

In the CNC Groove

Computer Numerically Controlled (CNC)

routers are essential for the sign maker specializing in dimensional signage, as evidenced by the work being produced by these four sign fabricators:

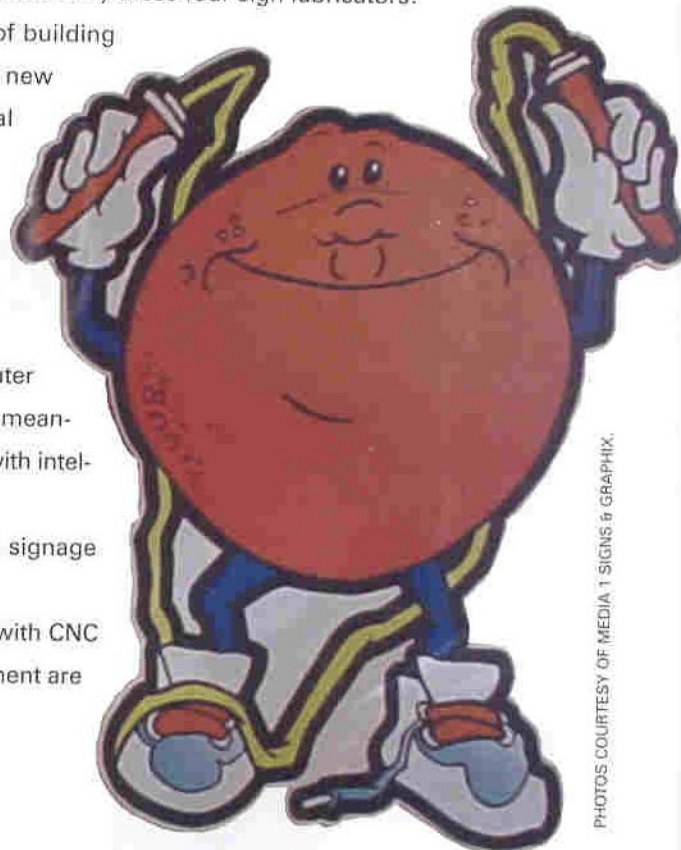
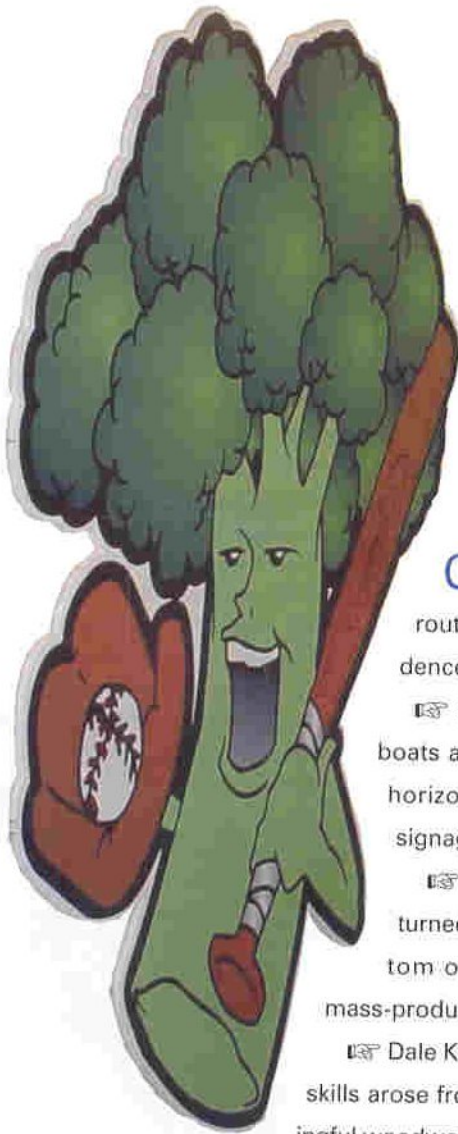
☛ Bill Palumbo dreamed of building boats and, instead, set sail for new horizons in three-dimensional signage.

☛ Dale Salamacha turned one CNC-routed custom order into a profitable mass-produced sign package.

☛ Dale Kerr's self-taught CNC router skills arose from his efforts to design meaningful woodworking for young people with intellectual disabilities.

☛ Kurt Stoner's CNC router has turned handcrafted signage into highly creative, interlocking-pieced displays.

