D - A print that bears a dedication

## GLOSSARY

### Antireflex Glass

- Non reflective glass

### Alkaline rebuffing

- Method to slowdown acidification by adding calcium carbonate to bookbindings and cardboard.

### Buckram

- Stiff impregnated, coarse cloth for book binding

### Duotone, Duogravure and duplex

- The plate is inked with two colours, transparent ink or varnish.
- Using two or more plates on one print.

### Farmer's Reducer

- made from highly toxic potassium ferric cyanide. Together with a fixing agent, Farmer's reducer is used to remove silver bromide from emulsions, i.e to reduce density. Farmer's reducer removes silver from the emulsion evenly throughout, regardless of density

### Ferric Chloride

- $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$ . used to etch coppergravure plates

### Inks

- Etching inks contain 20% of pigments ( of which 90 % are usually organic products of petrochemical factories, inorganic include various oxides such as ochre, sienna and umber ), about 30% vehicles ( oils, varnishes and resins ), about 45 % of solvents and conditioners ( silicates affecting viscosity and stickiness ) and about 5% of siccatives ( drying agents for linseed oils, usually salts of cobalt ) and antioxidants ( to prevent the ink from drying in the tin ).

- Etching ink can be tinted by adding small amounts of artist's oil paint or lithographic or offset ink, without affecting the quality of the ink. The best oil colours for tinting are translucent, rich oil colours which do not contain white pigment.

### Panchromatic

- A black and white emulsion, that is equally sensitive to all wavelengths of visible light. Used in gravure when a true positive copy is made of a colour negative.

### Retroussage

- Increasing the richness of tones by drawing the ink from the hollows by carefully wiping ink from the hollows by carefully rubbing an inked and wiped plate with a piece of cloth or felt.

### Turpentine

- Class of liquids composed of oleoresins. French turpentine is distilled from the resinous pitch obtained from conifers of the Mediterranean region; Venetian is from that of larch trees. Cheapest are the by products of the petrochemical industry

### Typolin, Typolcreme

- A popular conditioner, used to make tacky inks easier to wipe.

### Varnish

- Offset varnishes, mastic and dammar can be used either sprayed or rolled.

### White spirit

- Distilled petroleum. Can be used to clean the polymer plate but not used to thin the inks.

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