Using Quark (or InDesign), Illustrator, and Photoshop together

(and how to set up your scanner and TIFF file for best results)

Way back in the mid-eighties, when QuarkXpress, Photoshop and Illustrator were new, choosing the right application to do a particular job was intuitively simple—in part because each program served to replace a specific, separate, pre-DTP tool or service, but mostly because the majority of jobs could be done well in only one program. Illustrator was for hard-line drawing; Photoshop for photograph correction and manipulation; and Quark was for typesetting and designing pages. A few examples of why this was true: Type tools in Photoshop were so rudimentary that a designer would not consider using them for setting more than a word or two. Illustrator, originally a tool for informational art and technical drawings, was better at type, but lacked the ability to spell-check or set type in multi-column or multi-page format. Only Quark and similar programs truly replaced the typesetting firm and paste-up table. In general, computers were slower. Trying to get a photo program to set type, or a type program to draw was bound to be a frustrating experience.

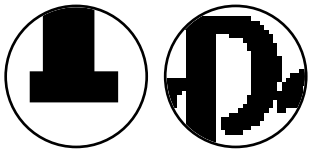
As the three programs have developed, they have not just become better at their core function, each has slowly spread into territories once dominated by the other two. This "spread" is a mixed blessing. On the one hand, each program is more functional, but at the cost of processor speed, ease of learning and simplicity of use. Additionally, it may now seem to a student designer that he or she can get by with only one or two of the core programs. Photoshop has advanced type tools, and allows for special effects to boot. Illustrator allows you to set up multi-page documents and has a spell checker. Even QuarkXpress has crude drawing tools.

It is true that Illustrator probably has developed enough as a design tool that its use for occasional single-page ads, fliers or covers is appropriate. However, because of the way it saves digital data Photoshop remains inappropriate for setting type (except for use on the web or if a special effect is desired) and for multi-page documents or periodicals, only a true layout program—with editable master pages and style sheets, superior font metrics, and text editing tools—is truly up to the job. Both QuarkXpress and InDesign are good layout programs, Framemaker, now owned by Adobe and developed specifically for educational and technical documents is also recommended.

However, students often become frustrated when using Xpress, Photoshop and Illustrator together, in part because of a misunderstanding of **Postscript** the common language that allows the programs to "talk" to one another and the printer, and in part because of less than optimal decisions about which file types and formats to use. this handout is designed to help students with these issues.

Even relatively simple pages are often made using all three standard design programs.

Banner (nameplate): **Freehand** (similar to **Illustrator**)
Why? The banner, as a logo, is a custom piece of typography. Individual characters are modified as can only be done in a drawing program like illustrator. (note extra-short descenders, and shape of the serifs on the bottom of the "i."



Why not design logos in a paint program like Photoshop?
Logos can be used very large—up to billboard size. Using a vector-based program like Illustrator assures that the image will look sharp no matter how big it gets.

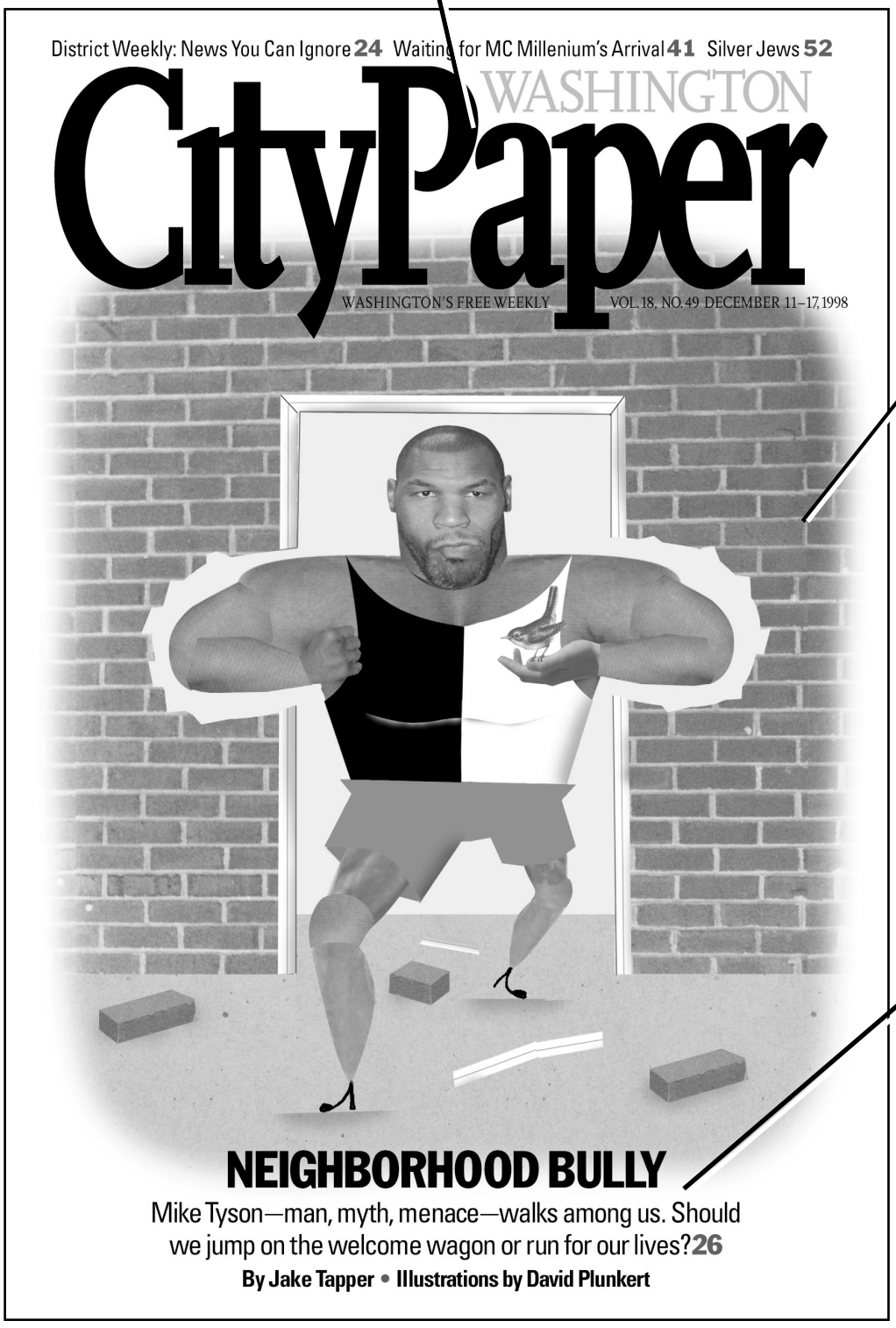
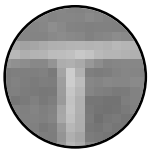
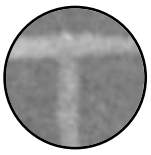


