I started doing digital imaging in 1994. I bought a computer equipped with Photoshop and worked on negatives that I scanned. It was a fairly steep learning curve, but I soon became proficient. Having done conventional darkroom work in black-and-white and color for many years, I knew what I was looking for in the images I worked on. I began to appreciate that the amount of control I was able to exercise over the images I created on screen was far greater than what I was able to do in a conventional darkroom.

Epson Stylus color printer
A few months later, I saw sample prints from the Epson Stylus Color printer. Even though the quality was nowhere as good as a conventional photographic print, it was a lot better than I thought could be attained from an inkjet printer. I bought one to do rough prints of my black-and-white and color landscapes. Unfortunately, these prints were not anything I could sell or exhibit. The inks weren't long-lasting, and the prints appeared grainy, especially in the highlights. At this time only one paper worked well with Epson inks—Epson’s Photo Quality Inkjet paper. This paper (still available) was thin and probably not archival.

New Epson printer improves quality
My print quality improved significantly when I bought an Epson Photo EX printer. Graininess, especially in the highlights, was significantly reduced. These prints were almost as good as conventional photographic prints. Better Epson papers were available, such as Photo Quality Glossy paper, a semi-glossy paper with a surface similar to an air-dried fiber-based paper. Poor light-fastness of the inks and doubts about archivability prevented me from using this paper for print sales. But I was able to make prints for gallery exhibitions, if the viewer didn’t look too closely, the prints could be mistaken for conventional ones.

Difficulty of printing black-and-white with color inks
By now, most of the images I was working on were black-and-white. Before “going digital,” I spent years shooting color landscapes and making darkroom prints. I started doing digital imaging in 1994. I bought a computer equipped with Photoshop and worked on negatives that I scanned. It was a fairly steep learning curve, but I soon became proficient. Having done conventional darkroom work in black-and-white and color for many years, I knew what I was looking for in the images I worked on. I began to appreciate that the amount of control I was able to exercise over the images I created on screen was far greater than what I was able to do in a conventional darkroom.

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prints. I also shot a fair amount of black-and-white landscapes, but didn’t print many. When I began working on the computer, I scanned a few black-and-white negatives to see what I could do in Photoshop. I realized I preferred my black-and-white work better than my color work, and decided to spend my time in black-and-white.

However, printing a black-and-white image on an inkjet printer with color inks presented new problems. It was difficult to get a neutral image tone throughout the entire grayscale from shadows to highlights. Making shades of gray with color inks required precise amounts of cyan, magenta, and yellow in the correct proportions. If one ink was out of proportion by even the slightest amount, you’d get a color cast in that shade. What usually happened was that out of proportion by even the slightest amount, you’d get a color cast in that shade. Even worse, Epson inks in a black-and-white inkjet printer exhibited a good-consumption. Black-and-white image to color, and shade. What usually happened was that out of proportion by even the slightest amount, you’d get a color cast in that shade.

Epson’s Pigment Inkjet Paper was probably the best quadtone ink on the market, especially in terms of longevity and stability. The absence of dye in the gray inks and the availability of a black ink without dye (Museum Black ink) makes this ink very long lasting.

Since I was using a dark gray inks (about 1.73 on Hahnemühle Photo Rag paper) and a dye component of 8%, is a compromise and is used to compromise between the greatest longevity. Portfolio Black, with a dye component of 5%, is a compromise and is used to compromise between the greatest longevity and light-fastness. Unfortunately, this stage, it’s not possible to have a black with both a high density and a bright color in their prints. This was caused by some of the greenish dye component in the ink separating from the carbon pigment. This only occurred when the printer was not used for a long time.

To resolve this problem, one can use the introduction of PiezoTone inks. A complete new formulation, PiezoTones differ sharply from the original PiezoTone inkset. One of the features of PiezoTones is a less volatile solvent, which greatly reduces clogs. Because of the new solvent, the ink is non-active with CIS tubing.

PiezoTone inks are available in four different gray tones: Cool Neutral, Selenium Tone, Warm Neutral, and Carbon. The availability of a black ink without dye (Museum Black) makes this ink very long lasting.

Conce Editions publishes fade data for each of the PiezoTone inks, as well as the original PiezoTone ink and Museum Black ink on their website. After 1,000 hours under three types of light (about three years in bright sunlight), the PiezoTones with Museum Black exhibited very little yellow and little color shift. The original PiezoTone ink and the Museum Black ink faded and shifted color substantially.
The new Piezography

The original Piezography system, developed about three years ago for the Epson 3000 (and subsequently for various other Epson printers), required its own proprietary software. Epson’s printer driver was not used—the software separated the inks into four quadrutone channels and created the dither patterns that were sent to the printer. The disadvantage of this approach was that new software had to be developed whenever a printer was added to the Piezography line. Developing software could take up to a year. In addition, buying specialized software was an additional expense—$149 for the Photoshop plug-in (which supported various Epson desktop printers), and $1,500 for a stand-alone RIP (which supported Epson’s wide-format printers, as well).

