



Lasting impressions

Aargh! Your graphical work-of-art looks no better than a photocopy when printed out. What are you going to do? Consult Gordon Laing, of course.

It would appear that in the wide world of graphics and desktop publishing the two most popular subjects, in terms of requests or feedback to me anyway, are fonts and preparing for output. No, honestly, they really are. If you want to point me in another direction, please feel free! While there's another font feature brewing, this and next month's pages are devoted to the process of getting your hard work onto quality paper. But first, here are this month's news and snippets.

The legendary PaintShop Pro has returned in the 32-bit guise of version 4 for Windows 95 and NT 4, costing £49.95 (plus VAT) from Digital Workshop. Check out my review in this month's *First Impressions*.

Following its announcement in September, Adobe is gearing up to launch new versions of most of its applications. Due before Christmas is Photoshop 4, PageMaker 6.5, ATM Deluxe 4 and the much-hyped Acrobat 3. An up-to-date Illustrator for Windows is not part of the big roll-out, and its future on the PC platform remains a mystery.

Photoshop and PageMaker

Here's a taster of Photoshop and PageMaker, prior to their forthcoming in-depth reviews.

Photoshop 4 for Windows 3.x, 95 and NT, along with Mac and PowerMac, has addressed several key complaints about previous versions, particularly that of speed. Since we haven't yet tested a final copy we cannot verify performance claims, but the new Navigator palette is a big step forward. This displays the entire image

with a box representing what you see in the main window. Instead of blindly moving scroll bars on the main window, you can see where you are at a glance in the Navigator palette, quickly relocate to a new region and zoom in or out as desired.

Features like guides and grids are so obvious, it's a surprise they weren't there earlier. Just drag 'em out as you would with any DTP or illustration package and even get elements to snap to location, if desired. Web designers will like the addition of new filters including Portable Network Graphics (PNG), Progressive JPEG and Adobe's own Acrobat Portable Document Format (PDF). Web formats and page design will be covered in forthcoming columns.

With 48 new effects filters, but still only one undo step, many users will find themselves performing actions they may regret. With Photoshop 4, it is now possible to have an effect as a layer in the Layers palette. Simply move it around to affect different layers and switch it on or off as desired. Those interested in automation will

be pleased with the new Actions palette which can store sets of editable instructions to perform on a multitude of files.

PageMaker 6.5, for Windows 95 and NT along with Mac and PowerMac, incorporates several innovative features which should help it recapture DTP market share from Quark XPress. Adobe is trying to maintain a common look and feel among its applications, and PageMaker 6.5 now features a Photoshop-style layers palette.

Placing elements on a page and sending them to the front or back is not a new DTP concept, but now you can place a number of page elements on a layer, then rearrange, hide or view them as desired. Adobe pointed out that you could have text in multiple languages on separate layers of a single document, enabling the selection of each as required.

Although remaining heavily committed to paper-based publishing, Adobe has increased the number of web-designing facilities in PageMaker 6.5. These include drag-and-drop hyperlinks from browsers straight onto your pages, automatic conversion of graphics to GIF and JPEG format, automatic reformatting of publications from portrait to landscape orientation, enhanced HTML export plug-in, and even a dedicated hyperlinks palette.

PageMaker is due for release in November, and Photoshop should be available by the time you read this.

The new-look PageMaker 6.5, with XPress-style frames and Photoshop-like layers



Final output

It's easy to fool yourself into believing your graphics or DTP job is complete after the final save. All you need to do is print it out, and surely that's as simple as pulling down the File menu and letting go at the right point. One click later and you've got your output. Right? Of course not. It is possible in some cases to successfully output in one go, but many graphics jobs require more thought and a few extra steps.

The trouble is that few of us have access to either the kind of printers capable of high-speed, high-resolution colour output on a variety of materials in a multitude of sizes, or even the facility to trim pages and bind them together in a magazine format with a shiny cover. Shame, really.

There are standalone colour printers which can satisfy the requirements for many jobs, but if you're after very high quality, perhaps in large format or at a high volume, you're most likely to have to employ outside help and this is where the problems arise.

The bureau, repro house, image setters, outside help or whatever you want to call them, are essentially just a bunch of people who bought a nice, expensive printer and scanner, have expertise on how to use them, and are willing to sell you both by the minute. Sounds great. All you have to do is design your work, get it to them, and they'll print it on their gear. Next thing you know, your work arrives with an invoice and, hopefully, no mistakes.

