



The Third Dimension

Holography brings art to the next century

At the Museum of Holography, you'll see ghostlike, three-dimensional images of rocks that appear to be suspended in midair, a hand that seems to reach out to grab yours, and a lunging pitchfork so real that you'll instinctively move to avoid being speared. What you won't see is a single pair of those flimsy cardboard glasses with red and blue Saran Wrap-like lenses required for 3-D viewing. What you see at the museum is not done with mirrors or cinematic technique, but with light.

Simply put, a hologram is a three-dimensional photograph of the light waves that reflect from a laser-illuminated object. The image appears as solid as the original, and as one high school student said looking at one of the museum's many holograms, "That's too real!"

As real as it gets, according to the museum's executive director Loren Billings, who takes visitors through her museum much like a teacher trying to enthrall her students. "For the first time in the history of man's endeavor," she says, "we are able to record three-dimensionally as the eye naturally sees its physical environment." This method of recording has applications in medicine, engineering, architecture, the arts, and entertainment, she says. Billings founded the Holographic Center at 1134 West Washington Boulevard, which includes the museum, a school and a research center, fourteen years ago,

to display holography and encourage its advancement. Although holography is exhibited and researched around the world (there is a Museum of Holography in New York, and several countries, including Japan, Canada, and Australia, are actively researching it), this is the only such center

that combines a museum, school, and research lab, Billings says.

A hologram (derived from "holo" meaning whole, and "graph" meaning picture) is produced by dividing a laser beam with a beam splitter: one beam illuminates the object, and the other interferes with the light reflecting from the object. A photographic emulsion plate is placed at the point where the two beams intersect, recording the pattern of interference. To view the recorded image, monochromatic light must pass through the hologram on the emulsion plate. The interference pattern recorded on the hologram bends or diffracts the light in a new direction. Voila!, an image of the original object—in 3-D—appears.

At the top of the museum's entrance-way steps, along the right wall, hang square and rectangular silver frames that at a

no larger than five by seven inches, a clown whose body seems to be suspended outside the frame stares at his reflection in a mirror. Several of the holograms also appear to have "motion." When the viewer rocks

from one side to another, a hand peels away a mask to reveal a reptile-like creature; a tiny skier flips down a slope; from one angle, a hand reaches out to grab something, from another, the same hand holds

balls between its fingers. Incidentally, you can take these holograms home for \$50-\$250.

In addition to the lobby gallery, the museum houses three other galleries: two smaller, white-walled, wood-floored rooms and one large L-shaped carpeted gallery, in which the current show "Equus/Underwater" is on exhibit through May 20. Created by Nancy Gorglione and Greg Cherry, a husband-wife team of California-based artists/holographers, the exhibit features huge, stunning holograms of sky, river, and light-through-trees images. There is also a holographic horse that pops out at the viewer some four feet and a shockingly real pitchfork that lunges at the viewer. One student leaned toward it as she yelled to her friends, "Look, it's going through my head!" An exhibit by Rudy Berkhout, a well-known holographer from Amsterdam, will follow the "Equus/Underwater" show.

One of the smaller galleries houses an exhibit that represents the current movement in holography—the variation of color and of light reflecting from those colors. "Studies of Color on Color" by John Kaufman, whom Billings calls "a master of color," is a series of holograms of objects (such as a rake, basket, rocks) illuminated by pure color—that is, color based on the amplitude and frequency of light waves.

"Spring Rain," a hologram of geometric shapes dappled with water drops, is "painted" with yellow, lavender, and blue

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"Journey" from the exhibit "Equus/Underwater."

distance appear to hold only dark green, gray, or black screens. Looking closer, under the white spotlight, binoculars "materialize" and appear to break through the screen, tempting the viewer to take an even closer look: through the binoculars' lenses are birds on a branch. In another, in a frame



The Holography Center's founder Loren Billings in front of "Sky and Clouds" from "Equus/Underwater."

hues. "Isn't that beautiful?" Billings asks. "And if I move the light here," she says, gesturing as if she were moving the spotlight hanging from the ceiling to the left, "I would see different colors." She holds up a hologram of a sphere printed on the cover of the Jewish Hospital Healthcare Services 1988 Annual Report. "That is just the most gorgeous color because it's vivid, it's real living color. It's stimulating to see them that way," Billings says. Asked about how her passion for holography began, Billings says, "I have no idea. The first hologram I ever saw was of a light bulb. I wonder if that had some impression." Prior to establishing the Holographic Center, she was a professional sculptor and took courses at the Art Institute, which is where she saw the holographic light bulb.

The exhibits Billings is able to mount depend, of course, on the funding her museum receives. The Chicago City Office of Fine Arts partially funded "Equus/Underwater." However, the Illinois Arts Council has not funded the museum be-

cause, Billings claims, "they feel that we belong in the realm of science and technology. But . . . artists are trying to make a statement in a new way." Museums receive grants from the Arts Council through a peer panel review process, according to Greg Mansfield of the Council's Office of Public Information. The panel, which consists of visual artists from around the state, ruled that the Museum of Holography was more of a science than art museum, and therefore did not recommend funding. Sale of the holographs, general public admission and tour fees, and producing holographs for annual reports and other publishing and advertising vehicles help support the center.

The center is also involved in joint projects with outside organizations. The school, which has taught some six hundred students so far in the technology of holography and its applications, offers courses accredited with the Illinois Institute of Technology, and courses taught with the chemistry and physics department at Northwestern. Additionally, the research

facility plays a vital role in holography's development because the medium is still in its "embryonic" stage.

Although the first holograms were produced by Dr. Dennis Gabor in 1948, the technology really didn't take off until the laser was first demonstrated in 1960. In 1971, the School of Holography was founded in San Francisco, allowing artists to experiment with holograms. Five years later, Billings established the Holographic Center. As part of its purpose in tracking the progress of holography, the center's research facility is working with computer programmers, taking computer-generated animations and transforming them into three dimensional holograms. Billings plans to produce an exhibit based on these holograms in the future.

It's all part of the center's underlying goal to raise public awareness of this new medium. "I think the function of every museum is to educate the general public, and to stimulate young minds," she says. "We have to educate the young so that in ten years, twenty years, we'll have holographers."

As part of the museum tour, Billings explains how to view holograms and then allows the group to wander through the galleries. Afterward, Billings shows a film about the technology of holography and its far-reaching scientific applications. All together, it's a fascinating marriage of art and science; a glimpse of just what may be the recording medium of the twenty-first century. ■

The Museum of Holography is open to the public Wednesday through Sunday 12:30 p.m. to 5 p.m. Group tours can be reserved for any day of the week. For more information on admission fees and group tours, contact the museum at (312) 226-1007.