

Laser to take stock of heritage sites

■ Camera has 'surgical' accuracy that supplies 3-D images, allowing for study or the creation of replicas, system's creator says

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Imagine a device with spider-like tripod legs, connected to a large cube that shoots a green laser beam. The beam scans the Orinda Theatre, then boomerangs back to a wired laptop computer.

No, it's not Star Wars. The laser won't blow things up or slice them in half.

Instead, the beam from a Cyrax camera will take a picture of the building, recording all aspects of its dimensions, down to every nook and cranny.

The job would take a surveyor days to complete, and he or she would still be unable to capture what the Cyrax camera can in seconds.

The technology scans an object and produces an identical three-dimensional image to the quarter-inch at every angle.

If anything were to happen to the theater, it could be rebuilt exactly the way it stood before. Even imperfections such as cracks could be duplicated.

"It's so precise," said Ben Kacyra, the system creator. "It's surgical."

Cyax Technologies began developing the system in 1992. The company was the first to figure out how to make the camera portable and make the laser eye-safe. The device was also able to scan large objects accurately.

Development of the machine figured in the company's acquisition by Leica Geosystems, a Swiss company, three years ago.

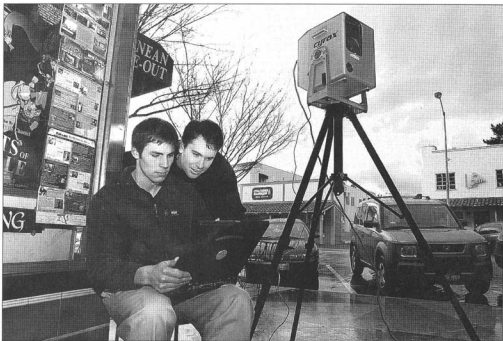
But even with Cyax Technologies no longer existent, Kacyra and his wife, Barbara, still had a passion for the technology and wanted it to serve a bigger purpose.

"We want to demonstrate to the world it's not just for surveyors," Ben Kacyra said. "It should be used for conservation."

The Kacyras are working on using the technology to document endangered world heritage sites. The recorded data would provide detailed information of unique landscapes and architectural wonders.

The data could be stored at universities, museums or other destinations and made accessible via the Internet.

Once on the Web, anyone from



JOEL CARLOS RAMIREZ/TIMES

ANTHONY FASSERO and Grant Adams, architecture students at UC Berkeley, glance at a laptop Feb. 20 outside the Orinda Theatre to observe the progress of a laser scan with a Cyrax camera. They and other Cal students scanned the theater inside and out as an example for a presentation to Bay Area university and business leaders.



A BEAM FROM a Cyrax camera scans the landscape to provide a three-dimensional image, accurate to the quarter-inch, at every angle. The device's creator hopes to collect data on world heritage sites.

a professional architect or archaeologist to a high school student writing a report could access the information.

"He can access the 3-D data and be able to understand how the streets were architecturally designed in the ancient Roman

Empire days," Barbara Kacyra said.

At the moment, the Kacyra Family Foundation, a charitable foundation started by Barbara and Ben, has helped jump-start a pilot program under Cyrax, the name of the Web site they hope will

serve up the information someday.

The program involves three endangered heritage sites that students from UC Berkeley and the University of Ferrara in Italy are studying.

The Ferrara students are scanning portions of Pompeii, the city buried in the 79 A.D. eruption of Mount Vesuvius.

A site in Deadwood, S.D., "a cowboy town," Ben Kacyra says, is also on the world heritage list, a register prepared by an international committee of more than 750 cultural and natural sites around the world.

In Tambo Colorado, Peru, UC Berkeley students have begun recording and archiving data on a society that built mud structures.

John Risteviski, a Ph.D. candidate in architecture at UC Berkeley, recently returned from Tambo Colorado, where he spent four weeks scanning 250 million reference points with the Cyrax camera.

"It makes a big difference in terms of preservation," Risteviski said of the technology. "It's the

perfect tool."

Back at the Orinda Theatre, with its marquee prominently visible from Highway 24, a group of Cal architecture students are scanning the building as an example for a presentation in Orinda in the next few weeks.

There, the Kacyras will show the 3-D images to representatives of universities and Bay Area businesses that might be interested in investing in the technology or helping fund the preservation projects. The system costs between \$100,000 and \$120,000 to purchase, but it can be leased for \$3,000 a month.

The Kacyras say their goal is to scan every world heritage site on Earth and provide the information on the Cyax Web site.

If anything were to happen to a site - if the Leaning Tower of Pisa were to lean too far, for example - an exact replica could be built.

"Hopefully, (the Web site) will show the world what can be done with technology," Ben Kacyra said. "Hopefully, one day Cyrax will be owned by the world."