While invoice mistakes are pretty bad, I'm actually referring to mistakes with your work. But what could possibly go wrong? The main thing to remember is that their machine might not have the same features that you take for granted on yours. They must have the same fonts you've used, for one thing, or substitution will occur. They must open your document using the same application with which it was created: it's no good giving them a PageMaker document if they can only read Quark XPress, however good their conversion filters may be. PC-to-Macintosh conversions and vice versa are even more problematic, and pictures can be a nightmare. It's all very well leaving gaps for photos, but if they don't know what goes where and which way round, you could be in trouble.

Getting your work to them can be fraught with difficulties. There are few graphics files which fit on a floppy disk. With tens or even hundreds of megabytes, you're in the realm of removable drives, such as the SyQuests and Iomegas of this

world. Just make sure the bureau has something that can read your disks. One-gigabyte Jaz drives may be cool, but few repro houses are equipped with anything other than the ubiquitous 44Mb 5.25in SyQuest cartridge. Even the later but still dated 88Mb and 200Mb carts are rare.

Perhaps you're in a rush, so the post is no good. Overnight won't do. If a courier is too slow, you could be looking at sending files over the phone. Once again, it's no good having a speedy modem or ISDN line if they don't have one at the other end. The transportation of large files will be covered in a future column, so here we'll concentrate on preparing colour documents for output on a commercial printing press, a process known as pre-press.

A commercial printing press is only capable of printing one colour at a time, each laid down in a separate pass. The fewer the passes, the quicker and, consequently, cheaper the job will be. If your document consists only of black ink, the machine operator has only to fill it with black ink and run your paper once through the press. Perhaps you want black for your text, but a nice bright red logo too? In this case, the printing press is loaded with black ink and the paper is passed through, then the press is reloaded with red ink for a second pass.

On the spot

Pre-mixed inks such as these are known as spot colours and are often chosen from a book in a similar manner to choosing paint at a DIY store. Consistency and accuracy is the beauty of choosing colours in this way. If everyone owns a copy of the book and someone talks about using the red on page 36, everybody knows exactly what colour is being described. The most famous spot colour collections include Pantone, Focoltone and Truematch, which may also feature examples of their inks on a variety of paper types.

So far so good; but what about a full-colour photograph with countless shades? One ink at a time is not going to be suitable for this kind of continuous tone image. In fact, printing more than four to six inks per page becomes prohibitively expensive.

It is possible to fool the eye into perceiving full colour by mixing varying amounts of the key primaries. Monitors and television sets transmit red, green and blue light which mix to create any colour required. All of them together make white but if none are present you get black. This is

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known as the additive RGB model.

However, on a printed page the inks absorb incident light, the remainder of which is reflected to our eyes. This absorption, or subtraction, of light by the inks results in a colour model based on cyan, magenta and yellow primaries. Magenta ink absorbs, or subtracts, green from white light, leaving red and blue light which mix to make magenta light. We therefore perceive magenta ink as magenta colour. Mixing cyan, magenta and yellow ink means all light is absorbed, resulting in the perception of black. More obviously, no ink at all results in white.

This is all hunky-dory in theory, but physically mixing cyan, magenta and yellow ink on paper results in muddy brown. Since black is such an essential colour, particularly for type, most printing processes include a dedicated black-ink pass, hence, the common four-colour subtractive CMYK process, K representing black.

Commercial printing presses, like most printers, are incapable of printing shades of an ink. It either places a dot of ink, or it doesn't. Consequently, shades are created by printing dots of different sizes, a process known as halftoning. When viewed from a distance, groups of big dots are perceived as dark, while groups of small dots are perceived as light. Look closely at a newspaper photo and you'll immediately see the differently-sized dots working in groups to give the impression of shades.

