Crossing Borders

Digital Atelier® artists explore and combine new digital tools with traditional techniques and materials.

Digital Atelier® artists Karin Schminke, Dorothy Krause and Bonny Lhotka have been exploring the role of digital tools for visual artists for 15 years. In this article, they will reach beyond their usual tools of inkjet printing and traditional artist materials to explore laser engraving, bookbinding, flatbed printing and more.

New technologies create new approaches that enhance both process and results. The work of these innovative artists illustrate how new tools do not necessarily simplify the workflow for artists as much as they empower artists to integrate a more robust palette of options into their studios.

As technology evolves, the opportunities to create and develop unique artistic approaches have expanded in ways that were previously unavailable. By working from small to large projects and combining cutting-edge technology with traditional artist materials, the possibilities are limitless.

Digital Laser Engraving and Cutting

Digitally controlled laser engravers, like those produced by Universal Laser Systems, approach imaging in ways that are parallel to digital printing. In fact, anyone using an inkjet printer will find the transition painless. Files are prepared with standard imaging software, such as Adobe Photoshop and printed using the laser engraving software, which is similar to a RIP in that it controls position and image quality.

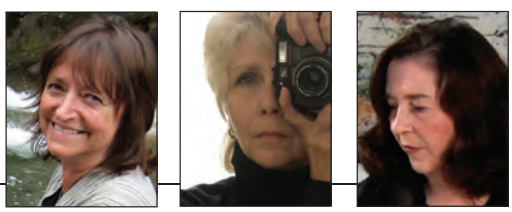
Any grayscale digital image, also known as a raster image, can be used to create an engraved image. To create a laser-cut image, a vector image is used. Artist Karin Schminke worked with both as she combined laser imaging with traditional art materials to prepare an exhibit of her art last September.

Laser Engraving

Schminke's digitally engraved image, "One Hour Later," began as a traditionally made monoprint that was scanned and combined with other drawings and prints in Photoshop. The resulting digital collage was flattened into a raster image, prepared for engraving by converting the Photoshop file to a grayscale image and applying a screen pattern.

Schminke created an etching substrate by painting a sheet of aluminum with two tones of green, which were positioned to match the corresponding top and bottom halves of her prepared digital image. Then, she covered the greens with a thick coat of artists' black acrylic paint.

The darker the value of the gray in the grayscale image, the deeper the image is engraved. Thus, the dark areas of the grayscale image were engraved to reveal the green paint beneath the surface, while



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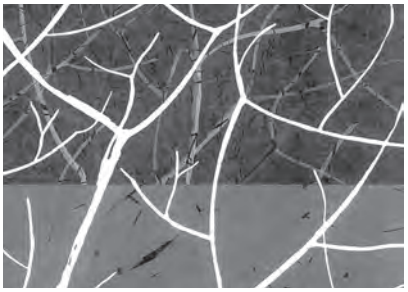

Figure 1: Photoshop files must be converted to grayscale and screened before sending them to be engraved.

Figure 2: Green color areas were covered with black paint and partially revealed by the digital engraving.

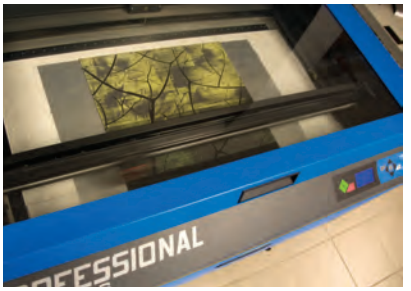

Figure 3: Engraving of a painted aluminum panel using the Universal Laser Systems' Professional Laser Series PLS4.

Figure 4: "One Hour Later"12 x 12 inches, engraved and painted acrylic and aluminum, shown here on display in September 2008 at the Bainbridge Arts and Crafts Gallery in Bainbridge Island, Washington.

white areas remained untouched, leaving the black paint intact in those areas. (See Figures 1-4)

The completed engraved surface was paired with a related engraved panel to make a diptych, or two-panel image. Artist-grade acrylic paint was added to the engravings' surface to increase color variation and further develop the images. For example, a deep blue wash was added to the panel on the right to suggest the time shift in the piece's title.

Laser Cutting

To use a digital laser for cutting materials, a vector image is created to determine the cutting lines. Technically, a vector image consists of mathematical descriptions that position lines and shapes in defining a form, as opposed to a grid of colors or values that define a raster image. Common digital graphic programs, such as Photoshop or Illustrator, can be used to make a vector file.

Schminke created a drawing, using pencil on paper, of a common plant in her yard as the first step in creating "Wild Geranium." After the scanning, it was converted into a vector file. (See Figures 5-9)

A .31-cm (.125-inch) thick plank of wood was chosen for this laser cutting. It was aligned in the Universal Laser Systems' PLS4.60 laser bed, using the laser red-dot pointer for accurate material placement.