Illustration: Photoshop

Why? Photographs and complex illustrations can only be created on a computer through simulation. Actually a Mosaic of Millions of squares of color, and/or tone, the illusion of of smooth graduations and photo realism are maintained as long as the tiles (**pixels**) in the mosaic are too small to see.



This low-res. version reveals the pixels. Note that most images found on the web appear smooth on a 72dpi screen but are obviously crude when printed.



This 25 lpi dot screen "hides" the pixels, because the pixel count per inch (dpi) is much larger than the screen count per inch (lpi). For a typical screen of 133 lpi, you would want a dpi of 266.

Page & Type: QuarkXpress

Why? Quark's job is creating sophisticated type, and combining images created in other applications. While this page is simple enough to make in Illustrator, Quark handles type better. Further, using Quark (or InDesign) for all pages ensures that page size, type settings, and grid match other pages inside *City Paper*, for which using Illustrator would not be an option.

Postscript and Importing into Quark.
A common concern students raise is that their illustrator and Photoshop file looks fine on screen, and when they print it from the native application, but crummy on screen once in Quark—or worse, bad when they print it from inside Quark. The first issue: bad screen quality is for a good reason, the second, print quality, is usually caused by one of three problems:

Illustrator (and Photoshop) files look bad on screen in Quark
Photoshop and Illustrator are each designed to edit one fundamental file type. In Illustrator, images are described mathematically; in Photoshop, images are described as mosaics of tiny squares of color. Quark's method of information storage is similar to Illustrator's, but must also account for complex composition data. However, Quark files can also contain imported information from many different programs. To reduce file size and complexity, Quark does not bring Illustrator and Photoshop Documents into Quark in the sense that all data in the imported document is incorporated into the Quark document. Rather, Quark creates a low-resolution proxy image of the imported document which the designer can use to size and position the imported file. Quark also remembers the imported document's location on the hard drive, and uses it for printing. The "low res." version that Quark creates is only meant to be seen on screen, and is kept small to benefit users of older and slower computers.

Illustrator (and Photoshop files) look bad when printed from Quark
There are three likely explanations for this problem, all of which can be resolved.

