THE FILM — heliogravure

In the photogravure process it is necessary — as in every historical photographic process in which the sensitive element is not a silver salt — that the film of the image to be reproduced, is of the same dimensions as the final print. This is because any enlarger light would be too weak to impress the Carbon Tissue and an UV source is indispensable for several minutes of exposure.

In the case of photogravure process, the film must show the positive image (unlike most historical processes) so as to generate a negative on the C.T. restoring the positive tones during the engraving of the copper plate.

Througt the Positive Transparency the negative image is impressed on the C.T.:

- **Transfer C.T. on copper**: highlight-tones carry the maximum gelatin thickness on copper, the shadows the thinnest.
- **Biting**: the feeble shadows, therefore, are engraved first; the 'lights' in the last minutes.
- **Print**: the 'shadows', deeply engraved, withhold more ink, very few the lights, so the whole positive tone-range is restored.

The film will have to adapt to the characteristics of the C.T., regarding to UV light sensitivity, the contrast and the needed density range.
In this context, more than precise indications, it prevails the suggestion to perform a number of individual tests and create one's own standard (1).

When the film used to be produced in the darkroom, through the enlarger, an orthocromatic continuous-tone film was necessary, which could be worked in red light, or a lith film (very high-contrast) processed in an extremely diluted development bath, to achieve the necessary low densities values.

Due to the film size, the biggest problem was the development in trays; the large surface exposed to an open environment and variables such as temperature, air humidity, stirring ways, bath oxidation, ... could lead to fair density deviations – especially in maximum values; a careful and delicate work.

Beetween this mode and new digital film, it was possible to use a lithographic screened film, with particular precautions in order to reproduce the continuous tone on the copper plate. Another technique with its own peculiarities that still had to be strictly standardized, but already benefited a digital start (i.e. the image file), with all the advantages as regards corrections and balance, skipping all the darkroom griefs: the lithographic film is automatically processed in highly controlled conditions.

But the lith film is also declining, turning in favour of more digital ways: the 'copying' of the file onto the film and the following exposure of the printing plate, in photolithography is swiftly going from Computer to Film or CtF to Computer to Press (CtP). It means that the digital file, instead of being '*written*' onto the film, 'carves' directly the printing plate (2), skipping the film stage almost everywhere. While we are waiting for the next evolution — already used but not competitive for high print runs — of the second generation CtP (Computer to Print or Paper), with no need of the aluminum plate, to impress directly the paper sheet. Basically it is what we do printing a document or picture with our InkJet printer: from the file to the paper! You may guess that every solution has, or allows, its own hybridizations.

Coming back to the point, the digital file, set to make a film for obsolete photographic techniques, ... holds very few of the past ways. The dark room is forgotten and it is therefore necessary to supply yourself with Hardware e Software tools such as a scanner, a digital photo editing like PhotoShop for the acquisition, correction, balancing and sizing of the image, whether it comes from a silver-negative or from a digital device; a IJ printer, better if set to the purpose; a special film for the transparency.

Beyond the 'management' of the file, the film to be printed is a polyester with one side covered with an impalpable ceramic powder, suitable to firmly grasp the ink, imitating the paper 'porosity' (3).

This surface — to be handled with great care — makes the film 'milky' at sight and slightly rough to the touch, with an extra density 'veil' of ≈ 0.05 over traditional film.

You may prepare the file/film according to one of the methods currently in use (or assorted 'hybridizations'), according to your requirement & resources:

– With the PDN system by Mark Nelson (https://www.precisiondigitalnegatives.com/) which also provide 'curves' - and ways for construction. The final mix of inks, which has a rather strong colour, doesn't leave much room for a purely visual evaluation of the film or a densitometric reading in gray scale mode. True engraving and printing will be the last judges.

– With the QTR system with pigmented inks, up to seven shades of gray (www.quadtonerip.com - https://www.bwmastery.com/ - https://piezography.com/). In this case the printer is absolutely dedicated to the purpose and the original inks should be replaced with as many dedicated ones. The result can be read with a densitometer.

– Using a RIP (4) that allows you to select the inks to use in printing. This system requires an excellent knowledge of the process and the results to be obtained. In printers with single ink's vessels, you may use only shades of gray, or some of these, associated with the most inactinic hues like yellow and/or magenta, ...

– Using all the inks of a CMYK or hexacromy printer, choosing in the 'Print' window the option 'Neutral color tone', the maximum print quality (2880 dpi) and the lowest writing speed, in order to allow a partial ink drying during printing. A good visual evaluation is permitted by the neutrality of the printed film, although the correction curves – always necessary – change the contrast. However, a grayscale densitometric reading guarantees the reproducibility of the range tones.

Note that in ink jet printing, the drying (and therefore the density misured values) of the ink at the film exit from the printer, goes from a few hours to a few days.

In any case, the personal compliance of the chosen method - through gray wedges, densitometric measurements, etching and printing, ... is once again indispensable for an overall judgment of the process. The densities to be achieved on these films, for obsolete photographic techniques are fortunately modest compared to those required by paper prints and I say fortunately because a smooth absorption capacity of ink by the IJ film is far lower and slower than that of an IJ paper, which may be coated with a more consistent receiving layer.

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(1) The buildup of the correct file and work with imaging sofware management, far exceed this notes. Creating the correct 'curve' to comply the process is a matter of personal knowledge and skill in graphical topic and/or in a reliable guide. A UV source does not 'see' as our eye does; the bichomate salt doesn't 'see' as the silver salt in straight photography; ect .

(2) In reality, the photolithographic printing plate is not really 'engraved', as is the case with copper in the intaglio technique, since the litho process is planographic, therefore printing and non-printing areas are on the same plane. The aluminum plate is only 'stripped' (washed from the emulsion not affected by the light), in non-printing areas (the blank parts).

(3) The most known and advertised ink jet film is the PICTORICO, but there are others (ULANO Pigment IJ film ; ILFORD omnijet IJ film; AGFA OHP InkJet film, …), sheets and rolls. … Of all these, local availability costs and sizes must be ascertained.

(4) A RIP, Raster Image Processor — in a very simplified way — is a software that allows to act in a personal way on the management of the image, leading the printer driver. Usually expensive and dedicated: see Graphic Technology sites. QTR is a RIP too.