What Mess

THAT S THE ONLY WAY TO DESCRIBE THE CONTROVERSY SURROUNDING THE HOLOGRAPHY PATENTS.

WHEN WAVEFRONT SET OUT TO TRY TO MAKE SOME SENSE OF IT ALL, WE UNCOVERED AN UNENDING STREAM OF INFORMATION, MIS-INFORMATION, GOSSIP, THREATS, OMISSIONS AND CONSPIRACIES. THIS FIRST REPORT IS BY NO MEANS COMPLETE, AS READERS WILL NOTE. MUCH REMAINS TO BE BROUGHT TO LIGHT, BUT WE HAVE HAD TO END AT THE BEGINNING, AS IT WERE, BECAUSE OUR PHONE BILLS ARE ALREADY DOUBLE WHAT WE BUDGETED.

NEXT TIME WE LL EXPLORE ISSUES OF PRIOR ART, THE VALIDITY OF THE PATENTS AND PROVIDE AN UPDATE ON THE ONGOING COURT BATTLES. WE WELCOME COMMENTS, CRITICISMS, DISAVOWALS, AMPLIFICATIONS, CORRECTIONS, SUBMISSIONS AND FURTHER INFORMATION. JUST DON T CALL US COLLECT.

NO, 3,506,327. Title: Wavefront Reconstruction using a Coherent Reference Beam. Expires April 14, 1987.

NO. 3,838,903. Title: Wavefront Reconstruction. Expires Oct. 1, 1991.

No. 3,838,787. Title: Holograms. Expires July 15, 1992.

These are the principal holography patents—the unstable centre of a complex legal imbroglio that threatens to undermine the growth of the holography industry.

Unstable because the validity of the patents themselves is being called into question.

Threatening because these patents—and the risk of suits for infringing them—are now a major factor in some firms' decisions to stay out of the holography market entirely until the patents expire. The immediate loss for the industry is millions of dollars of business. The long-term ramifications could include a divided and divisive business community.
As Emmett Leith ruefully told Wavefront: I hoped it would never come to this.

Holography COMMUNITY

by Carolyn McLuskie

IN 1962 Leith, then (as now) a research scientist at the University of Michigan, published a paper which outlined an amazing new process for creating three-dimensional imagery which he and research assistant Juris Upatnieks had discovered.

As do many universities, the University of Michigan had a policy of offering patentable processes to interested companies in return for royalties. In 1964 the university had such an arrangement with Battelle Memorial Institute. Battelle and the Du Pont Company owned a joint venture, Holotron Corporation. When Battelle acquired the patents they were assigned to Holotron. In 1976 Holosonics, a maker of ion lasers and equipment for optical and acoustical holography, acquired the patents when it purchased Holotron.
When Holosonics went bankrupt in 1979, leaving $5.5 million in debts, its principal assets were these patents. They are now held by Holosonics' main creditor, Citibank, which allows use of the patented techniques by selling licenses in specific areas covered by the patents. In 1981 American Bank Note purchased a license for, among others, the

three principal patents, from the trustee of Holosonics.

BY the time American Bank Note jumped into the holography business, several companies had already applied for and received licenses to manufacture holograms, including IBM and Atari. However, according to a preliminary prospectus from ABN dated August 13, 1986, the company believes "that its license, although subject to prior licenses, grants it the exclusive right to i use the Principal Patents to originate holograms for use in certain security and anti-counterfeiting fields" (italics mine).

ABN has been characterized as waging a war against professional holographers—aggressively pursuing contracts through a.combination of threats, coercion of clients and litigation, by which it hopes to contain potential rivals in the field until the patents run out in four years. ABN warns potential buyers that they will be infringing its licenses if they hire firms other than ABN to do jobs in security applications.

It is sign)ficant to note that the 1986 prospectus acknowledges that if any of ABN's licenses are held invalid or impaired, "the Company's competitive position could be adversely affected", since "there can be no assurance that the Company will be able to procure patents or licensed technology that may be necessary to the Company's product development and growth or that the Company's products and methods of production will not be rendered noncompetitive by future technological changes."

