

# DIGITAL PRINTING TODAY

What's new, what's next?  
Digital papers on test  
Royal Academy Schools  
Richard Hamilton  
Film or file?



## EXAMINATION: PAPER

There are more digital fine art papers available now than ever before. After carrying out this survey of them, artist and printer **Andrew Turnbull** was encouraged both by the variety and the different print options this range of media can now offer

Andrew Turnbull's sample proofs which include artwork by Andy Lomas, Joe McNally, Martin O'Neill, Phil Shaw, Paul Schütze and Turnbull himself

When I was studying for my MA in Printmaking at the Royal College of Art, I made my screenprints on Somerset Satin – a highly regarded, popular paper. Once I made the transition to making digital prints, I stuck with Somerset by opting for the specially coated version, Somerset Enhanced, which, again, is very widely used.

Later, after two years as a Print Fellow and running the digital print suite at the Royal Academy Schools, I set up my own studio specialising in digital printmaking. At this point, I also began to use Hahnemühle's fine art digital papers, Photo Rag mainly, which is also popular with artists and photographers.

That was then, however. Nowadays more companies are producing digital papers than ever before. Innova Art makes and distributes a wide range of coated papers, as does Permajet. John Purcell Paper is the exclusive distributor of a new range of coated papers from Arches, the French paper mill that was founded 500 years ago. With Senecio, John Purcell also makes and sells Woodstock; Senecio is, in addition, the distributor of Verona. Paper & Canvas Ltd is the UK distributor for the Breathing Color range of papers and canvas from the US. And some printer manufacturers, eg Epson, offer their own custom-made digital art papers. All these companies submitted sample papers for this survey but the list continues to grow. Lion PFS has recently taken on the distribution of papers and canvas from the German company, Tecco.

This survey has provided a welcome opportunity to try out

some of these papers. More often than not, when something works well for a printer, the temptation is to stick to it. Stopping work and running out trial proofs on many different papers to see what happens is a luxury that many printers find difficult to justify.

### Aesthetics

As the papers started to arrive and I began printing proofs, what struck me most was their diversity. The range of colours and textures was much wider than I had expected. And whilst the quality of the output was generally excellent, there were subtle variations between the proofs that could offer interesting options to artists and printers.

Why do we use digital art papers anyway? They are relatively expensive – often by far the biggest single cost of a digital print. The key reason, of course, is their aesthetic quality. In terms of weight, texture, feel and tone, they are a breed apart from mass-produced papers. Artists have been using the non-digital versions of the same papers for a very long time – for centuries in some cases! They like the fact that the reproduction of their watercolour can be printed on a digital version of the same paper on which they produced their original. Also, as a printer using and recommending such papers, I set myself apart from copy shops that happen to have a large-format printer.

Many of these papers are superficially quite similar. The range of what 'natural white' can mean only becomes apparent when you lay half a dozen 'natural white' papers together on a table.



Nor are the brighter papers ever really white, as a comparison with a sheet of office paper soon shows – a virtue as far as I am concerned. All are generally heavyweight but some are significantly heavier than others; the robustness and rigidity of the paper is important if you are printing a large-scale print. The Fine Art Trade Guild's Print Standards recommend a substrate of at least 250gsm for fine art prints.

#### Longevity

Digital fine art papers should help preserve images because they are made with high grade materials with proven longevity. This can mean either 100 per cent cotton, or possibly cotton fibre or chemically purified woodpulp with a high alpha cellulose content. Harmful acids either weren't there in the first place (cotton) or have been processed out. Again, the Guild's Print Standards recommend a pH for substrate of 7-9. Always check specifications with the manufacturer or a reputable supplier. By contrast, mass-market papers – newsprint, for example – contains a lot of lignin, which over time turns to acid and causes the paper to yellow and weaken.

Of course, the longevity of a print is dependent on a number of different factors. I use an Epson Stylus Pro 9800 printer with the UltraChrome K3 inkset. This inkset is pigment-based, generally agreed to provide much better lightfastness than dyes. The coating of the paper is also crucial and manufacturers have invested large sums of money to ensure a good balance between absorbency and vibrancy.

Digital prints, like many works of art, need careful handling. It is very easy to abrade the surface of these papers, especially the textured varieties. There continues to be a lot of research into the complex effects of air pollution and storage. The sooner the prints are protected by a frame the better!

I decided at the outset not to include photographic papers in this survey, though there are many fine ones. Artists tend to stick to matt papers so I have too. Neither have I looked at digital canvas, despite its massive growth in recent years. That is the subject of another article.

