

Good morning! A few weeks ago my friend Steve Rosenblum packed himself off to Vermont to take a Jon Cone Workshop. This is his personal report. Please note: all the illustrations for this article can be found [here](#). The regular guy will be back next week.

Review: Cone Editions Press Complete Digital Workflow Workshop

By Steve Rosenblum

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Jon and Cathy Cone live near Powder Spring Creek in the small hamlet of East Topsham, Vermont. The drive along Route 25 on the way to the area quickly reveals that this is not your liberal, Dean-voting Vermont enclave. The Waits River, a gorgeous trout stream, hugs one side of the road. Barns on the other side have big "Take Back Vermont!" signs painted on them, an expression of their occupants' displeasure with Vermont's Civil Union law which grants a degree of legal standing to gay couples. A recent proposal for part of this region to secede from Vermont and join nearby New Hampshire failed, but remains a local topic of conversation. It is a place where houses still carry the names of the family that built them for generations after they have died and roads are all named for the people who lived next to them.

In 1990, Jon and Cathy moved to this beautiful and remote rural area from New York City where Jon had owned Cone Editions Gallery in SoHo, and Cathy painted her own mixed media works. Jon had a long [history](#) of collaborating with other artists to push the boundaries of traditional printmaking techniques in order to help them realize their own creative vision. By the time he moved to Vermont Jon had already been collaborating on projects that combined computers with non-traditional printmaking methods for several years. He built the 4200 square foot Cone Editions Press studio across from his house and it has become a temple of digital printmaking innovation, education, and output.

Cone developed the first quad black inksets and software for the IRIS printer which he had been using previously to produce fine art non-photographic prints. He became very involved in IRIS printing techniques, training a generation of Giclée printers as well as becoming an IRIS dealer. As the IRIS organization began to fall apart in the 90's and desktop inkjet printers emerged he became intrigued with the possibility that a quadtone system could be adapted to the Epson Stylus 3000 printer which was widely available and cost only a few percent of the \$100,000 IRIS machines. Out of this effort at software and inkset development emerged the original PiezographyBW system.

PiezographyBW was an attempt to overcome the inherent limitations imposed by traditional halftone printing methods upon non-silver-based black and white photographic print making. In traditional halftone black and white printing shades of "gray" are conveyed by varying the number and size of

black ink dots on white paper. Some digital printers have adapted the halftone technique in what has been dubbed the "Single Black" method, which attempts to use only the black ink cartridge to reproduce all of the gray tones in a photographic image. While this technique certainly has an aesthetic appeal of its own, it is limited in its ability to produce fine gradations in grayscale tone.

Jon Cone's innovation was twofold. First, he developed an archival pigment-based ink set spanning the tonal range from light gray to dark black (each in its own cartridge) that could be sprayed through the tiny ink jets of a desktop printer. Pigments replaced dyes in order to extend the longevity of the prints to the point that made the sale of such prints reasonable. Next he developed software that would assign the appropriate tonal values to the right inkjet head and (most importantly) instruct the head to apply its ink dots at a small size and high frequency for that range of tones.

Each inkjet head is able to spray dots in a range of size and density from low to high and this range can be described by a curve. The intersection of these curves and the dithering pattern of the printer determines the smoothness and range of tones that can be achieved by a particular printer/inkset/paper combination. Cone's breakthrough was to develop software that applies a specific curve through a custom printer driver which instructs each printer to fire its heads so that the output intersects and overlaps exactly at the "sweet spot" of these curves. This technique produces the remarkable lack of visible dots and smooth tonality for which Piezography prints are known. Suddenly, it was possible for a photographer to produce fine art quality inkjet photographic prints at home utilizing a \$150 dollar printer and a \$300 software package that previously could only be produced on a \$100,000 IRIS printer with a \$20,000 RIP.

Like all revolutions, this one was not without its own trials and tribulations. The first set of problems that emerged can be related to the nature of the desktop inkjet printer itself, an amazingly complex device that is sold at a loss so that the manufacturers can make a huge profit on ink and paper supplies (a model that, to me, most closely resembles the corner drug dealer who gladly gives out samples to potential new customers knowing that they are sure to pay retail prices long into the future). The "consumer" class inkjet printers are essentially disposable devices that were designed to deliver (very expensive) dye based ink to (very expensive) proprietary paper by users who make relatively few prints per day. Their product cycle is a matter of months, and the manufacturers expect that they will be replaced frequently. Until recently they were not designed to deliver archival pigment based inks in a production environment. When Piezography was rapidly and enthusiastically embraced by a segment of the fine art printing community problems quickly surfaced primarily related to clogged ink jets. As internet forum postings about unclogging jets with Windex proliferated, the product developed a reputation as a finicky, high maintenance system which produced wonderful results. Cone refunded thousands of dollars to customers who developed significant problems with the first version of his ink which eventually led to litigation between himself and one of his co-developers regarding who was financially responsible for the problems.