The prospectus also notes that "if the licensed patents are held invalid or held not to have been infringed, the Company will continue to have the right to use the technology covered by the licensed patents. In the event of a holding of invalidity, however, its competitors would have the right to use the technology. "

These statements indicate that ABN is well aware of the potential to be declared invalid. It should be noted, however, that a prospectus is an information paper for potential investors and must supply all relevant facts, including potentially damaging admissions. Otherwise, if the patents are found invalid and ABN's market edge dies, investors who lose money could sue ABN for not telling the truth about its position.

PATENT law states that one cannot claim anything that has been published and has been in the public domain more than a year prior to the patent applica tion.

Leith cannot say for sure whether the paper he wrote, entitled "Wavefront Reconstruction and Communication Theory" and published in the Journal of the Optical Society of Amenca in October, 1962, would constitute public disclosure before the patents. "To a degree, yes, and to a degree, no. There are some areas that may be covered. Certainly there are some basic ideas in there. The idea of what we called carrier frequency holography, which the world has chosen to call off-axis holography, is in there."

Would that mean his paper constitutes disclosure in the public domain, i.e. prior art, which invalidates the patents?

"That would be a possibility. To a degree it does, but does it invalidate it completely? The patents cover reconstruction techniques which presumably are not described in that paper. It certainly is true that the paper is prior art for a lot of what constitutes the present day techniques of holography. The question is does it describe everything or does it not describe everything? The aim in the patents was not to make

any claims that would be invalidated by the prior art."

"I'm just a tiny, little cog with respect to the patent interpretation."

Leith feels there's no possibility of one company dominating the field of holography because the patents are so close to expiration. " One can hardly dominate the market with patents, the basic one of which expires in less than two months and the rest
of which expire in the next four years." However, he adds that "it could be an uncomfortable situation for people in the short run."

For Steve McGrew's California-based company called Light Impressions, it could be more than uncomfortable—it could mean the collapse of his successful business. Light Impressions is being sued by the trustee for Holosonics on behalf of ABN, which charges that the firm infringes its licenses. ABN is also seeking a permanent injunction against further infringement, which would effectively force Light Impressions to fold.

Light Impressions has a sub-license from Atari, which had received an exclusive license from the Holotron trustee covering electronic toys, games, computers, advertising, packaging, novelties. publishing, decorations, etc., and security applications relating to all the areas listed. The license Atari got from the trustee predated ABN's license on security and ABN's license explicitly states it is subject to Atari's prior exclusive license.

In 1982 Light Impressions licensed United States Bank Note to use its 2D 3D technology, patented in December 1986. Using this technology, Light Impressions made a hologram master for Visa and sold it to USB, paying Atari royalties on the sale, which, according to its license, it was entitled to do.

ABN disagrees, claiming its license gives it exclusive rights to security applications in holography. Atari now says Light Impressions owes it royalties on its patented 2D-3D process. The trustee claims patent infringement, despite the fact that ABN's license is subject to that prior license and all sub- licenses devolving from that license.

"We had agreed verbally before we got the license from Atari that 2D and 2D- 3D holograms were not covered by the Holotron patents," says McGrew. "Then Atari changed owners and decided it wanted to collect royalties. Now, that part could have been arbiuated. But part of the lawsuit was that Atari charged us with setting up the licensing agreement with USB and pro viding them with the Visa holograms as a ruse to get around paying royalties. They're suing us for the royalties and the trustees are suing us, saying we didn't have any right to do the Visa holograms."

A year ago, Atari abruptly told Light Impressions its license was terminated., violating the mandatory six-month notice period.

"And they'd been cashing the checks consistently up until then," McGrew says. Interestingly, that decision took place after ABN paid a visit to Atari and came away with a nonexclusive sublicense that covered the same ground as McGrew's sublicense.

