

Small museum sings praises of science, art of holography

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CHICAGO (AP) — At a small museum west of Chicago's Loop, a fragile apple of green glass hangs in front of a black glass plate, tempting violation of the age-old museum rule: "Look, but don't touch!"

The glass sculpture can't be broken, though, because it isn't really there. The apple seemingly hanging before the viewer's nose is an illusion cast by a hologram — specifically a new second-generation reflection hologram by English physicist Nicholas J. Phillips.

In reflection holography, the image appears to emerge from the surface of the plate and float before the viewer.

On the same wall hangs another of Phillips' holograms, a still-life of a computer circuit board, a measuring tape and a magnifying glass. Although only a holographic image, the glass retains its magnifying properties. As the viewer's vantage point changes, various details of the board and tape move "behind" the glass and become enlarged.

The works are part of the permanent collection of the Museum of the Fine Arts Research & Holographic Center, devoted exclusively to the new three-dimensional art form.

Other works in the collection include transmission holograms by Sweden's Hans Bjelkhagen, who has trapped women's faces three-dimensionally within his plates with a laser pulse far shorter than one-millionth of a second. The viewer seems to be looking through a window at an actual woman.

Another of Bjelkhagen's works hangs free from the ceiling. It seems to be nothing but a sheet of glass until the correct light is shone through it. Then, the legs and buttocks of a marble statue materialize in the

air, appearing to take on physical volume.

There are moving holograms, too, although their technique is less highly perfected. To create them, motion picture footage is holographically transferred to cylindrical diffraction gratings.

When the transparent gratings revolve on their pedestals, the viewer outside sees ghostly three-dimensional images moving within the cylinders. Phantom children wave and beckon; Dracula bares his fangs, a train emerges from a tunnel; a model blows a kiss and winks; columnist Mike Royko poses rigidly, then moves his prodigious adam's apple and breaks into a grin.

There are problems with the moving holograms. Their color is untrue and there is sometimes distortion in the motions.

That's fine by Center Executive Director Loren Billings, who doubles as museum tour guide on quiet afternoons.

"Holography is where photography was 140 years ago," she says. "It's an art of the future."

She explains that holography was discovered accidentally in 1948 by Dr. Dennis Gabor of London, but had to wait until the 1960 development of the laser to become practical.

It is not photography, Ms. Billings points out. In photography, light waves darken molecules in various portions of an emulsion to create an image. In holography, interference patterns created in a beam of coherent — usually laser-generated — light impart their information to each molecule of the emulsion, turning each one into a tiny, but complete, image of the recorded object.

If one of Phillips' or Bjelkhagen's lovely and costly plates were shattered, each fragment would contain the whole image captured in the larger original.

The museum is an extension of a school of holography, where students

are trained on the expensive equipment and in the painstaking techniques required by the new art. It's also a center where professionals expand the frontiers of holography.

Center Research Director John Hoffman, Ms. Billings says, has created a holographic image with an illusory depth of 30 feet — but that's still just the beginning.

She points to the least impressive-looking exhibit in the museum, what appears to be a torn scrap of ordinary photographic film.

That item, Billings explains, is a fragment of 77 millimeter film from the world's first holographic motion picture. It was produced in the Soviet Union, she says. By a process still not fully understood in the West, it was projected on a specially-designed screen in a totally new type of theater.

The museum, at 1134 W. Washington Blvd., is open afternoons Wednesday through Sunday.