

Tools

By Don Butler

We, today, use all manner of tools, many or most of which were not even conceived fifty years ago. Some of our power woodworking tools are so exotic our grandfathers, upon seeing them for the first time, might not even be able to guess what they do. And so, in my own practices, I use a computer for much preparation before I even go out to the shop and turn the lights on. Out there are tools which use lasers, motor driven feeds and microchip controlled shaft speeds.

But one of the tools we use, more and more these days, for inspiration and for documentation and just plain showing off the work is the camera. When I got my first (almost) professional grade film camera it had no electronics built in at all. I carried a light meter, separate flash, accessory lens for different focal lengths and, of course, rolls of film which had to be carefully used so the image we flashed onto its chemically treated surface would survive long enough to get it to the darkroom where the most of the work in making images took place. (Whew)

As you may have surmised, this is one of the tools I can use without problems because of my recent run-in with the effects of gravity and time. Thus, I'm using the time I have to explore some of the features of my latest camera, the Kodak P850 digital. I hope some of what I've discovered will help or enlighten some of you tool enthusiasts and possibly encourage some who haven't tried digital photography to give it a whirl.

It's been said that digital doesn't hold up well when compared to the best film technology. Resolution is the thing most often said to be a weakness for digital cameras. I, myself, had that idea for years, and for many of those years it was undeniably true. My first digital camera was good for making GIFs for the internet and could produce fairly acceptable 3"x4" prints, maybe 5"x7" if you're not too fussy. But any enlargement beyond that showed what digital pictures are made from: Little square patches of color. It got ugly very quickly when pushing the print size or examination on screen with zoom.

So this past weekend I set up an experiment designed to push the resolution question unmercifully. I placed the camera on a tripod about ten feet from the subject. The conditions were bright, direct side lighting in the sun and the subject was flowers in a vase on the driveway in front of a small garden. The camera was set for automatic focus and exposure, so the electronic controls are also being tested. The idea is to surpass everything I've ever done to pull the image apart and show it to be obviously a digital file.

The first exposure was done at the widest angle the Schneider Krueznach lens could do, equivalent to 36mm on a 35mm film camera. Modestly wide angle, since 50mm or 55mm is considered to be a "normal" view.

Then, without moving anything, the lens was zoomed to its optical limit of 12x, equivalent to 432mm. When processing the file in my Sony PCV-RX660 Digital Studio Computer, the natural image size results in a possible print size of 26"x36" at 5.1 megapixels. I say possible because I'd have to send the file to another city where some company might have a printer with that much capacity. For practicality and for pixel density, the size was reduced to 8"x10.5" and resampled at 300 pixels per inch. All the following images were resampled the same way. They were not cropped.

The second shot was made with the lens zoomed to its optical limit of 12x which is equivalent to a 432mm telephoto lens. The image was fully color saturated and sharp without any hint of pixelation (visibility of individual pixels in the finished image).

The next photo was taken by adding the camera's digital zoom to the full optical zoom. The digital magnification is about 3x, so the resulting image comes from a focal length, optical plus digital of about 40x! That's roughly equivalent to a 2000mm telephoto lens. That's funny because back in "the old days" I had a 500mm mirror lens and a 2x Tele-extender (we called it a 'doubler') and I thought that was just about the 'cat's meow'! The result was a phenomenal image of just the inside of one of the flowers without the slightest hint of pixels.

Was that enough punishment for the purpose of this experiment? Huh uh.

That was just what the camera could do with image enlargement. With the file in Corel's PhotoPaint program, I cropped and resampled again to 300 dots per inch, and only the inside of one flower, and still no evidence of digital pixels!

OK, then, no more pussy-footing around, we're going to give this image a real test. That cropped and resampled image was again cropped so the result, according to the best I can do with direct measurement of the final image produced an image of just the little stringy-thingies in the middle of the same bloom, the rough equivalent of a 10,000mm telephoto lens! At this extreme, it can be seen (but not prominently) that the camera's autofocus was just a little off, because the details were slightly fuzzy, but it was still a good photo, good color and NO PIXELIZATION!

After all this, I'd say the issue was exhaustively explored. This camera was easily the equal of any film based camera I've ever owned and was capable of producing image enlargement beyond anything I've ever had.

This gruelling torture test of resolution is the first article in my exploration of the limits of digital photography. I'm setting it up as a PDF file so I don't hog the bandwidth of this forum and those who have no interest can just not download it. It'll be served up from our own website.

If this subject is of interest and especially if you want to hear about any particular aspect of it, please let me know.

Best regards,

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