As a result, Light Impressions is suing ABN, Atari and Citibank, owner of the patents, for conspiracy to take its license away and give ABN a monopoly—an anti- trust suit. "We're very angry about this," says McGrew.

The case against Light Impressions is being heard in U.S. Bankruptcy

Court and McGrew says it's historical and legal fact that bankruptcy court is automatically prejudiced in favor of the creditors of bankrupt corporations. "We're at an automatic disadvantage. ABN is blocking all our efforts to move the trial into Federal Court down here in California where it belongs."

But how valid are the patents? Leith's 1962 paper was not referenced until very late in the patenting process. There is no indication the paper was ever seen by the examiner.

According to McGrew, the patent claims methods that are specifically described in the '62 paper. "Anyone who reads the prosecution history carefully will see that either the patent attorneys never read the '62 paper or they were trying to hide its content from the patent office."

McGrew does feel that some of the claims in the patents might be valid, for instance the ones on non-destructive testing.

Dec. 1986, before a closed session of trial attorneys and a court reporter, Leith gave a deposition on his '62 paper. The purpose of a deposition is to gather information relevant to the trial. Leith was represented by Jerry Parsons, ABN's patent attorney. His deposition is not yet finished and he will be called back again.

The manner in which Leith's information is being handled is worthy of note. "Within the process called "discovery"—wherein the lawyers go out and find all the facts before they argue about them—there's something called a restrictive order, which allows trade secrets to be class)fied for trial counsel only," says McGrew. "ABN is classifying everything for trial counsel only — including Leith's deposition, which is already in the public domain and is by no means their trade secret."

The problem for Light Impressions' lawyers is that this tactic by ABN means they don't have access to the facts. "There's nothing that could do us more good than Emmett Leith's testimony," says McGrew.

Wavefront has also heard that ABN is attempting to convince people that there are some claims in the 1975 patent, (No. 3,894,787) which are specific to the off- axis transmission hologram. That would give them five more years from April 14, when the first patent expires.

"It's a very elaborate mess that nobody's trying to have cleared up," says Steve Smith of Holographic Imaging Studios in Chicago. "As long as it stays out of court and the viewpoint has not been resolved, ABN is achieving what it wants to achieve, which is a lot of PR."

A close look at the first patent is illuminating. "Figure No. 9 is an off-axis transmission hologram," says Smith. "The object information is headed directly at the plate and the reference beam is coming in at what they call a finite angle. In other words, it's a determined angle. It doesn't matter which one it is and you can't patent one over the other. The fact is that it's any other angle off normal. To say 'well, it means anything of a certain angular relationship based upon derivations...' is a waste of a lot of legal time at $100 an hour. So I don't see the other two patents having any issue in the off-axis transmission hologram. But do they have anything to do with the copy of a hologram?"

ABN is in a critical position now, says Smith. " The market is just beginning to grow to the point where it's worthwhile for people with a fair amount of venture capital to jump in. This is what ABN is concerned about and that's why they want an extension of four or five years on this patent."

THE controversy surrounding the patents has become a headache and an embarrassment for Leith, who receives tiny royalties now and then from the process which is now a multi- million dollar industry.

"The fairly small amount of money that we've gotten in royalties is certainly not worth anything like the irritation I've experienced—seeing the suits and the threats of suits," Leith says. "It annoys me. When I go out among the holographers, they ask: 'Will we have trouble if we make holograms?' That puts me in an embarrassing and awkward situation. I say: 'Well, I think not' but I really don't know."

For others, there's no doubt about it. "The patents are invalid, that's all," says Ray Malavasi of Daleco, a West Coast marketing group. "It's very simple. Nothing complicated. As far as we're concerned, their patents are no good. That's why we're in production. We feel there are many ways to make a hologram. They have to go to court and prove that their patents are valid."

Citing Leith's 1962 paper and the fact that the patents talk only about coherent light, not white-light reconstruction, Malavasi says: "I really believe that the technology was around for a long time and was public knowledge before they patented the processes."

