

They Do the Locomotion

Ernie Blood and Jack Scully gave life to hundreds of animated characters we encounter daily.

By Tom Gresham

Ernie Blood and Jack Scully remember with genuine fondness the day they were given the axe. Between them, they had a combined 22 years of experience at Polhemus Navigation Services Inc. in Colchester when they were jettisoned in 1986. Guilty, apparently, of excessive ambition, they were stunned.

"I still remember leaving that afternoon and looking at Ernie and going, 'Well, what now?'" Scully says. "It was not an easy time for us." What has transpired in the ensuing years, however, has dulled that memory.

Driven together by adversity, Blood, the engineer, and Scully, the salesman, have teamed up to run Ascension Technology Corp. for 17 years. Formed out of necessity, and named to reflect their rising from the ashes, Ascension has developed into one of the country's most innovative small businesses.

That's a marked difference from the company's early days, which were decidedly humble. Blood's kitchen served as the conference room, and his bedroom became an engineering lab.

"When we had a heavy-hitter coming in, we would meet them in the foyer at the Radisson," says Scully, today the vice president for marketing and new business. "It was a real garage shop atmosphere. It was very similar to a lot of other technology companies' beginnings."

Today, Ascension has increased 20-fold in employees and grown a worldwide reputation. Its home is a 21,000-square-foot facility at the Catamount Industrial Park in Milton. The nondescript gray building, which doesn't even offer a sign to passers-by, has been in operation for four years and is already showing early signals that it will need an expansion to keep up with Ascension's rapid ascent.

"I never would have guessed in 1986 that this is what we were going to look like," says Blood, the president and chief technical officer of Ascension, "and that we'd be doing



Ernie Blood (left) and Jack Scully have developed their Milton company, Ascension Technology, into one of the country's most innovative small businesses.

some of the things that we're doing."

Ascension provides motion-tracking solutions for three-dimensional computer graphics applications by quickly and accurately tracking the motion of humans, peripheral devices and medical instruments. The motion trackers instantaneously track the position and orientation of one or more sensors for real-time analysis, interaction and control of computer processes.

Ascension technology chiefly serves six markets: animation, medical imaging, biomechanics, virtual reality, simulation/training and military targeting systems. The uses are exceptionally diverse. Ascension motion trackers can make a cartoon character's movements startlingly lifelike, guide a doctor through delicate surgery or help teach a budding pilot to fly a jet or aim a missile.

Ascension's commercial successes have justified the assertive vision of its founders. While at Polhemus in the 1980s, Scully had

been hearing regularly from customers of a growing interest in possible commercial uses of motion-tracking technology. Scully figured there was huge potential for commercial growth. However, Polhemus was focused on military applications, like a project for fighter pilots that Blood had a hand in. When a pilot turned his head, a slew of his plane's weapons turned with him, directed by the sensor attached to his helmet. "They called it 'the look that killed,'" Blood recalls.

Scully and Blood pitched McDonnell-Douglas, which owned Polhemus at the time, on a spin-off company that would concentrate on developing commercial applications of the motion-tracking technology.

"They essentially told us that it was illegal for employees to be thinking about starting up companies while they were working there," Blood says, "and they fired us."

Still resolute, Scully and Blood joined forces to form Ascension. For the first two

Ascension Technology

years of the company's existence, Blood says there were a lot of 16-hour days. The work eventually paid off, however, when Blood improved upon the head-tracking technology for fighter pilots. Scully negotiated a licensing agreement with GEC (General Electric Co. of Great Britain).

The deal was stalled for two years when Polhemus, which had been purchased by Kaiser Aerospace, a direct competitor of GEC, sued Ascension for patent infringement. Polhemus dropped the case shortly before it went to trial, and Ascension, which consisted of Blood, Scully and a secretary, was able to weather the legal fees with the financial backing of GEC. The licensing agreement was finalized with GEC, and Ascension has supported itself through sales ever since.

"It's been steady for us," Scully says. "We've had some steady growth all along and now we're poised to really take off, especially in the area of medical treatment."

