**About the Cover**

**Four Men Making Waves**

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The original idea was to build a computer graphics production house, but Bill Kovacs, John Grower, Larry Barels, and Mark Sylvester soon discovered the price for the kind of equipment that sort of enterprise demands was prohibitive.

So that others hoping to enter the business wouldn't face the same problem, the four decided to build a computer-graphics software house, and in the short time they've been at it, they've earned a real name for themselves. Who hasn't heard of Wavefront Technologies with its famous logo (see Figure 1).

But how do you start even a software company? "Well it took about a year of hard work to put together our original business," reveals Larry Barels, president of the company. "We had to do everything: look for potential markets, develop the original core team, even specify the parameters of the product we would produce," says Barels.

You begin to smell success, however, when you're called on to do an individual job like a graphic opening for a National Geographic special or get called in to consult with Lucasfilm and Universal Studios. "But there is infinitely more," chimes in Bill Kovacs, director of research. "What the company really sells is knowledge, the ability to build tools. The software we've written—which takes advantage of the new hardware and the speed it affords—allows people today to do work that wasn't possible even five years ago. Today a workstation fits under a desk. Five years ago that computer would have taken a special room and 2000 square feet."

Wavefront has grown from five people to 40 in less than three years, and it now has a small production department as well,
where the company’s code is tested and proof of concept work is done. John Grower, director of production, talks of doing a lot of in-house animation. He points out that they do this for their own demos as well as to show potential clients the possibilities that exist.

Wavefront lists as clients some of the giants in their own fields, including NBC, The National Film Board of Canada, and Disney, in animation, and General Dynamics, NASA, and Northrup, in aerospace, for example. The company’s software runs on a variety of hardware, including a $20 million CRAY 2, Digital’s Silicon Graphics Iris, Sun Celerity, Ridge, Edge, and Culler.

Using such equipment, Wavefront did NCGA’s 87 Call for Entries brochure (Figure 2). This image shows multiple objects, multiple light sources, texture mapping, compositing, and reflection mapping.

In Figure 3 you see one image from the 15-second piece for BRAVO, a cable channel. This strip shows multiple color light sources, randomized texture, and instancing on the floor. The world was composited separately on the scene.

**Try anything!**

For so small and new a house the variety turned out by Wavefront is stunning. Take, just for example, “Ribbon” (Figure 4), which shows reflection mapping on a black background, and “Eggs in Space II” (see Figure 5). In

“Eggs” you see bumpmapping (metallic), reflection mapping, texture mapping of a Santa Barbara sunset, transparency, smooth shading, and colored light sources. Then with a bit of whimsy you see in Figure 6 pine texture mapped onto a child’s educational play box. The NCGA logo (see Figure 7) with its highly polished surfaces required reflection mapping, and there is bump-mapping, color blending, and texture mapping in the same image.

A lot of overtime hours are put in on the systems Wavefront uses, all of which work under the Unix operating system, but the results can be as brilliant as this month’s cover. John Grower, both art and technical director for the piece, calls this month’s cover image an illustration of what computer brain molecules might look like, with amorphous shapes receding into the distance and two different texture maps applied for each amorphous shape. Grower used an attenuated light source to illuminate the picture.

Wavefront Technologies may still be small, but its work is bringing in many new clients, so it is growing all the time. And of course the images you see here are not the company’s principal work. Its principal products are software and software systems for animation and simulation. It seems some mighty pretty pictures come from a house that really didn’t start out to do pictures!