This has changed. Piezography now uses the printer manufacturer’s driver and dither pattern. The quadrutone separations are handled by ICC-compliant profiles produced by a profiling application that Cone Editions developed for quadrutone printing. Because these are ICC profiles, any program that can open a grayscale image and print it can be used for Piezography. And, if the program you’re using is ICC savvy (like Photoshop and other image editing programs), the ICC profiles can be used for soft proofing. This means that you can see not only the color of the paper and the hue of the inks on your monitor, but also the contrast and tonal range of the image as it will print. By using the printer’s own driver with quadrutone profiles, Piezography can be used with Canon, as well as Epson printers.

Recommendations

For anyone interested in pursuing Piezography, I recommend visiting Cone Editions’ Piezography web site at www.piezography.com. There is more information there than I can provide in this article, including prices and what printer/paper combinations have profiles. Cone Editions can send you print samples of each of the four PiezoTone inks. You can also check out the Piezography discussion forum on Yahoo Groups—go to www.yahoo.com and sign up for the Piezography 3000 group.

If you already have a supported desktop printer, or if you decide to buy a printer for Piezography, you can start off using cartridges. This gives you the opportunity to try the four different varieties of PiezoTone ink. Afterwards, you can buy a CIS and purchase PiezoTone ink bottles.

Epson’s Archival Matte paper (now called Epson Enhanced Matte) was my favorite paper for printing Piezography. It had good tonality, good Dmax (around 1.65 with the old Piezography inks), a smooth matte surface, and was inexpensive (about 90 cents for a 13x19-inch sheet). It’s not a very thick paper (10 mils), but is thick enough so it doesn’t buckle under a lot of ink.

However, the archival quality of Epson’s “Archival” Matte was always questionable. This paper is neither 100% rag nor purified wood pulp. There are now better papers available. I now use Archival Matte to print promo cards and as a proofing paper since it’s cheap and looks as good as the other papers.

Cone Editions will soon introduce profiles for the new Piezography system on a printer-by-printer basis. No longer limited to Epson printers, these profiles will include Canon printers, as well. In a follow-up article, I’ll report my findings testing the new profiles on an Epson 7000 and Canon s820 printer. I’ll also report what Dmax I attained printing Piezography on Epson’s new paper.

Legion Photo Matte is a good substitute for Epson’s Archival Matte (EAM). It’s about as thick as EAM, but it’s made of purified wood pulp and is acid free. The surface is as smooth as EAM, but the paper base is whiter. However, the paper cost is about double that of EAM.

My favorite paper is Hahnemühle Photo Rag, which is becoming very popular. It’s a 100% rag, acid free paper with a smooth matte surface and slightly more texture than EAM. The paper base is also warmer. It’s available in four varieties: lightweight (about 11.5 mils) coated on one side; lightweight coated on both sides; heavyweight (19 mils) coated on one side; and heavyweight coated on both sides. The dual-coated paper can be used for making books, calendars, or anything that requires two-sided printing. This paper produces the greatest Dmax (so far) available with Piezography inks. Paper cost is between $3.50 and $4.00 per 13x19-inch sheet, depending on thickness and whether its single or dual-coated. I prefer single-coated, heavyweight paper for my exhibition prints.

What’s coming

New developments in inkjet printing (especially in quadrutone printing) occur almost weekly. For instance, Epson recently introduced Ultrasmooth paper, said to yield a Dmax of almost 1.90 with Ultrachrome matte ink. This paper may have the possibility of a greater Dmax with PiezoTone Museum Black. If Dmax can be increased substantially, this could be the definitive paper to use for Piezography, with great blacks and great longevity.

Conclusions

What Cone Editions will introduce in the future is uncertain. We’ll have to wait to see how this new Inkjet Age develops. In the meantime, I’ll be exploring the potential of these new profiles on my Epson’s 7800 and Canon s820 printer.

A standard and panoramic photographer, John Custodio has photographed landscapes in the West and Southeast since 1988. He has a bachelor of fine arts degree in photography from the School of Visual Arts in NYC, and works as a video editor on documentaries for independent producers. His work has been seen in NYC, exhibited at Soho Photo Gallery, E.3 Gallery, and The Camera Club of New York, among others. For information, visit www.johncustodio.com.