Gum-Bichromate Printing

Bridging 100 Years of Photographic Technology

By Rainer Wenzl

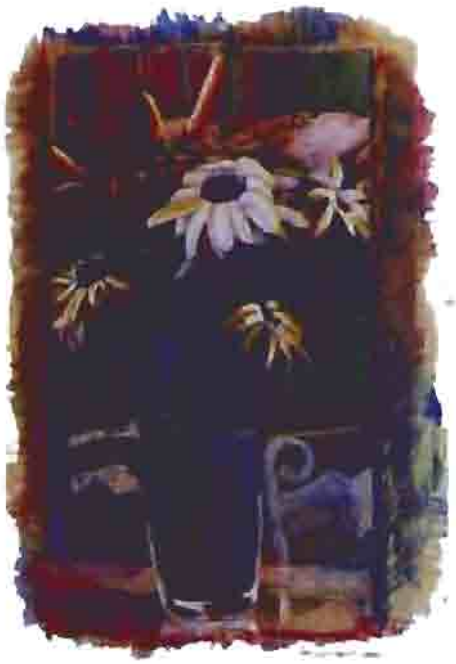
In this age of electronics, it is hard to remember that the photographic image is still created by the simple phenomenon of reflected light. We can still print that photographic image onto paper using chemicals that react with sunlight. Such processes have been in existence for more than 100 years. As an artist and photographer, I favor the gum-bichromate printing process. This alternative to conventional printing gives me the opportunity to achieve painterly expression in my portrait, still life, and everyday scenes.

In this antique printing process, watercolor paper is coated with a base of gum arabic in solution with dichromate salt and pigment. When the paper is exposed to light, the exposed areas become insoluble. The development process simply requires washing out the soluble, or unexposed areas, with water.

Originating in the 1830s, the gum printing process was criticized for its lack of tonal scale and image definition. It gained popularity when photographers realized that executing multiple exposures would extend the tonal scale and add depth to the shadows. In the gum printing process, the imager has control over both the tonality and detail of the work. As in painting, adding layers of different pigments makes a rich and textured image. Because the watercolor pigments are transparent, building up the layers gives the effect of glaze painting.

I have used a variety of cameras to capture images, including a 2.25 format rangefinder, a 35mm camera, a 4x5 field camera, a homemade plywood box, and now the Sony Mavica digital camera, which I use with this alternative process. Bichromate printing requires making a full-sized negative, which in traditional black-and-white printing is a lengthy process. With digital capture, the photographer has more control over the creation of the negative, and the process is less costly. Best of all, it is no longer necessary for me to sacrifice long hours to the darkroom—stumbling around in the dark and inhaling toxic fumes—for the sake of my art.

After capture, I save the digital images as JPEG files and export them to the computer. I open the images in Adobe Photoshop, where I create four distinct variations by posterizing, solarizing, inverting, adjusting the



"Still Life," ©Rainer Wenzl

"Youthful Curiosity," ©Rainer Wenzl

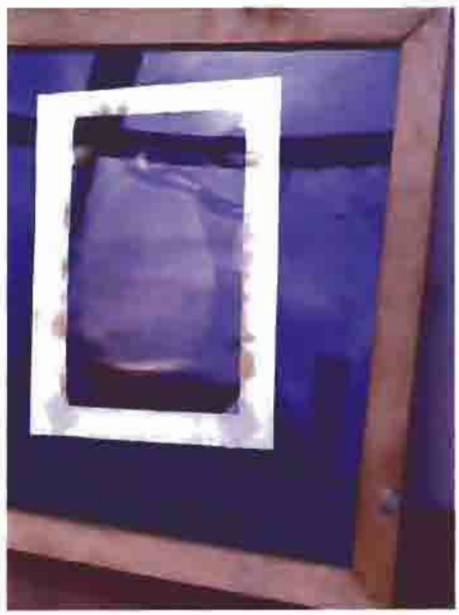
"Take 21," ©Rainer Wenzl

brightness and contrast, or adding special effects. Each variation will be output as a "negative." When I have achieved the desired alterations, I output the image files to a laser printer onto acetate sheets. I must be mindful when creating these variations of the way that the transparent watercolor pigments will interact with one another, how one layer of color will appear when placed over another.

