

Dorothy Simpson Krause, Karin Schminke and Bonny Lhotka are three accomplished artists who are collectively known as Digital Atelier. They were early adapters and integrators of digital technologies, and their work is widely exhibited in both public and private collections. The trio co-authored the book, Digital Art Studio: Techniques for Combining Inkjet Printing with Traditional Art Materials.

The artists known as Digital Atelier explore the possibilities of laser engravers. This piece, Day Shadow, by Bonny Lhotka, incorporates engraving and flatbed printing techniques

Blazing a Laser Trail in the Art World

A trio of artists take a new tack in their ground-breaking use of digital tools for creating fine art.

By Dorothy Simpson Krause, Karin Schminke and Bonny Lhotka

R rtists Dorothy Simpson Krause, Karin Schminke and Bonny Lhotka (collectively known as Digital Atelier) were recently invited to the Scottsdale, Ariz., facility of Universal Laser Systems (ULS) — a manufacturer of CO² lasers and laser printing solutions — to explore the artistic possibilities of laser technology. Guy Cipresso, director of global sales and business development for ULS, knew of the artists' pioneering work integrating inkjet printing with traditional artist's materials, and thought ULS would benefit



Krause examines the newly etched edition of *Brain Fog* with Guy Cipresso, ULS Director of Global Business Development.

from their exploratory approach to digital technologies.

"The combination of Digital Atelier and Universal Laser Systems is unique and exciting," says Cipresso. "Companies push the limits every day for what they can do with our technology, but art is a very personal experience. The project exceeded our expectations, and we are encouraged to see what else Karin, Bonny and Dorothy can do, given more time. The creative possibilities are endless."

The artists prepared and gathered various surfaces to engrave and prepared grayscale files in anticipation of their time at ULS. After a few hours of instruction with the laser software, they were up and running.

"Surprisingly, the laser system is no more complex then using an inkjet printer," Schminke says. "We quickly felt comfortable with the process. Work is designed in Photoshop or other software programs, and a grayscale or black and white file is then sent to the laser system. Like printer driver software, the ULS system lets one choose from a library of materials (and their pre-determined settings). While monitoring the etching through the large viewing area, custom speed and power adjustments can be made to control the strength of the etching. These settings can then be saved as additions to the library. Vector files can be used to make cut-outs, incisions or to cut work from larger pieces of material. Vector and raster files can be used in the same project for a



For her book, *Common Ground* Krause chose to combine the title with the outline of tree branches so that they could be deeply engraved into the painted wooden cover.



To insure that the title, *Pegasus*, was perfectly aligned under the metal image of the flying horse, a piece of glass was placed on top of the wood and the title engraved into the glass.

Krause experimented with some interesting materials: From left to right, top to bottom: wood, leadcovered foam core, MDF board, black painted brass, acrylic mirror (with added metal title), UV-cure flatbed-printed glass, black marble and a wood CD case.



Fine Art Applications



Tests for different etching settings helped determine the right amount of etching power to selectively remove the top layer of paint and reveal just the right amount of the lower levels of paint and/or aluminum.



Schminke discusses her work with ULS President and CEO, Yefim Sukhman.



To make *Dragon Flower*, Schminke created a drawing based on a plate from her herbarium featuring a dried green dragon (arisaema dracontium). She combined the drawing with a monoprint that represented an abstract field which completed the image. Etching revealed interesting levels of black and white beneath the rust.

greater variety of effects, such as etching with areas cut-out.

Laser systems from ULS range in work area size from 12" x 16" to 24" x 48". Most of the systems can be reconfigured with single or dual CO² lasers and range in power from 10 to 150 watts. The laser systems can cut, mark or engrave acrylic, wood, plastic, fabric, paper, leather, cork, rubber, photopolymer and fabrics; and will mark or engrave glass, ceramic, metal and stone. Depending on the laser system, the platform can accommodate objects that have a depth between 4" and 12". In three days the artists created many more pieces than are described in this article, but in wide experiments each artist found a favorite way to work with the laser system.

