

Living

**BUSINESS
PAGE 6**



By MICHELE MOHR
Staff Writer

Pictures are not supposed to move and they're *supposed* to stay in their frames.

Holograms aren't pictures. The three-dimensional images reach out toward the viewer; they change when looked at from different angles; sometimes, the eyes follow you.

Visitors to Chicago's Museum of Holography are amazed when they look at the holograms, museum Director Loren Billings said.

"Stand about two feet away and slowly rock back and forth," she advises visitors.

Groups of people do just that — not always in unison — and, depending on the view, each person sees a different image.

Lean to the right and a skier races downhill. Stand directly in front, and he's executing a jump. Lean to the left and the skier is celebrating a triumphant landing.

Other holograms show a merry-go-round slowly spinning, race cars crossing a finish line, a face that changes from man to monster. Forget those 3-D bubblegum cards from years ago, where Ernie Banks and Ron Santo winked from the same card. A driver's license photo more closely resembles an Alfred Stieglitz portrait.

In one image, the eyepiece of a telescope seems to float out about a foot from the frame. Squinting, a visitor pretends to look through the eyepiece. He pulls back shocked when he can actually see objects through the transparent image. Even more eerie are pulsed-laser portraits of live subjects that seem to stare right back at the viewer.

Holograms bring to mind images from "Star Wars" or from television's "Star Trek: The Next Generation."

"It's a little like peeking into the 21st century," Billings said.

But if holograms are the future, then the yet-to-be is here now. The three-dimensional pictures can be found in many everyday places, from images on credit cards and bus passes to video games and amusement-park exhibits featuring holographic light figures.

A kaleidoscope of future visions is on display at the Museum of Holography, 1134 W. Washington Blvd. Entitled *Interpretations of Space*, it explores new directions in holography, including examples of abstract, full color and portrait holograms.

A hologram, for the uninitiated, is similar to a photograph ex-



Staff photo by Art Vassy

Museum of Holography Director Loren Billings stands almost within biting range of a hologram of a lion. The uses of holograms are both practical and aesthetic.

A 3-D PEEK AT THE 21ST CENTURY

The future is now for holographic imaging

cept that the object is presented in three dimensions. A hologram "sees" an object just as we see an object: The light streaming from the source itself is photographed.

"You can create depth in a hologram, and produce movement," explained Lorraine Dikmak, marketing manager of the Holography Division of Polaroid Corp. Polaroid produces embossed holograms for promotional packaging and advertisements.

A pulsed-laser hologram, however, is a stable image. A laser pulse is shot at an object, such as a person, "freezing the motion," Dikmak said.

To create a hologram, models are sculpted to the exact size needed, since holograms are full-size images of three-dimensional objects.

Or if the object is too large, but the artist doesn't want to use a sculpted model, a stereogram can be made. The object — people, animals, a car — are photographed with motion-picture film. The frames from the film are used like a sculpted model, Dikmak said.

To make a hologram, lasers are aimed at the object. By bouncing the laser light through various mirrors, the patterns of

light waves from the lasers are reflected from the object onto a light-sensitive plate, in effect creating an etching of light.

What is captured on the holographic plate, Billings said, is not only the intensity of the light but also its phase: The waves of light, moving in uniform waves and crests, are frozen for an instant and photographed.

If you look at the holographic plate, the recording looks sort of like a fingerprint, just a bunch of whorls and ridges. But when

■ See HOLOGRAMS page 2

■ Holograms

(Continued from page 1)

white light — such as halogen lamps, spotlights and single-filament bulbs — is reflected at the holographic plate, the image is reconstructed in its original size and in three dimensions.

When you tilt a hologram, you can see different images. To create that effect, Dikmak said, the holographer is, in effect, creating double and triple exposure.

So in the skier's case, the first image shot was a model of a skier traveling downhill. A second exposure was made using a model of the skier in midair, and a third exposure was added with the model showing the skier having landed.

Artists have moved to the forefront in holography since its invention more than 40 years ago by a London scientist. At the Museum of Holography's school,

"We'll be seeing holograms used in many different ways and in many different places in years to come. We've only just started learning how to manipulate light."

- Loren Billings

they have collaborated with special-effects companies, such as Lucasfilm and Mathematical Applications Group (the company that created the computeresque setting for the movie "Tron"), in creating imaginative works of high-technology art, including the transference of computer-generated animation into three-dimensional holograms.

And business applications have also grown immensely. Polaroid has more than 25 years of experience in creating embossed holograms that can be used for credit cards, corporate advertising and promotions, as well as on greeting cards and stickers.

Dikmak said that, while holograms can be mass-produced, each image is an original. Since holograms cannot be duplicated, they are also used on security documents; Australia uses holograms on money to prevent counterfeiting.

"We'll be seeing holograms used in many different ways and in many different places in years to come," Billings said. "We've only just started learning how to manipulate light."

Interpretations of Space will be on display through Jan. 12 at the Museum of Holography, 1134 W. Washington Blvd. The museum is open from 12:30 to 5 p.m. Wednesday through Sunday. Admission is \$3. For more information, call (312) 226-1007.