These four sign makers are cutting imaginative paths with CNC routers, and the signs they're fabricating with this equipment are definitely worth a look.



PHOTOS COURTESY OF MEDIA 1 SIGNS & GRAPHIX.

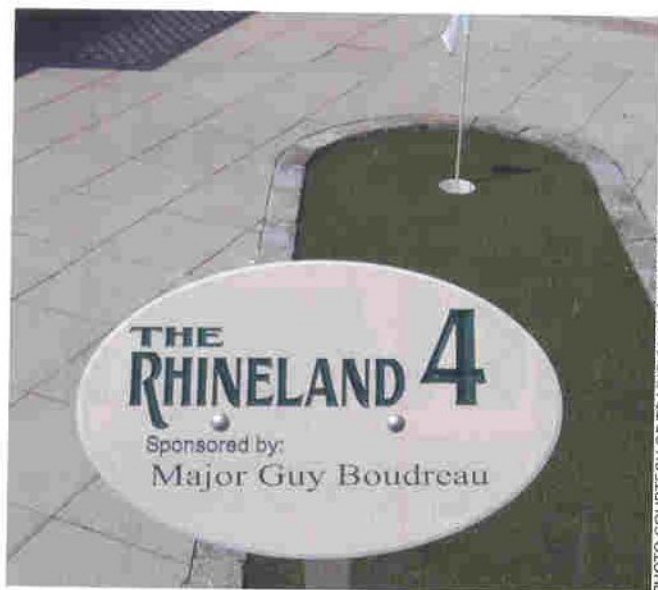


PHOTO COURTESY OF TRADITIONAL SIGN WORKS.



PHOTO COURTESY OF STONER GRAPHIX VISUAL COMMUNICATIONS.

Self-taught 3-D signage manufacturer now teaches others. Bill Palumbo originally named his Lakehurst, New Jersey-based business Baycraft Designs, because he planned to put his CNC router to work building boats. "But no one in our area wanted to build boats, so I went out and beat the bushes for 3-D software,"

he says. "I really looked into the 3-D software market for people not experienced with [dimensional crafting]."

Palumbo soon found Delcam's ArtCAM MillWizard—a program that he says "actually lets me carve in three dimensions." He simultaneously taught himself how to use the software and the CNC router. With ArtCAM Pro's built-

in face wizard, he can sculpt 3-D images in minutes.

"The current options for software have made the process of creating 3-D pieces much more accessible to all sign makers," he says. "It's understanding that they will have to learn a software package that scares many people from getting into all of the new technology, but

The Fine Wine of 3-D Design

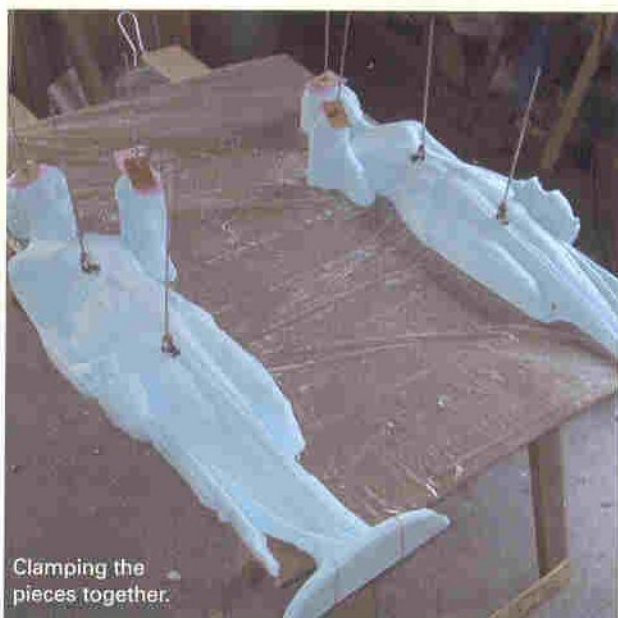
Baycraft's Bill Palumbo details his process for creating two faux statues—"wine girls"—for The Bacchus School for Wine in Jersey City, New Jersey, and explains how 3-D software makes it possible to create a faux statue with a router:

"On the 'wine girl' project, I knew that the final statues would be too thick to cut on my machine in their final state, so I used the ArtCAM Pro software to slice the 3-D models on my computer according to the thickness of the material I had to cut them from," Palumbo explains. "In this case, they were actually nine inches deep, but I only had three-inch-thick material on hand, which works fine with my standard seven inches of clearance. You can only fit something about half the size of your clearance, otherwise the router bit itself will not have enough clearance to cut to full depth."