The resulting wooden plant form was fragile and attached to a surface to complete the geranium image. Schminke prepared an aluminum panel with a thickly spread acrylic gel colored with gray pigment. Then, she pressed the wood cutout into the gel and carefully positioned weights to hold the wood flat as the gel dried.

The wood that was trimmed off the plank with the laser was used at the bottom of the piece to create a ground. The darker brown color is from the laser's "burn effect" and can be seen on the edges of the geranium form.

Bookbinding

Having bookbinding capabilities opens up possibilities for creating short-run books such as catalogs, memorabilia and corporate presents. Dorothy Krause demonstrated two approaches for printing and binding artist books. In the first example, individual inkjet printed pages were thermal perfect-bound into a commercially available cover. In the second example, an accordion folded book and its canvas cover were printed in an edition of six on a large-format inkjet printer.

"Perfect" Binding

The book, "Failed Rose," was made by Krause with a small, inexpensive desktop thermal binding system by PhotoBook Creator. The pages are held upright in a PhotoBook cover while applying heat to melt a layer of glue embedded in the book cover's spine. The glue fuses the edges of the loose sheets to the cover spine. An introductory kit, which includes the binding machine, three hard covers and software to create page layouts, costs approximately $100. Although limited by the dimensions and material of covers in the kit, you can choose the spine's thickness to accommodate varying page amounts. Also, you can select any paper, including pages that have

Figure 5: Pencil and paper drawing.

Figure 6: Individual vector line segments can be seen. Note the appearance of the vector "handles," or the small squares that can be used to edit lines.

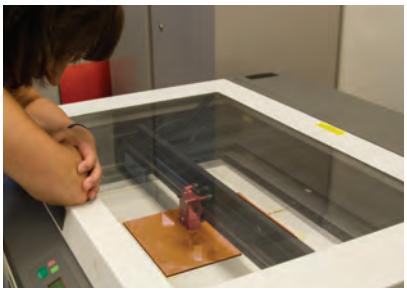

Figure 7: Schminke watches the geranium form being cut out of wood in the Universal Laser Systems PLS4.60 laser bed.

Figure 8: The geranium form is carefully removed from the wooden plank.

already been printed with image and text.

To make "Failed Rose", Krause scanned two sprays of rose-like gentian and collaged them in Photoshop. They were printed on a light brown paper and the prints were enhanced with colored pencils and pastels. An Emily Dickinson poem, from which the book takes its title, was written around the image edges with pen and gold acrylic ink. (See Figures 10-15)

Using Photoshop, Krause added the book's title to one of the flower images and printed it onto the same paper that was used for the pages. She cut away the excess paper and glued the title to the lower right corner of a black linen cover with gel medium. A tacking iron ensured the edges were well-adhered. Gold-leaf was used to enhance the title. Krause glued a ribbon around the book to add dimensionality, slipping its edges under the endpapers.

Binding the pages into the cover consists of four steps:

1. Preheat the binder.
2. Collate and align the book pages.
3. Place the pages tightly against the cover's glue-saturated spine.
4. Press the book, spine down, into the binder for 90 seconds for the heat to melt the glue embedded in the spine.

It's a simple and fast way to make a book. If pages need to be added in or taken out, the book can be placed in the heated binder to soften the glue.

Figure 9: "Wild Geranium" — 30 cm by 30 cm (12 inches by 12 inches) — laser-cut wood and acrylics on an aluminum panel.

Accordion Books

An accordion book, as the name suggests, is made from one or more long sheets, which fold backward and forward like an accordion into an even number of pages. It is often designed to stand so that the entire content can be seen at one time. Krause likes to use the accordion book, a favorite of many artists, to display images.

Krause was inspired to create "Little Red" by finding a Little Red Riding Hood doll whose skirt flipped over to reveal a wolf while an embedded music box played "Who's Afraid of the Big Bad Wolf." She chose to use three Gustaf Dore etchings and a phrase from a poem by Ellen Steiber,

Figure 10: Scanning gentians on a desktop scanner.

Figure 11: Enhancing the inkjet prints on brown paper with colored pencils and acrylic ink.

Figure 12: The black linen cover with a gold-leafed title that was added to the attached inkjet printed image.

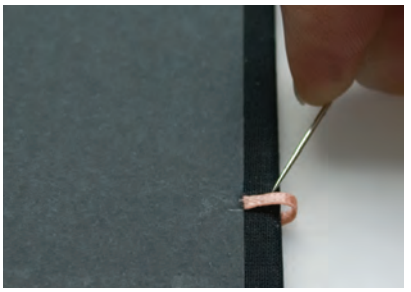

Figure 13: Slipping the glued ribbon end under the endpaper.