#### Sample proofs

I based my analysis of the papers on two sample proofs, one colour and one greyscale (illustrated on the facing page). Both contain a variety of images designed to test the performance of the papers across a range of areas. The colour sheet included a print out of the RGB spectrum direct from Photoshop so that I could look at colours in the range. (The file was set at Adobe RGB as required by the various profiles' settings.) Adobe RGB has such a huge gamut range that no printer in the world could print every colour exactly. I wanted to see how close (using an appropriate profile, on which more anon) different papers could come. The greyscale proof demanded the same of the printers across the greyscale range.

The sample included bright images, tonal images, shadows, highlights, fine detail and subtle gradations. I was looking for colour intensity and true blends, strong blacks without fill-in, good contrast without burning out, sharpness and softness.

I didn't use a spectrophotometer to measure colour output – that level of technical investigation is outside the scope of this article. I have rather relied on my eye in scrutinising the proofs – it's my job! There is an argument that you can prove a paper can produce all sorts of colours but that, in the end, beauty is in the eye of the beholder. To quote Mike McNamee of

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*Professional Imagemaker*, who has carried out exhaustive paper tests in his 'Paper Chase' series: 'Prints with poor statistical data can sometimes look quite good and vice versa'. The quality of prints on all the papers supplied was excellent; my aim was to see what different things they did well.

#### Profiles

In the test for uniformity, all of the proofs were printed direct from Adobe Photoshop, according to the profile settings. This simply means that I opened up the image in Photoshop on my Apple Mac and selected 'Print'. However, in all but three cases, the proofs were printed using profiles specially built for outputting from the Epson 9800 onto that particular paper. The exceptions were printed on third-party profiles either because a profile was not supplied or it was not compatible with my machine (see on).

Put simply, profiles manage the output of a file to a specific printer on a specific paper to ensure you get the best possible print. You need profiles because printers run at slightly different settings depending on the print media. At one time, profiles were not always easy to come by and could be expensive. Now they are widely available and can often be downloaded free from company websites. They are generally easy to install and operate: you select an appropriate profile in your 'Print' window as you send a job to print.

The alternative in a professional studio would be to build your own profiles, which can be used in conjunction with a RIP, but again that is beyond the scope of this article. There are many suppliers and distributors, including Senecio Digital, DCP Systems, Designline Systems and Fujifilm, who would be happy to advise you on RIP (Raster Image Processing) software. RIPs become an increasingly important consideration as your level of output increases.

In relation to output, it is interesting that some of the papers tested required the high speed print setting to be turned off. From the point of view of a professional print studio, this is not ideal because the aim is to work as time-efficiently as possible, not slow down your work rate. I have noted it when this has been the case.

#### Cost and availability

The primary concern for me will always be image quality, not cost, but price is bound to influence your choice of paper, which is why I have included recommended retail prices for the papers I have surveyed. Most, though not all, samples were supplied as 24-inch rolls, so these are the prices I have shown. All of the papers are available in cut sheets.

Some papers are less expensive than others for obvious reasons. The high-grade alpha cellulose papers: Woodstock from JPP/Senecio and Sterling from Breathing Color are both noticeably cheaper than the 100 per cent cotton rag papers. You pay your money and make your choice.

Availability is also a consideration. Some papers can easily be purchased at your local artists' materials or offices supplies shop. Others may require special delivery and carry extra postal charges. If your supply of paper runs low at an awkward moment, ready access may be important.

#### ARCHES

The profile available from Arches for its *Pure White Soft* 240gsm was for an Epson 9600 printer. After consulting

distributor John Purcell Paper, I used Hahnemühle's Photo Rag profile for the 9800 on my printer as the paper shares many characteristics with Hahnemühle's Photo Rag.

The quality overall was satisfactory, producing a range of colours that compared reasonably well with Photo Rag. However there was a slight 'burn out' in the low lights on the greyscale proof and less contrast overall in the colour proof. The lack of a profile specifically written by Arches for the 9800 could well be the problem here. It seemed well priced compared to Photo Rag but it is a lighter paper.

#### BREATHING COLOR

Breathing Color, a company that is based in the US and is distributed in the UK by Paper & Canvas Ltd, supplied two digital art papers.

*Sterling* is a 300gsm alpha cellulose paper with a smooth matt finish. The roll was very well packaged with foam and a waterproof sleeve, which minimises the problem of damage in transit – an expensive issue sometimes. This is one of the papers that required I turn off 'high speed' when printing, possibly a nuisance if you are running out prints in any quantity.

It felt an appreciably heavyweight paper in the hand. That it seemed to hold the rolled curve for a time could be an issue.