The printer manufacturers have created the second set of headaches for Cone. Epson initially embraced him as the pioneer that he is, gave him developer status, and took him to shows with them to demonstrate what their printers could really do. Eventually, however, they realized that he doesn't

use their ink with his process ("Not made here!") and in fact sells his own ink to use in their printers. Since they are really an ink company they decided that he was a competitor, withdrew his developer status, and have harassed him with legal maneuvers since then. He has had to fight Epson in court to protect his trademark of the name "Piezography" where he has prevailed in most markets. Then there is the issue of whether putting one company's ink in another company's inkjet cartridge is a patent infringement. Canon was also initially enthusiastic but has recently cooled for similar reasons. Given the proliferation of non-OEM inkjet cartridge manufacturers, this seems like a moot point; however, defending oneself in litigation is an expensive proposition for a small company. The notion that Cone is a real competitor for the inkjet companies seems strange given the millions of inkjet printers that these companies sell versus the total Piezography installed base of perhaps 5,000 users. Still, there it is.

Jon Cone is not a man who is easily cowed. At age 46, he looks like a Rastafarian rabbi with a long pigtail hanging down his back and blazing dark eyes. He teaches martial arts in the nearby town of Bradford and tries to adhere to the samurai's honor code. In person, he is an exceedingly engaging and forthright person. His enthusiasm is infectious. Cone Editions Press studio is a world class state of the art digital print making facility manned by brilliant employees who are clearly passionate about their work. Multiple large format Epson and Iris printers, Sony and LaCie monitors, and a huge Hell drum scanner occupy the main work area where Larry Danque is busily turning out astonishingly beautiful prints for an international cast of artists and photographers. Upstairs, Geoff Spence and Jeff Hirsch are working away in a private area on the latest applications of the Cone printing technology. When Cathy Cone isn't painting she works nearby in her office organizing and coordinating the many workshops and resident artists who make the trek to rural Vermont each month to learn how to apply the new digital paradigm to their own work. Inkjetmall.com is a separate company located in Bradford, Vermont which sells Cone products.

The four day workshop that I attended on "[The Complete Digital Workflow](#)" was a superb learning experience for me. It is a kind of "boot camp" for people who already have some knowledge of Photoshop and want to know how to establish a high quality digital image processing and printing workflow. It's intense and the participants make frequent use of the automatic espresso maker upstairs. The topics include everything from how to properly set up and light your studio space (Cone prefers 5000K lighting and proofing booths, and CRT's adjusted to D50/1.8 gamma), what is the best equipment to buy, hands-on calibration and profiling of monitors and printers, and how to use Photoshop to best optimize and print your photographs. The last day participants were turned loose in the studio to make prints with the enthusiastic encouragement of their teachers.

Of the eight workshop participants I am sure that I was the least accomplished photographer. People came from as far away as Alaska and were divided between professional fine art photographers, painters, archivists, and teachers. Their work was uniformly of very high quality. We each were assigned our own work station consisting of a computer, monitor, calibrated viewing booth, printer, and calibration/profiling equipment. Much of the teaching took place in the working portion of the studio by those who produce the prints on a daily basis. Most of us stayed together at the Bowen House in nearby East Corinth, so the interchange of ideas continued on into the evening. The food

provided at lunch was truly gourmet in quality. In fact, gourmet cooking and wine is a common topic of conversation among the folks at Cone Editions who, despite their remote location, seem to be able to obtain even the most unusual ingredients to add to the creations of their kitchens.

In response to my request for an interview, Jon and Cathy Cone invited me over to their house one night where Jon made us a Portuguese version of paella. His kitchen looks like one you would find in a high end restaurant with a Viking stove, gleaming stainless steel work surfaces, and dozens of pans hanging from the ceiling. Jon relaxes by taking cooking lessons at culinary institutes around the world and it shows in his cooking. I had developed a set of formal questions that I planned to ask him, but I confess that after the second bottle of fine Spanish wine my interview turned into an incredibly interesting conversation, so I am left with fewer direct quotations and more of a gestalt of the man. He is unabashed about the initial problems that people had with Piezography and has worked steadily to correct those problems and improve the products. The new PiezographyBW ICC product uses custom ICC profiles with the standard Epson drivers to accomplish what the old product did with a proprietary set of curves and a custom driver, and the results have been for the most part excellent. Developing and supporting a product across most operating systems, hardware platforms, and multiple printer models remains a challenge, but he is dedicated to providing the user with inexpensive, powerful printing tools.

He does not believe that it is reasonable to expect to have a product of this power and sophistication work flawlessly in \$300 printers indefinitely. Cone Editions has found that not all Epson printers come out of the box working well, some printers are better or worse than others even when brand new. Using his technique it is possible to produce on a \$500 system what used to require \$120,000 to produce, but there are caveats. The Epson desktop printers do require some attention and maintenance to produce prints of this quality, the heads are prone to clog and don't last forever. Cone suggests that anyone who is doing time critical jobs have two printers in case one malfunctions. For anyone who wants to engage in serious digital printing he suggests that they use the large format printers such as the 7600, 9000, or the upcoming 4000 Pro which are designed for pigmented inks and production work loads. The Epson 2200 is a more rugged desktop machine and he hopes to bring out an inkset for it once the patent issues surrounding the use of the cartridges are further clarified.