Palumbo cut all three slices out of one sheet of foam. He then laid out the slices and stacked them on top of one another for gluing and clamping.

Once the glue set, Palumbo did the final sanding and priming and sprayed on a coat of Sculpt Nouveau's water-based polymer metallic copper coating. "It's made for exterior applications and goes on over anything," he says. Palumbo then added some patinas and a black wax finish.

"The software is what allows me to make just about any image any size," says Palumbo. "I know that the boys at Delcam have produced an 11- by-13-foot elephant out of foam, which was then cast in bronze. And since it was digital, it doesn't degrade as it's enlarged, the way a pixilated image (such as a photograph) would."



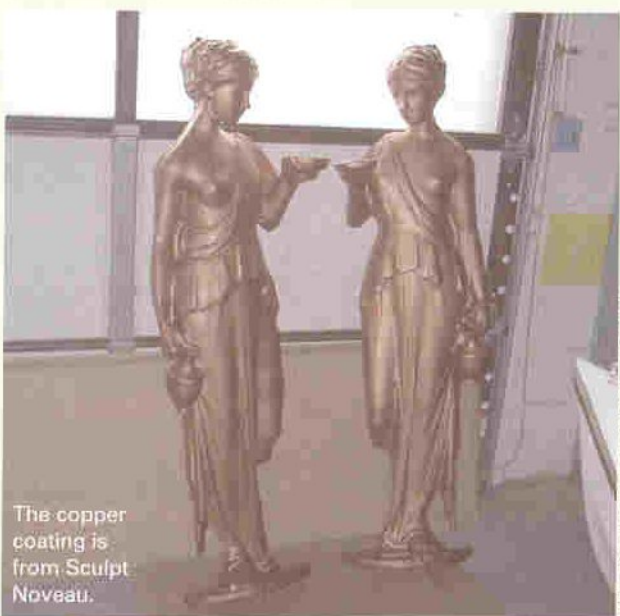
Clamping the pieces together.



Statues with primer and epoxy.



A finished statue hangs fifteen feet off the ground.



The copper coating is from Sculpt Nouveau.

PHOTO COURTESY OF BAYCRAFT DESIGNS.

most of the better software packages have 'wizards' or some onboard assistance to walk you through each of the tools they provide."

A ShopBot Tools user, Palumbo now runs ShopBot camps held by individual CNC router owners at their shops, where he teaches other sign makers the art of CNC routing. "By digitizing small objects and then resizing them in the software, we now have a wide-open palette," says Palumbo. (He also uses the Roland PICZA Pix-30 3-D scanner, which he says scans an 8-by-12-inch area up to 2.375 inches deep.)

Learning to work in 3-D signage also means going beyond linear thinking, Palumbo says. "You can't do undercuts with a three-axis machine," he explains. "I just take a hacksaw or bread knife to do any undercut. Even though ShopBot offers a five-axis machine, the software [for an undercut] is going to cost more than the machine."

One way to generate more profit from a CNC router is to use it to make molds (see "The Fine Wine of 3-D Design" sidebar), Palumbo states. "I keep pushing the world's most natural mold maker: a CNC router." For replicating 3-D designs, Palumbo takes the prototype—cut and glued together—to make a mold, which he then hits with silicone and fills with plastic or resin.

"Profitable 3-D CNC routing can be tricky," says Palumbo. "Too many people don't understand the extras of 3-D

gluing in layers, covering it in epoxies, gilding it, and coating it. They can neglect how much happens after the router is turned off, and they need to be careful of underbidding."

Fruit and veggie sign characters are a healthy hit. Dale Salamacha, founder and president of Media 1 Signs & Graphix in Longwood, Florida, has successfully turned one custom order into mass-produced signage his business now markets nationwide. The themed package is called "Five a Day." It consists of an endearing collection of CNC-routed

fruit and vegetable characters Media 1 designed for the Collier County School Board in Naples, Florida. The organization approached Media 1 with the concept, and Salamacha's company, in turn, produced the four- to five-foot-tall signs by cutting the 1/4- and 1/3-inch Sintra® substrate with a CNC router and applying digital prints to them.