*Elegance Velvet* is a 310gsm, mouldmade, 100 per cent cotton rag paper, which was similarly well packaged. Breathing Color has only just launched its new coating for this paper, so we were privileged to try this out. The aim was to improve the quality of printed blacks, which seemed to be borne out by the excellent blends on our greyscale proof. The paper also has a beautiful, subtle texture. High speed printing again had to be turned off.

#### EPSON

An advantage in printing on Epson papers is that Epson profiles are pre-installed on your machine. My pick here – *Epson Ultrasmooth* – printed very well across the colour range, with no peaks of colour intensity, making it a safe, straightforward choice for users. Epson's profile for its Epson Somerset Velvet

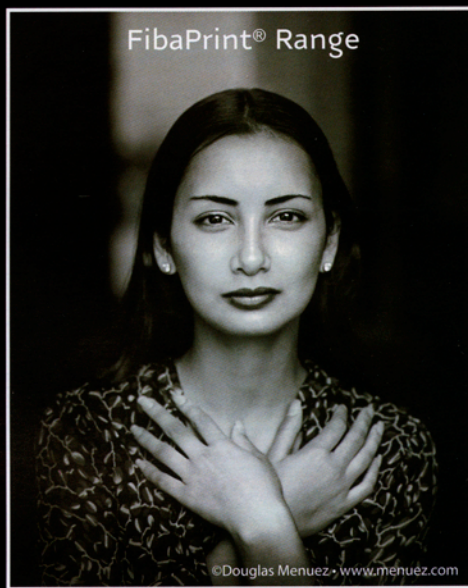


Andrew Turnbull examines a greyscale proof



# INNOVA

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on the Stylus Pro 9800 seemed to be well designed as it did a good job with both the Somerset and Senecio papers.

Ultrasmooth, a 325gsm, 100 per cent cotton paper with a natural white tone, was quite the smoothest paper of any of the art papers we tested here, including Hahnemühle's Photo Rag. This suggests, of course, that it is squarely pitched at the photography market, but it also has an appealing off-white/cream tone that slightly goes against the grain of photo papers. My sample showed slightly cooler reds than Photo Rag. The paper also produced nice, strong blacks and good blends.

### HAHNEMUHL FINE ART

Hahnemühle is one of the best known names in digital paper and for good reason. My experience is that while there are noticeable differences between Hahnemühle and other papers, there is less variation within the Hahnemühle range. So you can choose a texture that you like in the knowledge that you will get a uniformly high standard of output, even on the more textured papers. I often use *Photo Rag* and *Photo Rag Bright White* for illustrative and strongly graphic images, which look lovely and crisp against the brighter paper tone.

All four samples we looked at here produced deep blacks, very good highlight and lowlight detail and good colour contrast in dark areas. The lovely pale cream colour of the 308gsm Photo Rag (as opposed to Photo Rag Bright White) and the 350gsm *Museum Etching* produce warm black and white prints, which I like. Colours across the range were bright and rich, with outstandingly intense greens in comparison with other papers.

Museum Etching has a subtle, slightly more textured surface than Photo Rag and is slightly creamier. The 210gsm, 50 per cent cotton rag *Albrecht Dürer* also has an interesting, rather linear texture and appealing light cream colour.

### INNOVA ART

Innova Art, founded in 2003, by the team who established the Hahnemühle digital business, has a wide and diverse product range. All the papers printed well across the colour spectrum, with blues being especially well defined. Black and whites tended to be cool; greyscale blends were excellent.

I liked the light texture and cream colour of the 315gsm *Soft Textured*. The texture of this paper was visible in the black areas of some images, but whether you find that attractive or intrusive will be down to your point of view.

Innova's 315gsm *Rough Textured* paper has a distinctive, non-uniform texture and quite a strong, cream colour. It produced especially smooth greyscale blends. For example, a proof image of soft, concentric circles that becomes successively whiter towards the centre printed as a softly graduated 'ball'. Whereas other papers showed a defined, white centre in an image of graduated stripes, on *Rough Textured* this became a smooth blend right across the image. On the other hand, the fine detail of other sample images was also clear. Overall, this paper provides an unusual and interesting combination of features that I was glad to have found out about.

### PERMAJET

Permajet sent nine papers so, like Hahnemühle and Innova Art, they certainly offer an enormous selection of paper weights and textures. The company also provides a good range of profiles for each, which should mean that users can be confident of a

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### WHICH PAPER? WHAT PRICE?

