



**THE**

**GREAT**

# PAPER CHASE

## PermaJet Digital Negative Transfer Film

A couple of issues back we looked at PermaJet Digital transfer film. At the time we knew that an improved offering was in development and promised to revisit the topic in the fullness of time. Well, here we are!

The new film has been introduced to overcome some of the shortcomings of the original and to provide a serious rival to the scarce but excellent Pictorico media. In particular the new Permajet media is very much flatter (we encountered no head strikes at all during testing) and also has a clearer base. Other than that we were in quite new territory and so we had to go digging in the archives and the back of cupboards to find test targets and instruments with which to do some measurements.

The workflow required to make a good digital negative is beautifully described by Lamrecht and Woodhouse in their book *Way Beyond Monochrome*; we have waxed lyrical about this book before. A summary of the process is as follows:

1. Prepare and manipulate a colour image in any way you choose, including montage, selective dodging and burning along with local contrast enhancements and filters to choice. The image is sharpened and converted to greyscale at this point although a monochrome RGB file would suffice as well.
2. Process control strips are added if measurements are required.
3. The computed transfer function is applied via a Photoshop curve. This 'corrects' the original so that a negative suitable for contact printing to Grade 2 Multigrade is obtained.
4. The image is inverted.
5. A negative is printed using the same settings as were used to create the print from which the transfer function was computed.
6. The negative is used to create a silver halide print by contact printing (or for that matter a platinum print).

Other than making the transfer function, the above is relatively straightforward.

Testing took us into the old territory of Quadrant Transfer Functions and other arcane methodologies that were once bread and butter to the serious monochrome worker. Sadly things have been dumbed down quite a bit these days and such fundamentals are rarely taught and even less written about\*. Originally patented by Lloyd A Jones in the 1940s (no relation to Phil) the system provided a way of refining the transfer of tone through the work process, so a reasonable quality print was obtained despite all the variations along the way.

\*Your editor was once told to write a book on mono printing but no equations or graphs were allowable in the proposed text. Hurter and Driffield would be turning in their graves; we are supposed to be professionals, experts in our field – if you can't be bothered to learn a bit of theory then take up knitting or pay somebody else to print for you!

Coming right up to date then we are seeking to make an image, adjust it (with curves) in Photoshop in the expectation that the resulting silver halide print will be a correct interpretation of the scene. Arriving at the correctly graded starting image involves a quadrant diagram. Now although a quadrant diagram is relatively easy to draw (on a big piece of paper) the job is better done these days using a spreadsheet to calculate the way around the four squares. This is a daunting task for a non-mathematician but fortunately Lambrecht has done all the hard work, providing a target, spreadsheet and comprehensive instructions on their website [www.darkroommagic.com](http://www.darkroommagic.com).

In the absence of a darkroom we could only follow the process so far but at least we could get our instruments out of their dusty old boxes and let them see the light of day for the first time in decades! Gratifyingly the densitometer calibrated within a hundredth of a point right out of the old box.

## The Choice of Settings

One thing we were able to explore was the settings range for inkjet printing of the digital negative – this, at least is familiar territory. The recommended choice is Photo Black ink (on the Epson) but we found the new material to be equally at home with Matt Black ink, indeed we obtained much higher Dmax in the negative with Matt Black. Both dried equally well with no hint of flooding. In each case the media selection was Premium Glossy Photo Paper for Photo Black and Enhanced Matt Paper for Matt Black. We also explored the use of 'full colour' profile printing and use of the Advanced Black and White driver. The data are tabled and it is obvious that there is a) scope for experimentation and b) plenty in the tank in terms of density and tone gradation.