In his own way, he seems to relish playing David to the Goliaths of the printing world. This attitude pre-dates his interest in digital photographic printing to the days when he championed alternative approaches to traditional art printing techniques. It's there in the Kung Fu he practices as well as in the motor cycle races he strives to win.

"I wish that companies like Epson would view people like me who try to push the envelope with their products in the way that Ford views the people who race their cars. We are helping to advance the use of their products by developing new techniques. But (he shrugs) they don't. That is the nature of the world I work in."

He is equally unmoved by the "is digital photography *really* photography" discussion that rages on the internet and in magazines. "Look," he says, "the same thing happens whenever a new technique or media appears on the scene. It's always trashed by the artists who are using already established media. One of the reasons why I liked silkscreening was because it was looked down upon

by many printmakers as not being 'real' printmaking. Now it is well accepted. Same thing with lithography. In fact, photographers of all people should understand this the best. Photography has only recently been accepted as a 'serious' medium. At first, other artists derided photographs as 'instant art' that lacked the 'craft' of other art forms such as painting. Now many photographers are saying the same thing about digital techniques, calling it 'instant art' which lacks craft. It's just a matter of time before it's accepted, like the other media before it. You know, I have always honored the look of traditional photographic prints because that is the background that I come from. But, truthfully, the real advances in photographic printing will happen when artists start to really take advantage of what digital printing has to offer that traditional methods do NOT offer such as near total control of local contrast in the print. That is when this technique will truly be accepted." My guess is that by the time that happens, Jon will be working on yet another new technique, undeterred by the nay-sayers.

"The Complete Digital Workflow" workshop suited my needs quite well. I was already using a color managed workflow so I initially thought that the emphasis on color management in the first few days would be wasted on me. To my surprise, I found that my home methods were, in fact, faulty in some ways and I learned something useful during each section of the workshop. As an example, while I had spent a lot of time profiling ink/paper combinations I had never calibrated my printers by adjusting the alignment of the print heads, a procedure that improves the quality and consistency of prints a great deal. Also, while I had carefully profiled my monitor I had never paid much attention to the lighting in my computer room or to using a color accurate viewing box. I am certain that paying attention to these details will go a long way towards achieving on paper the prints that I see in my mind.

I got the most out of the last two days in which the photographic tools available in PhotoShop and the final pre-printing process were carefully reviewed with us. Geoff Spence, who is largely responsible for the development of the new PiezographyICC product, has an extensive previous experience in software development and technical teaching. He has a strong interest in developing models of human color perception. He handled the entire Photoshop day and is quite clearly a masterful teacher. As I am a physician by profession I spend a great deal of time trying to explain complex subjects in an understandable manner to my patients, interns, and medical students. I have come to really admire great teachers and Geoff did the best job of teaching a complex subject in understandable terms to an audience who have varying levels of knowledge that I have ever observed. I cannot overstate how helpful it is to be taught by the people who develop a product and use it in a production environment every day.

I think that this workshop is best suited to dedicated photographers and artists who have made some effort to make the leap to a digital workflow but just can't quite get consistent high quality results. It is well worth the time and money I invested. An intermediate knowledge of Photoshop is required with an emphasis on levels and curves. I would not recommend the workshop to someone who has never used Photoshop. An advanced Photoshop user might find this course to be too slow, unless their knowledge of color management was quite deficient. Jon Cone and his staff make a real effort in the beginning to gauge everyone's entry level and goals and they try to individualize the workshop to some extent to meet those goals. All questions were entertained and given thoughtful answers. Certainly

the teachers have a depth of knowledge that would be hard to match elsewhere. Perhaps an advanced user could obtain sufficient new knowledge if they were very clear about their goals up front and made sure to thoroughly pick the brains of the staff. An impressive staff it is.

– Steve Rosenblum

Once again, all the illustrations for this article can be found [here](#)

This column is SHAREWARE! If you've read all the way to here, you're requested to make a modest [donation](#). Two weeks ago, between 10,000 and 25,000 people read SMP – and nine people contributed a total of \$37 to the enterprise. Now I ask you, how is the web supposed to revolutionize commerce at that rate? SMP is two years old this weekend! So come on, send it a birthday present, please.

*When STEVE ROSENBLUM isn't fly-fishing, he lives in Ann Arbor, Michigan, where he works as a late night helicopter-greeter. After greeting the helicopter he takes the folks who've just arrived to a lab where he photographs their heart using black & white, full-motion digital techniques. Then he opens their blocked arteries with tiny balloons to stop their heart attacks. If they don't smile during the procedure, he has to do it again. In his spare time, he collects photographs and old cameras, studies Zen, and waits patiently for the publication of Mike Johnston's new book, *The Empirical Photographer*.*

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