LASER BOOK COVERS

-Dorothy Simpson Krause-

The books we encounter on a daily basis are usually categorized as hard cover or paperback, but when an artist makes a book it can take on many forms. Dorothy Simpson Krause decided to use her time at ULS to explore some of the possibilities of using a laser system for engraving her unique book covers. She brought two of her handmade books and a variety of additional materials.

Krause began with *Brain Fog*, a book covered with natural linen. She measured its size and in Photoshop laid out the title to create a grayscale file for engraving. To keep *Brain Fog* from being slightly higher on the fore-edge than the spine, a piece of marble was used to weight it closed. The laser lightly etched the linen to color it without cutting through the fibers.

For her second book, *Common Ground*, Krause chose to combine the title with the outline of tree branches so that they could be deeply engraved into the painted



wood cover. The back cover was separately engraved with copyright information.

From the materials she brought from her studio, Krause chose a wooden bookend with a metal image of a flying horse. To insure that the title, *Pegasus*, was perfectly aligned under the metal image of the flying horse, a piece of glass was placed on top of the wood and the name engraved into the glass. It was just a touch off, so the file was shifted slightly and engraved perfectly onto the cover. The covers that Krause engraved will be included in her forthcoming book, *Book* + *Art: Handcrafting Artists' Books*, to be published by North Light in March 2009

PAINTING WITH LASERS

—Karin Schminke—

Inspired by a collection of preserved, dry pressed plant specimens (an *herbarium*) that had been given to her, Karin Schminke decided to work on a series of art pieces celebrating ordinary plants by placing them in a new space. When the invitation

to work with laser systems came, she realized the laser technology could give her an elegant solution to production of this series.

Schminke wanted to combine a realistic silhouette of the plants with a looser, painted look. She felt the laser system could provide an efficient way to utilize her tight drawings of the plants as part of a more expressionistic acrylic painting.

She scanned her pencil drawings and then, using Photoshop and Illustrator, created vector outlines of the drawings she wanted to laser etch. Although the scan of the drawing could have been used for the etching, in some cases she wanted the clean edge provided by the vector version.

She prepared aluminum coated with two or three layers

of acrylic paint, usually in neutral colors. In some instances, she added patinas of copper or rusted metal to the surface. Schminke developed each substrate for a particular image, choosing colors, textures and even brush strokes to enhance the intention of the image.

Schminke also prepared extra samples of most of her paint layer combinations to test before etching onto the final surface. The ULS laser software allowed her to quickly test different etching settings and find the right amount of power to selectively remove the top layer of paint to reveal just the right amount of the lower layers of paint and/or aluminum.

In making *Dragon Flower*, Schminke began with a drawing based on a plate from her herbarium, featuring a dried green dragon plant (*arisaema dracontium*). Further research helped her extrapolate how the living plant would have appeared. She combined the drawing with a monoprint that represented an abstract field to complete the image for etching. Schminke selected a rusted metal surface for the green dragon plant silhouette that would resonate with the primitive form (and name) of the plant. The rust was applied over layers of black and white paint on aluminum. After testing for etching strength, the image was etched to reveal levels of black and white beneath the rust.

As the image was etching, Schminke decided to leave a section of the rust on the left side unetched to reemphasize the green dragon flower silhouette.

"Going in I wasn't sure I would be able to control the lasers to get more than a twotoned image (foreground and background). I was amazed how simple it was to control the software to bring out values between white and black. It actually was simpler than adjusting color on an inkjet printer," Schminke said.

LASERS IN PRINTMAKING —Bonny Lhotka—

While working on her undergraduate

degree, Bonny Lhotka spent much of her time in the printmaking department of Bradley University, where she explored a wide range of traditional printmaking techniques.

In one traditional printmaking process, a printing plate is made by engraving or etching an image into the surface of the plate. The etched plate is then inked by hand, and the surface is wiped clean, leaving ink in the recessed areas. The inked plate is placed on damp paper that grabs and holds the ink when put under the enormous pressure of an etching press.