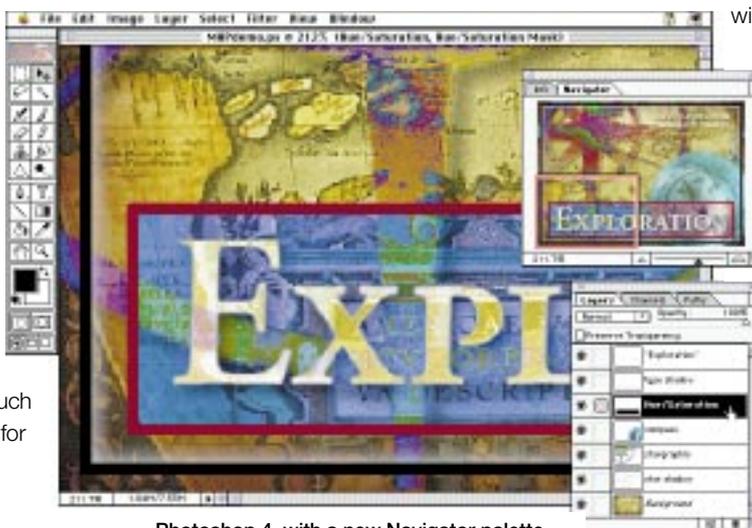
Full-colour CMYK printing uses exactly the same trick but places the dots at four different angles to ensure they don't overlap. The resulting rosette (as it is known) can be seen on any billboard poster or, using a magnifying glass, viewed on a magazine page. When you see a solid colour with no rosette pattern, you've found an example of a spot colour which in full-colour printing would be an expensive fifth pass. Most magazines can afford to use a spot colour on their covers, usually for the logo which must stand out.

Along with looking good, spot colours can also be used to provide colours that the CMYK model simply cannot create, such as those which fall out of the possible range, or specialist ones like gold, silver or laminate.

It is possible to print shades of spot

colours. These are known as tints, and are described as a percentage of the original. Tints are also created using the halftone process. Once you know what you're looking for, you'll easily recognise which colours have been used, especially on food and drinks packaging.

The printing press needs to know which inks to put where. In practice, it is supplied



Photoshop 4.0, with a new Navigator palette and effects applied as layers

with a separate plate for each ink, resulting in, say, five plates to describe cyan, magenta, yellow, black and an additional spot colour. We don't have to worry about plate-making, only that these component colours must be separated from the original full-colour image and from each other.

Fortunately, colour separations can easily be made by most decent graphics and DTP applications. Have a closer look at the options in your printer dialogue box and you'll commonly find the facility to separate colours. The application and printer driver then outputs sheets dedicated to each ink used: one for cyan, another for magenta and so on. These sheets are subsequently made into the plates which drive the printing press. Since each sheet is clearly labelled as to which ink it will eventually represent, there's no need for it to be made in anything other than black and white. Even if you're not going to use a printing press, it's a valuable educational exercise to take a full-colour document and have your application separate it, to illustrate the theory.

The resolution of an image represented by halftones is down to how many of the different-sized dots you can place on the page. Most printers are not only incapable of printing shades, but are also unable to

print different-sized dots. Consequently, each halftone dot is made up of many printer dots. The more dots your printer has to play with, the greater the number and variety of halftone dots it can create.

Magazines such as *PCW* print 133 halftone dots per inch (known as lines per inch, or lpi) and require 256 shades of grey. This means 256 possible sizes for

the halftone dots. It is achieved

with a 16 x 16 grid of printer dots and turning various amounts of them on or off. To make the separations we therefore need to use a printer that is capable of printing 16 dots, 133 times per inch. That's over 2,000dpi, which is why most repro houses, with their expensive printers, make the separations themselves. Of course, if you've got a 1,200dpi laser and require neither as many shades of grey nor lpi, you could save

money and make your own separations. Remember, you will be charged for the amount of time it takes to make the separations, so if your pages are complex and full of big images, they will be pricey. Repro houses use high-resolution printers (image setters) which output on transparent film, because most paper has difficulty resolving such small dots and film is easier to make plates with.

I hope that's cleared up a few uncertainties and got you thinking about using the facilities of a repro house. Next month, I'll talk about the unfortunate fact that CMYK inks can only print a limited range of colours and, worse still, are incapable of reproducing many of the colours you see on-screen. I'll go over colour management systems that ensure you don't get any nasty surprises, as well as the truths about expensive repro house scanning, including the times when the job can be done equally well for nothing, using your own desktop scanner.

•PCW Contacts

Any repro tips and tricks? Please get in touch with me at the usual VNU Broadwick Street address, or electronically as gordon@pcw.cmail.compuserve.com

Adobe 0181 606 4000
Digital Workshop 01295 258335
Fontworks 0171 490 5390