MANUFACTURER	PAPER	WIDTH	LENGTH	PRICE ex VAT	SUPPLIER/DISTRIBUTOR
ARCHES	Arches Digital	24"	10.7m	£73.50	John Purcell Paper
BREATHING COLOR/	Elegance Velvet 310	24"	12m	£63.25*	www.breathingcoloruk.com
	Sterling 300	24"	12m	£42.37*	
EPSON	Ultrasmooth Fine Art Paper	24"	15.2m	£117.90	Epson distributors
	Watercolour Radiant White	24"	18m	£68.15	
HAHNEMUHL FINE ART	German Etching	24"	12m	£115.00	Hahnemühle distributors
	Museum Etching	24"	12m	£158.00	
	Photo Bright White	24"	12m	£145.00	
	Photo Rag	24"	12m	£141.00	
INNOVA ART	Rough textured	24"	15m	£110.89	Innova Art distributors
	Smooth Cotton High White	24"	15m	£141.03	
	Soft Textured Natural White	24"	15m	£110.89	
PERMAJET	Museum	24"	12m	£72.30	Permajet distributors
	Parchment	24"	12m	£68.04	
SENECIO	Verona	24"	12m	£51*	Senecio Digital
	Woodstock	24"	20m	£50*	Senecio Digital & John Purcell Paper
SOMERSET	Somerset	24"	10m	£80	Somerset distributors
*Discounts may be offered on quantity					

good result whichever they opt for. All seemed to be very sharply priced. My pick is the 285gsm *Parchment* paper which has a nice, mottled texture and the heavier, smoother 300gsm *Portrait*, which is rather like Hahnemühle's Photo Rag. Both papers printed nice, 'true' blues and gave excellent, very even greyscale blends.

### SENECIO DIGITAL & JOHN PURCELL PAPER

Only Senecio distributes the 100 per cent cotton *Verona* papers; Senecio and John Purcell Paper distribute the alpha cellulose *Woodstock* paper. Both papers are available in smooth and textured or 'watercolour' surfaces. Neither has a custom-built profile for my Epson 9800 available, so I took the advice of Senecio and used Epson's 9800 profile for Somerset Velvet.

Verona is an attractive, heavyweight paper that produced a great range of colours right across the spectrum, with good, distinct blues and greens (though no paper matched Photo Rag for greens). Reds were especially punchy, stronger than any other paper on test here. This is not to say you would necessarily want your reds to be bright in every image but it is a good option to have at your disposal. Better to have a vibrancy that you can tweak or knock back, than to start off with weak colour. Greyscale blends were also good.

The Woodstock paper is marketed as a highly cost-effective option for artists and printmakers: you get a lot of paper for your money. With this in mind, I would say that this is a nice paper with a cream tone similar to Verona. It didn't quite match the intensity of reproduction of some (more expensive) papers but there was a good tonal range across the colour spectrum.

### SOMERSET

The 255gsm *Somerset Velvet Enhanced* is a great option for any artist who is accustomed to using its traditional equivalent. It has a nice texture, which, though visible when printed is not overpowering and a distinctive, much admired off-white tone.

Given its venerable age compared to other, newer papers, Somerset Velvet Enhanced continues to hold up well. It

produced good, strong colour across the range and good tonal contrast in the greyscale. Having had many years' experience with this paper, I would add that it is very resilient to marking when printed. Prints don't seem to scratch or burnish easily, a real plus if you are handling an unframed print to any extent.

### Conclusion

Would I change my working practice and opt for a very different set of papers as a result of this exercise? Possibly not. The performance of Hahnemühle German Etching, Photo Rag and Somerset was very high. There are advantages to a 'closed loop' system, in which I know which papers I am likely to be using and what I can expect from them. However, the survey proved a very revealing exercise in trying out different tones and textures of paper and how much these could potentially add to a particular job. I could immediately see how the texture and colour of Innova's Soft Textured and Rough Textured papers could bring a very different quality to a print. I liked the wonderful smoothness and off-white colour of Epson's Ultrasmooth, which would work very well with some of the more photographic images I am printing. Senecio's Verona paper (possibly helped by a well-crafted Epson profile) produced superlative reds that I'd be very glad to have in my own work (see the front cover of this supplement). I also like the texture of the Verona W (watercolour) and Permajet Parchment paper. You can see how each of these had me thinking about particular jobs for which they might be highly suitable. In the end it comes down to personal opinion and I can only encourage you to try the expanding range of media for yourself to draw your own conclusions. ●

Andrew Turnbull studied printmaking at Loughborough, the Royal College of Art and Royal Academy Schools, London. He founded Digital Print Studio, London, in 2005 and has produced prints for several leading artists and galleries, including Alan Cristea Gallery, London. [www.dprints.co.uk](http://www.dprints.co.uk)