Figure 14: Krause holds the cover in the thermal binder to melt the glue and adhere the pages to the spine.

Figure 15: "Failed Rose©" 2007 10 pages — 22.2 cm by 28.5 cm (8.75 inches by 11.25 inches).

"Silver and Gold," for the book's content. The book's back has a longer portion of the Steiber poem and a picture of the doll.

"Little Red" was designed to be 16.5 cm (6.5 inches) tall and 50.8 cm (20 inches) long when unfolded with four pages, each 12.7 cm (5 inches) wide. Krause selected Hahnemuehl fine-art inkjet paper for this book because it was stiff enough to stand folded, and printed beautifully on both sides. Since she wanted to make six copies, Krause printed three accordion pieces at a time (front and then back) on a large-format HP Z3100 inkjet printer, and then cut them apart. The large illustration in "Little Red" was folded in the middle to create a double-page spread. (See Figures 16-20)

To create a cover, Krause cut a cover board .63-cm (.25-inch) larger than the pages and printed a cover image onto an inkjet canvas large enough for the boards plus a 2.54-cm (1-inch) margin to wrap around them. The margins were scored, the corners mitered and the back of the canvas coated with acrylic gel medium, which was wrapped around the cover board and rubbed to ensure adherence. The completed covers were attached to the accordian pages to complete the book.

Creating Multiple Commissioned Pieces for a Single Site

Bonny Lhotka was asked to create commissioned work for the new Platte Valley Medical Center in Colorado. Art Consultant Nancy Noyes, of Artist Showcase, chose Lhotka for this project, which required multiple pieces in different media.

The choice from a variety of media was made early in the project to better fit the sites — including the lobby, chapel, entry and various places throughout the Medical Center — as well as increase the uniqueness of each piece. In fact, Noyes selected Lhotka for this project because of her ability to work in several different media with equal comfort. "Bonny's work is always unique and special. Everything she did for this project was different from the other," Noyes said.

Figure 16: Pages and covers printed on the HP Z3100 being cut apart and trimmed.

Figure 17: Coating canvas with glue to wrap boards and make covers.

Figure 18: "Little Red" inside.

Figure 19: "Little Red" outside.

The Medical Center took a unique approach for funding the art in this new construction. A percentage of each donation from the Capital Campaign was specified for art purchase, and donors were able to choose which art would be used to recognize their donation from selections made by Noyes. Lhotka was selected by four donors to create pieces for the entry, emergency room waiting area, chapel and main lobby.

Lenticular Installation

For Lhotka, the project began with a meeting at the construction site to make decisions about the size, media and placement of the work. The piece Lhotka chose to create for the lobby, "Country Meadow", was a four-panel backlit lenticular image, 4.8 meters (16 feet) wide and 1.8 meters (6 feet) high. (See Figures 21-25)

This special piece was chosen by the board of directors to show appreciation for work done to get the new Medical Center built. Using more than 300 photographs, Lhotka constructed an environment using local imagery. Unlike typical backlit signage, natural daylight bulbs were used with a blue filter to balance the light so that the colors look the same whether the lights are on or off.

Art for the emergency room waiting area consisted of three round virtual-lenticular fish tanks. This installation was so popular with children that they tried to grab the phantom lenticular tropical fish and instead pulled the actual work off the wall. The wall was rebuilt and the lenticular fish tanks were bolted to the studs.

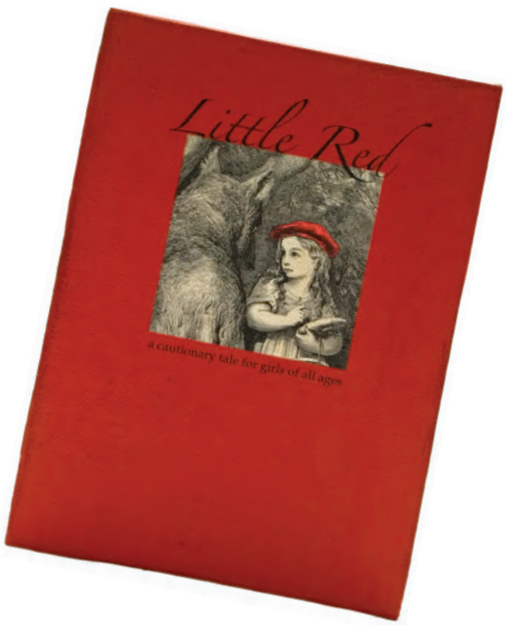

Figure 20: "Little Red©" 2007 four pages — 16.5 cm by 12.7 cm (6.5 inches by 5 inches) closed and 16.5 cm by 50.8 cm (6.5 inches by 20 inches) open — edition of six.

