

Minneapolis Star Tribune: Inventing Products for Everyone

An entrepreneur mixes passion, good sense
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Dianne Goodwin likes to design products that make it easier for people to work and play. But she's an inventor with a twist: She designs products so people with physical disabilities can use them. "I love developing new functional technology," she said.



Goodwin, president of Blue Sky Designs Inc., has about a dozen ideas waiting in her notebooks and more swimming in her head. "I do lots of sketching, lots of doodling," she said. Last month, Vertex International, a product development company based in Watertown, Minn., licensed one of her ideas - a garden seat that's comfy for gardening but makes it easier for people with back problems. Vertex will begin producing the seat in the fall. Her latest project is a camping tent and vestibule. But it isn't an ordinary camping tent. Goodwin, who loves to hike and camp, designed it so someone in a wheelchair can independently get in and out.

Such a design is a lot trickier than it sounds. It requires knowledge of various physical disabilities and how they affect a person's body movement and the ability to apply that knowledge through technology. For example, how does someone in a wheelchair or someone with a weak upper body open the door of the tent? Zippers are the worst means of entry, Goodwin said. She designed six different door styles, including "curtain doors" which slide open like a show curtain, and hands-free "cafe doors," which are two swinging doors that use counterweights. She eventually will select the best two designs for the tents that will be manufactured.

Another consideration is making the tent easy to set up from a sitting position. One approach is to have central poles (the structural tubes) that fold down, she said. That's something she's still working on. Like Goodwin, many product designers are developing products for "universal" use so people with or without disabilities can use them. For example, in addition to storing a wheelchair, the tent vestibule could be used to store a bike, a stroller or camping gear, she said. It also can be attached to a car. The curb cut on the sidewalk is a good example of universal use; it works for people pushing baby

strollers, bikes and people in wheelchairs, she said. Goodwin sometimes is asked: Do people with disabilities camp? If a person loves to camp and then becomes disabled, does he stop doing everything he loved beforehand?

"Lots of people with disabilities camp," she said. About 33 percent of Americans camped last year, and 64 million Americans have disabilities. In addition, federal laws now require wheelchair-accessible facilities at campgrounds and grading of some of the wilderness trails. "It's a well-worthwhile project," said Harold Johnson, program coordinator for Wilderness Inquiry, an organization that packages outdoor adventure trips for people with and without disabilities. Tents aren't designed for people with disabilities, he said. Many tents have a front lip on the ground in front of the door that presents an obstacle for someone in a wheelchair, he said. His current tent-buying strategy is to scour manufacturer's catalogs, order one that looks like it might work and try it out. "Really, there's not a lot of good choices," he said.



Getting a start Goodwin splits her time between one of her favorite St. Paul cafes, where she works in the mornings, and her office in St. Paul, where she has her drafting tables and 3-D modeling computer. She always is thinking of new ideas and surrounds herself with friends who are creative too, bouncing ideas off them. Although Goodwin has experience in product design - she used to draft trucks for Tonka Toys - much of what she knows is intuitive. For example, her first version of her garden seat was an old domed Plymouth hubcap. "I thought to myself, 'a spherical thing would do it.' " She eventually sculpted a real model of the garden seat in plastic. The garden seat has handles on both sides for pushing off and a dome-shaped base, wider in the back, that lets the gardener - or ice angler - lean, pivot and spin around with ease.

Goodwin learned about disabilities while working as an outdoor recreation specialist in Maryland. She went camping and canoeing with kids who had various physical disabilities. But it wasn't until Goodwin toured the Courage Center, a resource center in Minneapolis for people with disabilities, as she considered moving back to Minnesota that she knew she could turn her interests in nature, disabilities and engineering into a career. "I thought: 'Cool, I could work with people with disabilities and I could design,' " she said. She studied rehabilitation engineering at the University of Virginia and won an award from the Rehabilitation Engineering and Assistive Technology Society of North

America for her master's degree project - a customized wheelchair for short people.

By the time Goodwin graduated, she had a rehab engineer position waiting for her at Gillette Children's Hospital in St. Paul. Her boss left Gillette to start Tamarack Habilitation Technologies, also in St. Paul, and she followed. In 1997, Goodwin went out on her own, forming Blue Sky Designs with the goal of creating a "river of revenue streams" by licensing her products. She has two employees: Sherry Rovig, a design consultant who helped design the garden seat, and Kevin Kinney, whom she originally met at the Courage Center. He sews the tents. .

Getting funded

Goodwin's plan is to work half-time on her tent and get two other product proposals into the pipeline by January. "In two years' time, I'll need to have some other source of income," she said. Goodwin always must think about funding. For her tent, she received an initial Small Business Innovation and Research (SBIR) grant for \$70,000, which got her project underway. Recently, she received an additional \$296,000 two-year grant to finish it. Winning a federal grant is not easy. "If you're a do-it-yourselfer, it's a big increase on your workload," she said. Initially, she applied a few times on her own and didn't get funded. Then three years ago, through a referral, she turned to Minnesota Project Innovation Inc. (MPI), a Minneapolis-based nonprofit agency that helps science and technology entrepreneurs get federal grants. MPI helped review and shape the proposal.

It's a bureaucratic process, and each agency has its own rules, regulations and idiosyncrasies, said Pat Dillon, an MPI director. But she thought Goodwin had a winning product. "When I sat in on the focus group for the tents and I saw their reaction, it was so heartwarming to have been a part of that," Dillon said. "That's where I get my thrill - companies that are doing something to help people." Goodwin also attended a conference and had the good fortune or fate to sit next to the woman who represented her target funding agency, the U.S. Department of Agriculture (USDA). She told Goodwin to make sure her proposal had commercial viability, with rural economic appeal as well as cited sources. So Goodwin wrote the 60-page proposal, adding more research and statistical information than she did the first time. It worked. Now Goodwin can finish work on her tent.

She needs to make it insect- and weatherproof and is redesigning it to be less clunky and "sexier" for consumer appeal. She also needs to find a manufacturer. The goal according to the scope of the grant is to commercialize it within two years. That means Goodwin needs to do a lot of schmoozing at trade shows and conferences. Recently, she attended the Outdoor Industry Rendezvous trade show in Scottsdale, Ariz., where she dined with corporate executives including the chief financial officer for REI, the outdoor sporting store. "It was slightly intimidating for an engineering type," she said.

Meanwhile, Goodwin has another idea that's taking shape: remote-controlled art for kids who are bright but nonverbal. That's all she can say about it at this time. "I want to bring good things to the world," she said.

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