Other schools soon became interested in the end product. "We've done these jobs for forty schools already," says Salamacha. "The router table can cut twelve to fourteen different char-

Companies Mentioned in the Article

Baycraft Designs

Lakehurst, New Jersey
732/286-2700
www.baycraftdesigns.com

Dale Kerr Traditional Sign Werks

Ottawa Ontario, Canada
866/770-4775
www.traditionalsignwerks.com

Media 1 Signs & Graphix

Longwood, Florida
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acters in rapid succession, so it's primarily a mass production endeavor."

Media 1 Signs and Graphix provides a wide range of services (graphics, architectural signs, engineering, etc.), but they purchased their first CNC router when the firm's CNC routing subcontractor missed a deadline. The \$50,000-plus investment in a five-by-ten-foot MultiCam unit proved a motivating factor for product expansion. "Our sales guys began to talk it up," says Salamacha. "It immediately rolled into us using it on a whole lot of projects. I plan to purchase a second one before the end of the year." (Salamacha's company boasts an impressive range of clients, including Universal Studios Theme Parks in Orlando, Florida, for which it routed a sign for the new *Fear Factor Live* attraction.)

From used-car salesman to overnight sign maker. Traditional Sign Werks, in Ottawa, Ontario, started as a home business in October 2004, when Dale Kerr bought a CNC router originally used in a charitable organization he was involved with called LiveWorkPlay. Woodworking was a hobby for Kerr, and he suggested LiveWorkPlay open a woodworking shop and buy a router in order to produce a custom cedar clock as a way to employ intellectually disabled clients served by the organization.

"I started mucking about with software to do the cedar clocks," says Kerr. Soon he went from "making silly clocks to really gorgeous signs and 3-D work that people actually liked."

The non-profit endeavor eventually folded, but Kerr bought the organization's router. With his newly acquired four-foot ShotBot PRT96 router, Kerr's sign making business was underway. He currently employs two people who were former participants in the LiveWorkPlay woodworking shop.

"A lot of people can do it by hand better than I can do it by machine," Kerr admits. "I don't have that eye, so I'm trying to find unique things to pair with my skills. I'm doing special material applications and repeat items that you can guarantee will fit every time."

One recent job involved using Corian® substrate for miniature golf course figures. "I vee-carved into it and covered it with One-Shot paint," he says. "It will last for years."

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Achieving lightweight masterpieces. Kurt Stoner, president of Stoner Graphix Visual Communications, a fifteen-year-old signage business in Hummelstown, Pennsylvania, has owned a CNC router for over six years. "It was a wise investment," he says. "It allowed us to do things more productively and more cost-effectively than doing it by hand."

Stoner's company fabricates displays ranging from movie theater marquees to actual exhibits and furniture-type signage. The firm fabricates CNC router-cut component parts for 3-D displays. "Precision cuts make the parts easier to assemble," says Stoner. "I think it through—basically on a computer and on paper—to engineer it, as to what I want to come out the other end."

It's a challenge, Stoner says, and requires understanding how to break things into components to make dimensional products. Such skills go beyond the typical software programs for furniture and metal fabrication. "Most of the things we do are pretty unique," he continues. "The router is very basic—more x/y/left/right/up/down," he says. "Understanding the cause-and-effect of things is key to doing the more interesting and involving projects."

One such example can be found in the interior sign package Stoner's firm manufactured for Cabela's, an outdoor gear and clothing company. The five overhead department signs were made of Gatorfoam® with an inkjet-printed wood-veneer paneling appearance. The resulting eight-foot-round overhead signs had a heavy appearance but were actually quite light, Stoner says. The multiple pieces, cut by the router and interlocked together, made the signs very rigid.

Stoner's firm used a similar technique to construct a seven-foot-tall Hershey's Kiss replica with thirty-five different aluminum pieces (see "Quotes & Comments"). Stoner has also produced prismatic letters, cutting another path inside the letter to create a new effect. "We put smaltz in that channel, and using epoxy, we create a new texture on the center of the letter to give it some interest," he says. "We're also doing a lot of fasteners and brackets to hang unique signs with our router."

These four sign makers are proof of just some of the wealth of projects and potential imagination that are available with CNC routers. ☐

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