Figure 21: Platte Valley Medical Center lobby under construction.

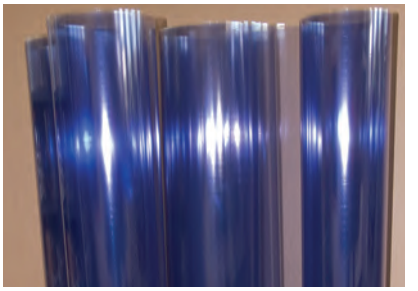

Figure 22: Blue filter used to color balance lighting.

Figure 23: "Country Meadow" — 1.8 m by 4.8 m (6 feet by 16 feet) — lenticular in the lobby of Platte Valley Medical Center.

Figure 24: "Tank Series" — 60.9 cm by 60.9 cm (24 inches by 24 inches) — in the emergency room waiting area.

Figure 25: "The Falls" UV-cured pigment — 1.21 m by 2.4 m (48 inches by 96 inches) — being installed in the chapel of Platte Valley Medical Center.

Backlit Art

An additional backlit piece was designed for the hospital's non-denominational chapel. The choice of a backlit image for the chapel was made to create a sense of ongoing, but muted, daylight to add comfort to a space created for solace. Using an HP Scitex VeeJet flatbed at New Vista, Lhotka printed "The Falls" onto polycarbonate using infrared photographs taken at the Pasadena Botanical Garden. She placed a sheet of 2447 acrylic diffuser behind the print to spread the light evenly across the image.

Tile Tapestry

The most complex piece Lhotka created for the medical center was a polycarbonate-tile tapestry called "Amber Wheat." Working with Colorado Plastics in Boulder, Colorado, the tiles were designed with slots and holes so that handmade, antiqued brass straps could hold the tiles together.

First, a grid was printed on the HP Scitex flatbed printer's bed. Next, the tiles were positioned on the grid so that the image could be printed onto the tiles in one pass. This was a multi-image piece of amber wheat fields taken in the Brighton, Colorado area, which was sponsored by a special member of the Future Visions Committee. (See Figures 26-28)

UV-Flatbed Print

Lhotka created a piece for the hospital lobby based on images taken at a local lettuce farm. "Field of Greens" was printed on a UV-flatbed printer on aluminum Dibond.

Speaking of completed art, Noyes comments, "I knew I could count on Bonny, and she came through with fabulous art that my client absolutely loved. Each piece adds interest and flair to its location. All the donors sponsoring Bonny's work were thrilled."

Conclusion

As technology evolves, the opportunities to create and develop unique artistic approaches have expanded in ways that were previously unavailable. By working from small to large projects and combining cutting-edge technology with traditional artist materials, the possibilities are limitless. Schminke, Krause and Lhotka challenge themselves to cross the borders of media and stretch the boundaries of creative intent to make new and powerful images.

About the Authors

The three authors work together under the banner of the Digital Atelier© to research current digital imaging technologies and procedures for their integration with traditional artist's materials and techniques. Their current project is working with Universal Laser Systems to explore combining inkjet, UV flatbed printing and other media with laser engraved images. Their book, ***Digital Art Studio: Techniques for Combining Inkjet Printing with Traditional Art Materials,*** *was published by Watson-Guptill in 2004 and is described by the Library Journal as an "inspiring work for many years to come."*

Karin Schminke taught digital art and design for decades at several universities. She currently works as an artist and lives in Seattle, Washington, where she is inspired by the natural environment. Her mixed-media works on aluminum are exhibited widely in local, regional and national galleries. She is in dozens of public and corporate collections.

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Dorothy Simpson Krause's work includes large-scale mixed media pieces, artist books and book-like objects that bridge the two forms. She is the author of "Book + Art: Handcrafting Artists' Books," which is expected to be published by North Light in spring 2009.

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Bonny Lhotka has work in more than 200 private and corporate collections worldwide. Currently, she is producing a series of educational DVDs from DigitalArtStudioSeminars.com that teach mixed-media techniques and introduce new products for experimental inkjet printing, including a new paintable inkjet pre-coat.

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Figure 26: Placing tiles on UV-flatbed printer at Colorado Plastics.

Figure 27: "Amber Wheat" — 1.5 m by 2.1 m (5 feet by 7 feet) — on the second floor of the Platte Valley Medical Center.

Figure 28: "Field of Greens" — 1 m by 1 m (40 inches by 40 inches) — installed at Platte Valley Medical Center.