

LIGHT DIMENSIONS

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'Already it is accepted that the laser is the tool of the twenty-first century: holography is its vision.' So reads the organiser's introduction to the latest hi-tech exhibition of holographic images to hit London. And visitors to *Light Dimensions*, at the Science Museum until early this month, are not likely to forget that they're experiencing what we've been told to expect from a brave new world in which art and technology fuse in a lifestyle dominated by the microprocessor. High technology is back in fashion, and holography with its almost obligatory 'space-age' music and sci-fi subject matter, is all set to cash in.

It is an appealing formula which has little to do with holography as an art form. The lasting impression of visitors to the exhibition is of anxious parents trying to keep their children up-to-date with new

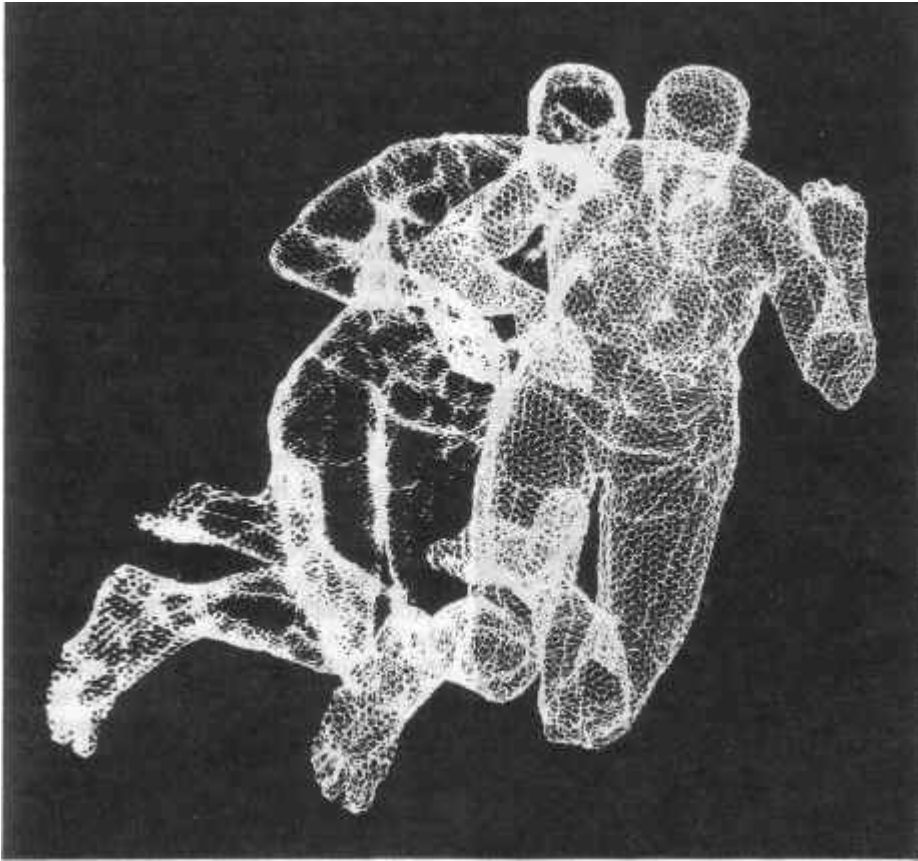
technologies which the adults don't understand. It's the same phenomenon as the fears that boost sales of home computers; fears of being 'left behind', which the computer industry is quick to exploit in its advertising. Holography is so inextricably caught up with this image that it is important to remind ourselves that it is neither a particularly new medium, nor one that necessarily involves space-age technology.

A hologram is simply an image stored on an old-fashioned glass photographic plate. But instead of recording a direct photographic image, a hologram records a pattern formed by the interaction between two sources of light: one reflected from the subject of the hologram, the other a pure 'reference beam'. This pattern is called an interference pattern, which is formed

whenever waves travelling in different directions meet each other. Think of the pattern of waves that form when you drop two stones simultaneously a yard apart into a pool of still water. Light waves, of course, travel far faster and have far higher frequencies than waves in water, so when they interact they form far more complex patterns. In a hologram, these patterns store a 3-dimensional image on a photographic plate. When the plate is developed, and illuminated in the right way, the image reappears hanging apparently in front of—or behind—the plate.

