

## AVOID OPEN BITES

The wash (**ill. 5**) is made with pen, brush and Indian ink on a transparent drawing foil. The lines are ultrafine, bold and anything in between, and the tones are mostly either black or delicate gray.

When the positive is placed on top of the photopolymer plate and it is exposed to UV light, the figures in the wash block different amounts of light. Where the UV light is not blocked by black lines or shapes, the photopolymer hardens, and the etching ink will be wiped off during the inking up of the plate (since there are no valleys in the plate where the ink can stick to). Where the light is completely blocked (the black areas) or partially (gray areas), the etching ink only gets stuck in the



**5** India ink wash on transparent film (the positive)

thin black valleys (created from thin lines), but not in the areas of the image that are covered by larger black surfaces and bold lines. Here the etching ink clings to the edge of the etching, because it has nowhere else to cling to (**ill. 5a**). This phenomenon is called "open bite". In other words, the area we would have liked to print as a big deep black area in the final print, ends up as a big white or light gray area in the finished print. The problem with "open bites" have always been commonly known in traditional printmaking, and it took printmakers more than 100 years before the problem was solved. They simply spread fine aquatint grains over the open bites immediately before etching.

The aquatint grains work as a very fine sandpaper. They can be applied to the plate, for example by dusting the plate with a microscopically fine mist of acid-resistant grains on top of the plate just before etching. In this way it is also possible in the "bottom" of the open bite to etch microscopic grains in the copper that can hold the ink during the inking up and wiping (like if you ink up a piece of sandpaper). Nowadays this effect is achieved quickly by first exposing the photopolymer plate through an aquatint screen and then afterward through the positive (in this case the drawing on the drawing foil). This I call double exposure. An aquatint screen is a film applied with an extremely fine mesh net of microscopic grains (about 1800 dpi), which only allows approx. 20% of the light to pass through and harden the underlying photopolymer plate.

## DOUBLE EXPOSURE OF THE PLATE

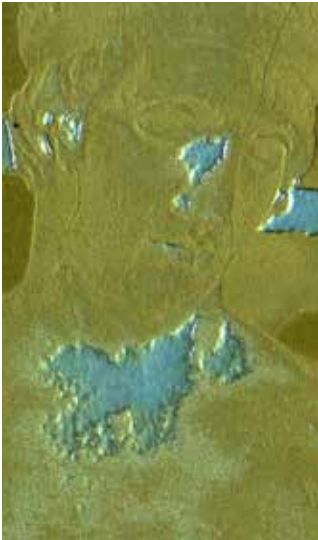
First you expose the aquatint screen to the photopolymer plate, then you replace it with the positive. The positive, in this case the wash on drawing foil, contains, as seen in **ill. 5**, an enormous amount of gray tones apart from the clear black and white lines. To sum up: you now have the photopolymer plate, which you first exposed with the aquatint screen on top. Then you replaced the aquatint screen with the artwork and now you expose the plate a second time (with this artwork on top of the already exposed plate). In bigger black areas of the artwork, which block the UV light, you would normally get open bites as you can see in **ill. 5a**. But because we have exposed the aquatint grains below (in the first exposure) they will be etched like fine sandpaper that will make the etching ink stick to the plate in these areas, (where you would otherwise get open bites). In the bright areas of the artwork, the aquatint grains produced by the first exposure are completely burned out by the UV light during this second exposure, since the UV light is not blocked in the bright parts of the artwork. In these areas the plate hardens like a glass plate with the result that the etching ink has no grains to cling to during the wiping and therefore will print white in these areas. Where the UV light is only partially blocked, because the motif here contains a shade of grey, which only allows a small portion of the light to get through, the plate will only harden a little bit and produce a delicate shade of grey in the final print. The result can be seen in **ill. 5b**.



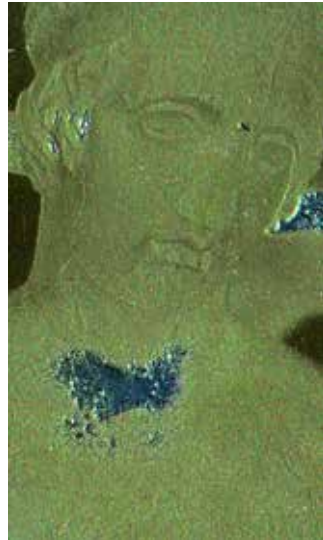
**5a** Here, the photopolymer plate is only exposed with the artwork (single exposure) and printed as a photogravure. The result is that all black lines become negative and black areas produce open bites.



**5b** Here, the photopolymer plate is exposed twice (double exposure), first with the aquatint screen and then with the artwork. Finally it was printed. The result is that all the tones of the image got represented.



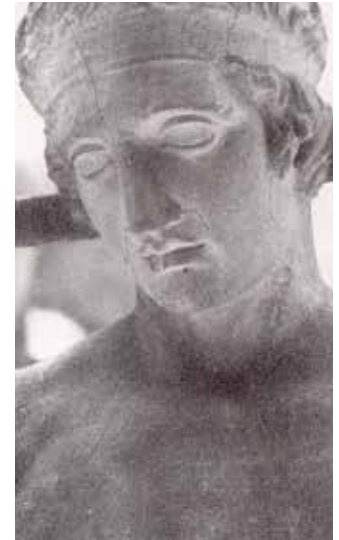
1



2



3 ✓



4 ✓

## CAUSES OF OPEN BITES

As we just saw in **ill. 5**, an open bite occurs in the plate, when we do not expose aquatint grains into the plate to make the ink stick to the plate in the dark areas. However, even though you expose aquatint grains into the plate, open bites can occur, but only if you expose the aquatint screen for too short a time – then the grains simply become too weak and get washed away during etching.

### Open bite 1

Here you see a detail of the photopolymer plate with clear open bites - the shiny holes contain no

aquatint grains to hold on to the ink – the aquatint screen is simply exposed for too short a time.

### Open bite 2

Here the aquatint screen is exposed for a longer time and the open bites have become smaller in extent.

### Open bite 3

Here the aquatint screen is still exposed longer time - exactly so long that no open bites occur.

### Open bite 4

Here you see the print of the correctly exposed plate.

## THE IMPORTANCE OF THE EXPOSURE TIME

You have just learned the importance of the correct exposure time of the aquatint. Once you have exposed the aquatint screen exactly so long that you do not get any open bites in your final print, you can concentrate on the exposure time of the positive. Below you can see the result of different exposure times from 40 to 80 seconds – from which you can derive this main rule:

➤ Regarding the exposure time, this main rule applies: The longer you expose the plate, the brighter it prints. And the shorter the time you expose the plate, the darker it prints. And the shorter the time you expose the plate, the darker it prints.

## SINGLE EXPOSURE OF THE PLATE

The method of exposure that we have just gone over, is also called double exposure, because the plate is exposed twice before it is etched. First through the aquatint screen and then through the positive. This is how we have made photogravures since the late 1980s. Nowadays you have the possibility to work with single exposure. This can be done with the help of a new method, called "Direct to Plate", where you print the digital image directly on the photopolymer plate instead of printing on a transparent film, and the aquatint grains are generated automatically during the printing of the positive. This method I will go through later (see **page 57**).

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Same positive exposed different times

80 sec



60 sec



50 sec



40 sec

