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Virtual vision

Katie Bradford masters computer imaging for hard-to-design projects

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IFAI publication

by Sigrid Tornquist

Katie Bradford uses computer imaging to master hard-to-design projects.

Virtual vision

"WE CAN TAKE A PHOTOGRAPH OF A BOAT, CREATE A COMPUTER MODEL OF IT AND ADD TO IT THE VIRTUAL STRUCTURE THAT WE INTEND TO BUILD," says Katie Bradford, MFC, IFM, owner of Custom Marine Canvas in Noank, Conn. "That way the customer can see exactly what [the product] is going to look like before we bend the first piece of steel." Being able to do business virtually was the farthest thing from Bradford's mind when she started the marine fabrication company in 1985, with one sewing machine and one employee. But Bradford seems to have a knack for welcoming unexpected opportunities—and making a success of them.

A woman, a boat and a sewing machine

Bradford had always thought she was going to be a scientist. Her junior year in college she went to sea to study the marine sciences. "But when we were offshore I discovered that I wanted to sail professionally," she says. She got her captain's license and delivered race boats around the world, including two trans-Atlantic crossings. It was during those travels that she met a woman who did canvas work for racing boats, and first realized that she could possibly make a living by combining two of her passions—boating and sewing.

Photos: Bart Harris/Chicago.

VITAL STATISTICS

Katie Bradford, MFC, IFM
Custom Marine Canvas
Noank, Conn.
Since 1985

Custom designed and handcrafted canvas-based products for boats and waterfront properties

IFAI member since 1994
www.custommarinecanvas.com

FAVORITE CHILDHOOD BOOK

"Island of the Blue Dolphins"
by Scott O'Dell

It was also during this time that she acquired the experience that landed her her first job working at a sail loft doing sail repair, experience which involved an unlikely connection of elements. She was in Sardinia, Italy, racing sailboats. The condo at which she was staying had some "great waffle weave towels" begging to be transformed into a pair of shorts. Bradford had a *Time* magazine begging to be turned into a pattern for a pair of shorts. And the North Sails Repair Loft had a sewing machine set up for sail repairs begging her to use it to craft her one-of-a-kind waffle weave shorts. Not only did she end up with a custom pair of shorts, she ended up with a new career. Upon her return to the United States Bradford applied for a job at a sail loft doing sail repair. "When they asked if I had any experience I said 'Yeah, I've sewn in the North Sails Repair Loft in Sardinia, Italy,'" she says.

After ten months, Bradford was laid off and decided to start her own business. In an unheated building that was once a foundry, with a used sewing machine she bought from her former employer and one cousin for an employee, she launched Custom Marine Canvas. "We live in coastal Connecticut and seagulls love to break open clams on roofs," Bradford says. "Every time a seagull would drop a clam on our roof, soot would fall on my work." From those primitive surroundings Bradford expanded the business and moved to a more polished, 3,000-square-foot facility, hiring additional employees, including the man who introduced her to AutoCAD®.

Photo modeling

"In 1991, a man named Paul Shuman came to me looking for a job and he said he knew AutoCAD. He also brought some sport kites he had made," Bradford says. "[Impressed with his sewing] I hired him on the spot, not thinking in a million years that we would ever use AutoCAD [photo modeling] because we were still a pencil-and-paper kind of company." But when a project came up to design a cover for a rescue boat located on the bow of a ferry—while it was in motion—Bradford thought it was time to give photo modeling a try. "The ferry's going 18 knots all the time and there's no opportunity to have it sit still long enough to take a conventional pattern, where we drape material and mark it for the pattern," she says. "So we rode on the ferry with a camera and put round file folder stickers all over this inflatable boat." Using those stickers for reference points, Shuman took photographs from at least three different directions as close to 90 degrees as possible and loaded the photos onto the computer program, identifying the points so the program could generate a virtual frame of the inflatable boat.

Sf Review asks *What is your...?*

INDUSTRY PREDICTION

Right now there is zero boat building going on. I think the cycle we're in is going to take six or seven years before boat building is going to start recovering.

BUSINESS PHILOSOPHY

To recognize customers' needs so we can design something that makes their boating safer, more comfortable and more attractive.

card, but passion the gale. ~ Alexander Pope

From there, Shuman used the rendering program Rhinoceros (or Rhino) to complete the patterning. "In the rendering program you decide where the seams are going to go based on the shapes that are generated," she says. "You work within certain tolerances. The number of pieces of fabric you need depends on how much shape you want to put into each [project]." Bradford's company made the cover out of 24-ounce vinyl and it fit perfectly. "And the beauty of having the pattern in the computer is that it's easily accessible for future use," she says. "The company has since reordered that cover."

When a plan comes together

Since that first job, Bradford and her team have done many projects using photo modeling, although it's still a small portion of the company's total revenue. "The process is time-consuming," she says. "We charge about $700 just to produce the image, so it's only for the discerning customer." But for some projects it's really the only answer, and using the process brings magnificent results, according to Bradford.

Take, for instance, a recent project Custom Canvas did using photo modeling. The customer wanted a sun shade for a sleek oceangoing sailboat, which Custom Canvas designed to be partly welded and partly slip fittings. No one at the company ever met the owner. "The boat was in Newport, R.I., and the owner was in Texas, and so we photo modeled the boat, drew what we thought he wanted and he made changes," Bradford recalls. "We made those changes and when he approved the design, we found a company in Maine that had done a similar type of top in terms of having it be partially welded. We e-mailed the file to the shop in Maine [to make the frame]. We made the fabric cover. By now the boat has left Rhode Island and is in St. Barth's in the Caribbean. The frame shipped from Maine. We shipped our canvas top from Connecticut. The two pieces met in the Caribbean and the captain put the thing together half an hour before the owner showed up, and it fit like a coat of paint. That was something that would have been impossible without photo modeling."

But with the help of photo modeling, Bradford made it *virtually* possible.

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BUSINESS STRENGTH

Our product is our strength. Also, as an avid boater I recognize what people need and want for their boats.

ADVICE FOR OTHERS

Share what you know. For many of us in the marine fabrication industry, if we find a new way to do things we can't wait to share it with the other shops.

OCEANOGRAPHIC EXPLORATION

It seems whatever Katie Bradford is involved in, there's always some connection to the sea. When she isn't working on fabricating projects for someone else's boat, she's either sailing on one of her own vessels, volunteering for the New London Community Boating nonprofit organization she founded with her mother (www.newlondoncommunityboating.org), or she's fabricating a one-off item designed to further marine exploration.

One unusual project Bradford and others at Custom Marine Canvas worked on was a camera harness for a sea lion. Recruited by Mystic Aquarium in Mystic, Conn. (www.mysticacquarium.org), the company designed a harness that attaches a camera to the sea lion, enabling scientists to learn more about the undersea world without disturbing the natural habitat of the sea creatures.

Bradford was also hired to design and manufacture a project for the Woods Hole Oceanographic Institution (www.whoi.edu). Her company has been building 60-foot-long zippered sheaths to keep the cables on a submersible from tangling when going to the bottom of the ocean. Most recently, the product was used when the RV Atlantis deployed a Remotely Operated Vehicle (ROV) to the bottom of the Mariana Trench in the Pacific Ocean.