Even Blood, an inventor who by nature dreams big, has been surprised by the revolutionary developments in the uses of motion tracking in medical treatment. Motion-tracking sensors are rapidly changing the way doctors treat their patients. Scully says that Dr. Elias Zerhouni, director of the National Institutes of Health, recently cited three great advances medicine will see in the next five to 10 years: advanced imag-

ing, cellular biology and image-guided procedures — many of which will rely on motion-tracking technology.

The use of Ascension technology helps doctors guide their instruments more accurately in a number of procedures. Blood says sensors can or will be used in prenatal treatment, the treatment of breast tumors, spinal surgery, the sewing of veins, heart treatment, prostate treatment, the removal of lesions and even brain surgery. Ascension technology has also led to three-dimensional ultrasounds and has been used widely to develop medical simulations for training.

The medical uses are in various stages of development — some are still very much experimental — but Blood says testimonials for some of the procedures have been piling up fast.

"It's really just starting," Blood says. "Some of it is just getting into the medical community. It takes time for new methods to gain widespread acceptance, but it's exciting to see what they're doing so far." Blood cites the example of a German neurosurgeon who told Ascension that its sensors allowed him to navigate the brain as he never could before. Using Ascension sensors, he operated on patients with conditions that previously would have been considered inoperable. The surgeries saved lives.

"I don't think we always appreciate what we're doing around here," Blood says. "When I get a chance to sit back for a moment and think about it, it makes me feel pretty good to know that the work we're doing is helping to save people's lives. It's an amazing feeling."

Even if Ascension's growth in the medical market were to explode, the company

Ascension Technology serves six markets — animation, medical imaging, biomechanics, virtual reality, simulation/training and military targeting systems — from its 21,000-square-foot facility.



In 17 years, Ascension has realized a 20-fold increase in employees and a worldwide reputation. Sue Ames (left), administrative/HR manager, confers with Karen Lemire, accounting coordinator.

would avoid concentrating its resources in that direction. Blood and Scully say they have always wanted to keep from getting bogged down in one market. When the virtual reality revolution erupted in the early 1990s, Ascension played a part in it, developing motion trackers that could be used in high-priced games. However, Ascension, which does 50 percent of its business internationally, did not succumb to the temptation to focus on virtual reality applications, so when the virtual reality craze deflated, Ascension was not one of the technology companies that faded with it.

"We decided from the beginning that we were not going to go after a single-segment application," Blood says. "From day one, we've always made sure we were involved in a lot of different markets."

A constant for Ascension has been its work in the field of animation. Scully says Ascension deserves some of the credit for inventing real-time animation, in which sensors capture the motions of performers for the instant animation of computerized characters. Over the years, Ascension technology has been used in the animation of characters in hundreds of television shows (MTV's *CyberCindy*, *Donkey Kong*), commercials (the Pillsbury Doughboy, the Keebler elves), video games (Legend, College Hoops Basketball, SONY's new game, *The Getaway*) and movies (*Starship Warriors*, pre-animation for *Star Wars* films). While still at Polhemus, Blood and Scully

Ascension Technology

created the digitizer used for George Lucas' groundbreaking *Star Wars* series, which won an Academy Award for Polhemus. Blood's name is on the patent. Unfortunately, Blood and Scully were history before the presentations in Los Angeles.

Toka, a video-game developer, used Ascension's MotionStar system to create Legend. "The most interesting advantage of magnetic ... [motion tracking] is to see in real time the results of the ... [motion capturing] session," says Benedicte Loyette of Toka. "It's also very good for game development, because there can be a wide variety of motions for the players."

Blood says one of the most exciting — and daunting — aspects of Ascension's business is the ever-present uncertainty that accompanies life as a company driven by invention. When one operates on the front end of technology, there are no predecessors to follow. Markets cannot be accurately analyzed because they do not exist.

Although his administrative duties are growing as Ascension's work force continues to expand, Blood remains closely involved in the nitty-gritty engineering work that drives Ascension. He enjoys the chal-



Among other things, Ascension's technology helps doctors guide their instruments and has led to three-dimensional ultrasounds and simulations for medical training. Crystal LaPlant is an assembly technician.

lenge of steering the direction of his company's inventiveness, predicting markets and proposing products.

