Use of holographic technique "stops them in their tracks"

When Mark Diamond, 27-year-old president and owner of Holografix Inc. of Kendall, saw a hologram on the March cover of National Geographic magazine, he had a feeling of justification.

For one thing, it buttressed his decision nine years ago to get into holography. Secondly, the cover convinced him that holography is entering a serious phase in communications.

"Here was the staid, prestigious National Geographic — conservative as well as academic — introducing a hologram to its 10.5 million subscribers, many of whom were seeing a hologram for the first time," Diamond remarks, "without wearing funny glasses or standing on their heads."

Diamond describes a hologram as a three-dimensional image created by laser, and holography as the process of making such images. Some holograms must be illuminated by laser, but the ones Diamond produces can be seen in "white light." (One use of holography utilizing laser is the supermarket scanner.)

Diamond notes that holography was an accidental discovery by Hungarian-born physicist Dennis Gabor in 1947 when he was searching for a means of magnification. Accidental or not, Gabor won the Nobel in physics for it in 1971.

Diamond has patents pending for the world's first computer-controlled talking holograms, a project jointly created (about two years ago) with Alif Khawand, 30-year-old president of Disco Lighting Systems of Miami. Diamond came up with the concept of talking holograms, and Khawand programmed a computer to synchronize sound with a moving image when both were working on a project for Saudi Sheik Mohamed Al Fassi.

"It was the world's first computer-controlled laser image. Speech was synchronized with the three-dimensional heads of the sheik and his wife, installed behind two-way mirrors in the sheik's breakfast room," Diamond says. "The lights, the motors, the sound were all tied into the computer, which was activated when the sheik clapped his hands.

Diamond: Decision justified

Diamond says the techniques of the project are scheduled to appear in an upcoming issue of American Cinemaphotography, a professional motion picture magazine.

Diamond founded the company to research and bring to market the applications of holographic technology and laser technology, but specifically holographic technology.

"When we produce holograms there are several components involved, various disparate elements in which we use computers to control these elements," he says.

"We have computer numerical control of various motors and mechanical components that are required to make precision moves in terms of the juxtaposition to each other in an optical system which we call a holocamera.

"In some situations, we use computer laser light sculptures, and they do all kinds of things with lasers, including drawing patterns and intelligent graphics such as words, or even corporate logos. With lasers, this can be done on anything from a sky to a screen."

Formats differ. Some are flat, and some rotate 360 degrees. "National Geographic chose a hologram which allowed it to be reproduced relatively inexpensively and discernable in regular white light," Diamond says.

"And when you consider that the whole purpose of advertising is to attract attention to whatever may be your product or service, holography is one medium that stops them in their tracks categorically," Diamond says.

"Since very few companies can produce holograms effectively or in any quantity," Diamond says, "major national credit card companies may, by as early as the end of the year, be issuing holographic credit cards to counter the growing use of counterfeit cards."

Clients who have utilized Diamond's expertise include DeBeers Diamonds, the Norden Systems Division of United Technologies, and the Lawrence Livermore Radiation Laboratories at Berkeley.

Diamond also created a 360-degree hologram of a 1,500-pound cow for Economics Laboratories, developers of a blue substance used to lubricate udders.

The hologram, with the cow floating in space and rotating while a farmer applied the lubricant, was displayed at a dairy association trade show. "It was literally a cow of a different color and it was effective for what they needed," Diamond says.

Items like diamonds can be holographed and put on display without risk to the original, and the hologram in most instances shows the stone in more detail and realism that can be perceived by the human eye, and certainly in greater depth.

Diamond said it's because laser lighting brings out aspects that the human eye doesn't ordinarily see.

"I expect that in the future we will be able to make binoculars into contact lenses, and we'll be able to make telephoto and telescopic lenses that will fit flat in your pocket because basically, holograms behave optically as though they are the lenses themselves. Such lens configurations currently exist in flat plastic discs in the supermarket scanners," he says.

Diamond isn't the least concerned that he is averaging "under $150,000" a year after nine years (actually six and one-half years if you exclude learning time) in business because he regards himself more a scientist than a businessman.

However, his financial status could change dramatically to a higher level momentarily. He's currently working on a project for an unnamed client that calls for the production of 100 million holograms.

"They're very small, and the cost is in the pennies range," but it a project that could gross Diamond a seven-figure return.

"It's the first time I've been able to deal with numbers like this," he says. "But I want more than anything to get into research and development. I don't see working with clients that much in terms of business transactions because my time needs to be in the laboratory.

"This, 1984, is the year of the hologram," Diamond says. "Things have developed and shifted so rapidly since I got into this medium nine years ago that sometime in the future holography will reach a state where you won't know whether I'm sitting here, or you're looking at a hologram

"I know it's going in that direction." ■

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