This printmaking background led Lhotka to approach the laser as a tool for creating plates that could be inked and traditionally printed. She expected that acrylic would be a good substrate to



For Lhotka's string puppet project, the first step was to convert the photo image to be engraved from color to grayscale.

Fine Art Applications



Hand wiping the litho inks onto the engraved extruded acrylic



Lifting the print from the laser engraved plate.

use as a printing plate made with a laser system and chose cast and extruded sheets of acrylic for her experimentation.

The first step was to convert the image to be engraved from color to grayscale, remembering that white areas would be unprinted, while the black areas would be etched the deepest and therefore hold the most ink and color in the final print. The grayscale file was then engraved into both the cast and extruded acrylic sheets.

Returning to her studio, Lhotka inked both of the acrylic "plates" she had engraved at ULS. She wiped away the ink on the surface and printed them with her etching press, transferring the ink from the plate to damp printmaking paper.

"I was surprised to find how differently the cast and extruded plastics responded to the laser engraving process," Lhotka commented. "The engraving into the cast acrylic was so deeply cut that it was difficult to ink and get a good tonal variation." The best plate turned out to be the extruded acrylic with a very low relief. When printed it looked similar to a traditional print.

"It was easy to be able to combine digital and traditional techniques by

using the laser-engraved plate on my etching press," said Lhotka. "While it might take several days to engrave or etch a plate traditionally, that same plate made on the laser system could be completed in just two hours."

FLATBEDS AND LASERS

As Krause, Schminke and Lhotka have done extensive research and experimentation with flatbed digital printers, (see *DG*, Sept. 2005, "Fine Art and the Flatbed Printer"), Lhotka was interested in seeing how a laser and a UV-curing flatbed printer might work together.

She started with pieces of routed MEDEX board that had

been coated with a marble powder/glue solution. The glue solution was tinted and stained in various ways, so she had a variety of substrates to test.

The laser cut through the teal colored coating layer of the MEDEX board Lhotka had selected. The etching process changed the board color to a rich burnt sienna tone in the deepest engraved areas, while leaving a small amount of the teal coating in the un-etched areas.

On returning home, Lhotka used an Océ Arizona 250 GT Flatbed UV printer (working with Fast Signs in Boulder, Colo.). She selected the Océ unit because of its high resolution, and she felt the unit's light ink density would be less likely to obscure the detail of the engraving.

In order to align the image for perfect registration, Lhotka printed the file temporarily on the printer bed and then placed the engraved board in position so that the image printed in perfect alignment with the etched image. The combined print exceeded Lhotka's expectation, merging the physicality of the two printmaking processes into a unique new way of working.

Since laser systems that can engrave, cut and etch are in the same price range as wide format inkjet printers, they are relatively affordable for artists who want to expand their options. Shops with this equipment may find it worthwhile to market engraving services for artists.



The finished 12" x 12" piece, *String Puppet*, was imaged onto Arches Rives BFK paper using a laser-engraved, extruded acrylic plate printed on an etching press.

Here is the grayscale image used to laser engrave the substrate.



The teal colored marble panel shows the laser engraving





The finished print, *Day Shadow*. The combined print techniques exceeded Lhotka's expectation, merging the physicality of the two printmaking processes into a unique new way of working.

The engraved panel with template ready for positioning over the temporary image on the print bed of the Océ Arizona 250 GT Flatbed UV Printer

Either way, a laser engraving system has great untapped potential in the fine arts world.

MORE INFORMATION

For this project, the artists used the VersaLASER, Professional Laser Series and Industrial Laser Series from Universal Laser Systems. For additional information on ULS and their products, visit *www.ulsinc.com*, or contact Guy Cipresso at *gcipresso@ulsinc.com*.

For more information on Digital Atelier, visit www. DigitalAtelier.com. Also, see the artists' individual Web sites: Dorothy Krause, www.dotkrause. com; Karin Schminke, www. schminke.com; and Bonny Lhotka, www.lhotka.com.