To produce my prints, I first coat a number of sheets of Carlyle Japan paper with a solution of yellow ochre watercolor pigment, gum arabic and dichromate salt. I place the negative variation with the most detail on top of the coated paper, and expose the composite to sunlight in a contact printing frame. The exposure time varies depending on the intensity of the sun. It takes longer in the early morning, the late afternoon, and in winter.

I develop the exposed paper by placing it face down in warm water to dissolve the unexposed solution. When the pigment from the unexposed areas has settled to the bottom of the developing tray, I remove the print and hang it to dry.

Usually, the next pigment I apply is cadmium red or phthalo blue. I place the second or third negative on the paper, expose the composite to sunlight, and repeat the development process. For the final layer, used primarily to add detail to the shadows, I use dioxazine purple pigment, and repeat the exposure, development, and drying procedure. The process and these



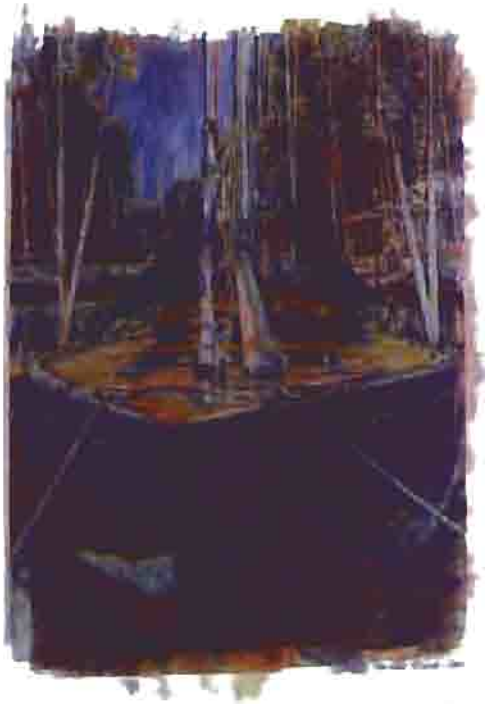
Top row: Wenzl sensitizes the paper with a solution of yellow ochre watercolor pigment, gum arabic, and dichromate salt. He then places the acetate "negative" on top of the paper and exposes it to sunlight in a contact printing frame. Bottom row: Wenzl develops the exposed paper in a bath of warm water and hangs it to dry.

Another pigment is added to begin the next exposure step.

Adding additional color and highlights with watercolor pencils.

colors, which are the ones I use most often, are similar to the color separation process used in offset printmaking.

I can repeat the process for each additional color I wish to apply, varying the color depending on the subject matter and the desired effect. Additional variations can be achieved by changing the length of the exposure, the ratio of pigment to the solution of dichromate salt and gum arabic, the



Says the artist, "The gum-bichromate process allows me to express the scenes I see in my mind's eye."
©Rainer Wenzl.

temperature of the water during development, and by brushing off the unexposed areas while the image is developing.

I often continue to work on the print by applying watercolor paints and pencils, adding localized areas of color and texture, and enhancing the highlights and shadows.

The versatility of the gum process, with its multiple exposures, rich texture and color, and painterly effects, gives me a near-limitless means of expression. We see objects differently from day to day, in ways beyond the superficial manner of the camera. With these techniques, I can begin to portray my visual editorials. ■

Rainer Wenzl is a professional photographer and artist in Oakville, Ontario, Canada. His images have been published and exhibited in local galleries and businesses. His award-winning work ranges from traditional black-and-white photographs to artistic, alternatively printed images that incorporate painting, sculpture, and furniture design. *www.gallerywenzl.com.*