"We don't have much of a picture of the future in this business," Blood says. "We have

to use our instincts to decide what to do next. So far, it's worked well. We're still selling every product that we've ever made."

Blood's knack for succeeding in competition runs in his bloodlines. His great-grandfather Ernest Blood is a member of the Basketball Hall of Fame. In 51 years of coaching YMCA, high school and college teams, Blood compiled a robust record of 1,268-165. Between 1915 and 1924, his Passaic High School (N.J.) team fashioned a national high school record 159-game winning streak.

It's not surprising, therefore, that Blood tends to gravitate toward athletic pursuits in his free time. He plays racquetball three times a week and enjoys skiing and working out. Blood, a Burlington resident, plays the occasional round of golf. As one might expect of an engineer, he prefers to work at perfecting his swing on the driving range.

"I spend so much time behind the desk that when I actually get some free time, I want to do something physically active," Blood says.

Born in New Jersey and raised in the Berkshire Mountains of Massachusetts, Blood spent his early professional life designing airplanes in California.

A University of Michigan graduate, he worked on military aircraft, some of which, he says, the public still hasn't seen. However, the transient nature of aeronautical engineering labor led him to believe he would end up



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a "vagabond," floating from job to job.

In search of stability, Blood landed a position at Polhemus in 1971. He settled in Vermont, much to the pleasure of his parents, who had already moved to the Green Mountain State.

Polhemus was still a small operation when Blood arrived. He was quickly — and fortuitously — thrust into unfamiliar terrain.

"I didn't know anything about electronics, but I was the only person there who could write computer programs, so they put me there," Blood says. "Since then, my whole life has been built around electronics."

Scully arrived at Polhemus later in the decade. A Greenwich, Conn., native, Scully was familiar with Chittenden County from his days as a student at St. Michael's College, which he attended on a ROTC scholarship. Following graduation, Scully spent four years in the Air Force, where he became acquainted with aerospace technology. He was immediately impressed, upon his hiring, by the discoveries Polhemus engineers like Blood were making.

"I was amazed," Scully says. "I couldn't believe what this little company in Vermont was doing."

Today, Scully lives with his wife and 7-year-old son in Malletts Bay. He also has a grown daughter. Despite his considerable work responsibilities, among them a sometimes busy travel schedule, Scully has long been active in the Colchester community.

He formerly served on the town's Select Board and was a founder of the Malletts Bay Advisory Commission, which works to preserve and protect the Bay.

Scully says he and Blood long ago gelled as partners. Their skills and personalities just mesh.

"It's been a really nice division of labor," Scully says. "He wasn't too interested in marketing and sales and that was my area. His forte is discovery, invention and engineering, though he's very good at working with customers, too."

Blood says if Polhemus had simply said "No" to his and Scully's proposal for a spin-off company, he would have been content to continue with his job, likely never again worrying about the potential commercial applications of the magnetic tracking technology.

"If I hadn't been fired, I never would have been able to do things that I've done," Blood says. "I might have had the ideas, but I wouldn't have moved on them. I was forced to and I'm glad."

Scully agrees that being fired simply brought out the best in him and his partner.

"You know the saying, 'Necessity is the mother of invention,'" Scully says. "They made a mistake to let us both go. If they'd only laid off one of us, it would have been more effective. But they kept us together, and it's worked out well for us."

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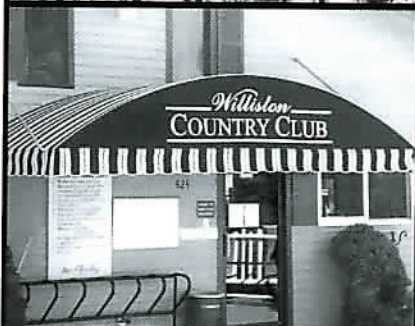
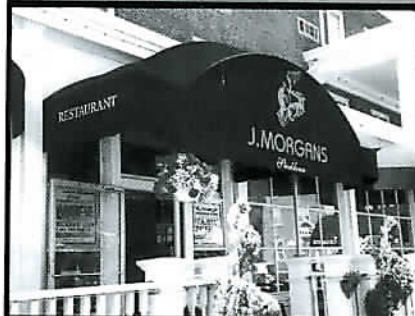
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