High technology comes in because only very pure light, in which all the waves travel together, can create interference patterns. The only practical source of such light is a laser beam. The idea of creating three-dimensional images in this way dates back to 1947, but it took the invention of the laser in 1960 to make it a practical process. Nowadays lasers are conventional industrial tools, and at the low powers needed to make holograms you can forget about death rays.

So what is all the fuss about? For a start, holograms can be pretty, and the three-



Hologram by Edwina Orr

dimensional effect is intriguing at first. It does take a while to get over the urge to touch the ghostly image hanging in mid air. And a lot of artists, in the US, Europe and Japan, are excited by holography's possibilities. But the medium has a more serious, and potentially sinister role as an industrial and military tool. A whole section of the exhibition covers this aspect of holography, and gives a clue to the reality behind the hype. Rolls-Royce makes holograms of jet engines to find out how they wear out, the Central Electricity Generating Board examines holograms to fuel elements that are too radioactive to handle and now British Telecom's cardphone (those annoying phone booths that don't accept money) work by reading holographic patterns on the cards. British Telecom's blurb tells us depressingly 'In the not too distant future the coinbox telephone will be obsolete and replaced by the cardphone.' Fine for the executive on the move; but what if you're unemployed, a pensioner, or use public phones only once in a blue moon?

It is also significant that perhaps the most technically impressive hologram in the show — at least as an accurate three-dimensional recreation of an original object — is of a 'head-up display', made by

Marconi Avionics, which allows fighter pilots to fly close to the ground in the dark. It works by projecting an image of the ground as seen by infra-red cameras holographically in front of the pilot's face. He flies, 'head up', just as he would in daytime.

Neither is holography free of the taint of big business. Patents that cover the process are firmly in the hands of Citibank and the People's Bank of Seattle, which took control when the previous holder, Holosonics, went bankrupt. In 1980, Atari, the Space Invaders giant, spent millions of dollars licensing the technology to use in a video game, and threatened to sue any competitor foolish enough to try to get in on the act. As it happened, Atari got its fingers burnt: its holographic 3D video game failed to catch on, and interest in the amusement industry has now shifted to games such as Dragons Teeth, in which the player 'interacts with' (ie, slices up) full-colour cartoon movies stored in a video disc. But with so much money tied up, it is hard to imagine the big corporations letting the patent rights go.

So how do artists survive in this cut-throat world? It is possible — just — for someone with basic technical skills and

a knowledge of photography to make holograms at home. (The main requirement is a large table absolutely free of vibration, preferably in a basement.) But many of the medium's leading artists have worked either comfortably or otherwise with big money. Some do very nicely making holograms as advertising displays or as corporate sculptures. Others try to take holography beyond the superficial images that commercial backers usually look for. But if the work in the artists' section of the exhibition is anything to go by, the artists still have a long way to go. Some of the work descends into the realm of gimmickry; in other pieces it is hard to see what purpose holography serves. Only in the more abstract images does the medium look as if it is coming into its own.

The conventional explanation is that holography is a new medium, and has yet to develop. 'What we see here is the first 36 years of holography. Imagine what the next 120 years will bring,' writes Eve Ritscher, the exhibition's organiser, in the introduction to the catalogue. But if holography really is in its infancy, why the self-conscious attempts to identify it as art? The catalogue makes great play of the fact that Salvador Dali worked with holography (although the exhibition features none of his work); why the need to involve a 'recognised artist' for a seal of respectability?

There are also questions surrounding the organisation of the exhibition itself. *Light Dimensions* is clearly a commercial venture — sponsors include the *Standard* newspaper and firms that make holographic materials — and there is a hefty entrance fee of £1.75. Would the Science Museum have thought holography worth an exhibition without this backing?

The questions uncover conflicts — not necessarily unhealthy ones — in holography between art and business, between applied science and aesthetics. The reality is that a hologram of a turbine blade has little in common with one made for art's sake, and that exhibiting them together under a 'high-tech' umbrella belittles both aspects of the technology.

One lasting memory of *Light Dimensions* was a matronly grandmother holding up a small child to see a hologram from the correct angle, then realising it showed a pair of naked buttocks. I don't think you'll like this one,' the grandmother said firmly, putting the child down. When holography has learned how to cope with that kind of problem, it will really have arrived.