Overall the results indicate:

1. The Pictorico and Permajet media are almost identical in response.
2. The Dmax is higher using Matt Black in the tests conducted to date, along with no obvious downsides.
3. The 'base fog' of the Permajet media is lower, ie it has a clearer, less milky base.
4. Using the Photo Black ink and a colour profile with a PGPP profile produced a weak 'print' with poor separation of the lighter parts of the film (ie the shadows in the final print). More work would result in a better quality 'negative' and there is nothing to suggest that top-class wet prints could not be made with either media. Using the ABW driver created a rapid transition of tones in the dark areas (ie the highlights in a wet print)
5. The Permajet media had a smoother transition into the dark parts of the film (ie the highlights of the wet print).
6. Despite our best endeavours we have done little other than scratch the surface of this topic, but at least we have proved that perseverance will almost certainly yield a really good wet print.

| INK   | Matt Black |                              |                                |                  | Photo Black |      |
|-------|------------|------------------------------|--------------------------------|------------------|-------------|------|
|       | Settings   | EMP Dark / 0 Optical Density | EMP Normal -20 Optical Density | PGPP Max Quality |             |      |
| Media | Permajet   | Pictorico                    | Pjet                           | Pic              | Pjet        | Pic  |
| Dmax  | 2.46       | 2.43                         | 0.42                           | 0.57             | 1.44        | 1.47 |



## Making a Transfer Function

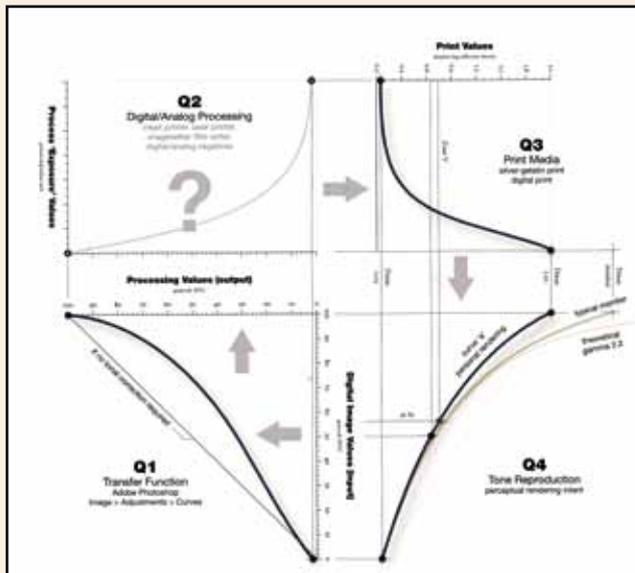
We followed the instructions as set out by Lambrecht on his website, first printing his tone target file. We used Photo Black ink along with maximum quality settings and Premium Glossy Photo Paper as the media choice with the relevant icc profile. A 4900 was again used. We also ran the Pictorico media through the same process.

We remain suspicious about the shape of the Photoshop curve that resulted from the measurements and it is obvious that more work is required; our inexperience with the process shone through!

Permajet provided samples to Chris Woodhouse for testing on his Canon printer. His main concern is that the inkjet inherently creates little shadow resolution.

*"There is still the overall limitation of the process, which is that inkjet process has far more highlight tonal resolution than shadow – and so in a negative process, achieving smooth highlight transitions will always be challenging."*

Chris got a Dmax of 1.6 and estimates that a paper grade of at least 4 would be required for a good silver halide print.



*The making of a quadrant transfer function is elegantly explained on Lambrecht's website but even better is the excellent book by Lambrecht and Woodhouse, Way Beyond Monochrome.*

## CONCLUSIONS

Overall we seem to have ended up with a few more questions than answers in this review! However, we can say that the Permajet media performs as well as anything on the market and is an improvement on its predecessor. The enthusiasts will no doubt take the experiments further and the media is worthy of this investment in effort. Our inclination is that the Epsoms will out-perform other printers when they have the extra monochrome inks in their carriage (eg the Black, Light Black and Light-light Black), experimenting with full colour printing might squeeze a bit more quality with the extra dots (as compared with say using the ABW workflow), although the effect of this 'colour' on the grading of multigrade papers might need watching. There is also the possibility of using the Epson 'film' settings when this is available again in combination with either ABW or full colour printing. If all this sounds like a ruck of hard work remember that the value of silver halide prints and, in particular platinum prints, might make the effort worthwhile!