1. **The image looks as bad as the screen (proxy) image.** (Illustrator & Photoshop). It is possible you *are* printing the image Quark creates for screen display, which is what happens when the link between Quark and the source file is broken. Remember that for correct printing you must have not only the original of all files brought into Quark, but also all the fonts you use. Under Utilities → Usage... you can relink supporting files to the Quark document. Also note that you have choices about how good Quark proxy images will be. Use preference settings to change resolution and color depth. (Preference changes will only effect images imported after the changes are made.)
2. **The image looks fine on screen, but fuzzy when printed.** (Photoshop). Printer resolutions range from 300–4000 dpi. Monitor screens are typically 72 dpi. A much lower quality image will look good on screen than in print. For this reason images created for web or television display are usually not good enough for print. See the attached sheet for tips on scanning effectively.
3. **The image prints fine from Illustrator, but bad when I print from Quark to an inkjet printer.** Art printed from illustrator looks good, because you are printing the file from its native application. To export the file to another application you must change it to an **eps** file—encapsulated Postscript. Postscript is the lingua-franca of publishing software, nearly every program uses it to some extent. However, Postscript, a computer code, requires a printer which can interpret it. Postscript is common on laser printers, but is rare on the inexpensive inkjets that most people use. Try printing an imported illustrator file to an ink jet and the school's laser printer to see the difference. The most elegant solution is to purchase a Postscript RIP—Raster Image Processor—available most inexpensively as a software program from several companies including Adobe, which owns the Postscript language; as well as major inkjet manufacturers. Software RIPs are still not cheap, nearly doubling the cost of a 100.00 inkjet. A workaround solution would be to RIP your illustrator files through photoshop—a simple but time-consuming option. Open the illustrator eps in photoshop and choose a resolution when prompted. Be sure to choose a resolution that at least matches the resolution of your printer. You can also RIP Quark pages using the same technique.

Scanning and saving TIFF files for best results

How you choose to scan and save a bitmapped image image is based on the nature of that image. If it is mostly hardline art, like a pen drawing or a logo, it should be saved as a one-bit B&W scan. It should also be scanned at very high resolution, 600-1200 dpi.

This 600 dpi logo is scaled to 30% size, its effective resolution far exceeds that of the printer's. It looks smooth.

Note how large the logo can get before the bit map is visible

Line art scans are very small files, an RGB image is 32 times bigger than a bitmap image of the same size.

What if you want a line-art image to print in color or gray?
You can convert a bitmap to color in Photoshop, but there are good reasons not to. Color files of high res. art are huge, low res. files look blurry. It is easy to change the color or shade of a bitmap in Quark.

Two tone gray-scale file.

This is two copies of one bitmap file, sandwiched with one set to print 40% gray in Quark. Which logo looks better?

Bitmap files have a clean line. You can overlap them with other elements inside Quark.

This is a tonal file, Quark is "unsure" what should and shouldn't be visible.

Bitmaps have strong lines, knockouts are clean.

Bitmap files can also be overlapped, or collaged inside Quark.

Tips for scanning color and grayscale images

Students often ask what resolution photographs should be scanned at. There is no good answer to this question. 300 dpi is good enough for the most demanding print applications, 200 dpi is adequate for inkjets, but these numbers assume that you will be printing the image at close to 100% of the original size. Imagine that you scanned a picture at 200 dpi, but sized it to 400% inside Quark or InDesign. The resolution of the image as it prints is 50 dpi. The results will be rough. A resolution of 800 dpi is required to ensure the image prints at 200 dpi. Fortunately, for most purposes, a resolution that is approximately right is good enough. In other words if you scan at 300 dpi, but print the picture at 127%, a rescan is probably not necessary.

What format should I use for saving my file?
For print, TIFF is best for most purposes, including color work. Most of the options for file formats that Photoshop offers are for specialized purposes that most print designers will not encounter. Some like DCS (Desktop Color Separation) create huge files and are now obsolete. Postscript is useful for files that contain extra information. One reason for using PS is if you want to mask an image by including a bezier outline to create a knockout or text wrap. Another reason to use PS is it allows you to include PMS color information for duotone creation. Highly-compressed formats like JPEG can be useful for image storage or e-mailing—but should not be used for printing.

Should I use LZW Compression with TIFF?
LZW can make some tiff files much smaller. If the image is full of complex detail—imagine a photograph of a very detailed quilt—LZW will not have much effect. For one-bit tiffs with lots of white space, such as a cartoon, LZW will "boil" the image down to nearly nothing. LZW makes printing slightly slower, a concern if you are using lots of images. Unlike JPEG, LZW does not reduce the quality of the image.

Why would you scan a B&W image using RGB?
Everything you put on the scanner offers a range of tones. Many of these tones are beyond a scanner's ability to "see." However, scanners see a larger range in RGB mode than in grayscale mode. What difference does this make? Imagine a B&W photograph with important shadow detail. Scanning and adjusting that photo in RGB before B&W conversion, allows you to bring out that detail.

How do I save color images?
For print purposes, color images should be saved as CMYK files. Ink jet printers, color laser printers, offset presses—all but the most expensive print processes build colors the same way, by blending them out of the three printer's primaries (cyan, magenta, yellow) and black. If you print an RGB image, your printer or your computer program is translating the RGB file into CMYK on the fly, which is both more time consuming and gives you less control over color. For better color on an inkjet, and to save money on ink (assuming you have a separate black cartridge) Set Photoshop to create GCR (Gray-Component Replacement) separations with black generation set on "heavy" or "maximum." Why does this save your color cartridge? It forces the printer to create blacks out black ink, rather than by mixing cyan, magenta and yellow together.

Why is there an ugly white bitmap edge on my sufficiently-high-resolution TIFF image in Quark?
This is a software error in Quark. Changing the background color of the box from "none" to "white" will clear this up.