MALAVASI has a few things to say about ABN's business practices, too. "ABN's approach is very unethical. They approach our customers and clients—potential customers and customers we already have agreements with —and tell them we are infringing on their patents, before they've found out whether they are valid. They don't even know how we're shooting our holograms." Malavasi says lawyers from his firm are in contact with ABN's attorneys.

Another company, Global Images, which sells embossing and hotstamping technologies, has opted to ignore the patents. (Most of Global's contracts so far have been outside of the U.S. however.) Global's Walter Clarke says the patents are "unrealistic" and that the company has "historically definitive examples of prior art."

But some companies literally can't afford to be so bold. McGrew tells about Flexcon, a pressure-sensitive adhesive coater which has now set up an embossing system, and which Light Impressions had dealt with for years. ABN told Flexcon they would be sued if they did not emboss exclusively for ABN. The result? ABN now has exclusive supplier rights with them.

ABN has attempted to contest a contract to put holograms on Chicago Transit Authority fare cards. (Holographic Imaging Studios has been doing the

CTA hologram for the last five months and now has a five-month extension on that contract.)

"ABN tried to use its patent clout, even though it came in with a high bid," says Smith. "CTA's patent lawyer pointed out that the first patent runs out in April. ABN hedged, eying there were claims in the later patents that cover the same process. The CTA lawyer said: 'We're in a po-sition to go ahead and accept this bid and we feel we cant' And will. And did. All I know is I've already made three sets of masters. All of them have been used and everybody is happy with it."

In another case, Hallmark wished to buy holograms, and it wanted to buy them from Light Impressions. Faced with the prospect of having to deal with ABN, the company decided simply to stay out of the business

until the lawsuits are over. Other holographic firms have reported similar lost sales. The immediate effect has been to depress the industry as a whole, costing millions and millions of dollars in lost contracts. It winds up costing customers millions too, because they are forced to buy at ABN's rates, which are two to three times above the going rate.

The suit against Light Impressions has serious implications for the entire holographic industry. "If they succeed in beating us, they don't have to beat anybody else," says McGrew. And in an industry which grossed a mere $23 million in 1985, few firms can afford the financial risk of patent lawsuits.

Even when a firm is in the right, it sometimes cannot sustain the legal battles required to prove it. Diffraction Company had an ironclad case against several firms which had pirated its diffraction foils, but after $200,000 in legal fees, it threw in the towel.

MANY commercial mass production processes today use not only the off-axis transmission hologram (H1), but also the Benton white-light transmission "rainbow" hologram (H2). At this time, Polaroid attorneys have declined to enter into the fray concerning patents and licensing, and have even offered a list of disclaimers with regards to the Benton patents.

One could speculate, however, that future enforcement of these patents will be a matter of coqrse once the ABN issue is cleared up.

It may be possible that in future, some inroads can be made by class- action suits by consumers or producers of holograms. As Wavefront went to press we heard rumors that several businesses in Europe are joining in a class-action suit against ABN over its
new patent on hot stamp foils, recently issued in Europe.

Of that recent patent, McGrew says: "It covers things that I know people have been doing since 1977. It's truly ridiculous. That's what patent examiners are supposed to find out, but I have discovered, much to my dismay, that examiners are human and very busy, and what they like better than anything else is getting work off their desks. The Holotron patents are a good example of that."

HOWEVER ABN is not the only bad player. Says T.H. Jeong, head of the physics department at Lake Forest College in Illinois and educator of a great many holographers practising art and commercial applications in the field: "Right now the holographic community is fragmented and that's the worst thing, because each little group is trying to backbite another little group."

Steve Smith agrees, and offers a hypothetical example. Holographers A, B, C and D separately visit a potential client. A tells him: "We're the only ones who produce high-quality images. B, C and D do this wrong; they don't deliver." Holographer B goes in and slanders A, C and D. And so on down the line. "We know this because when we go to see people and go over what can be done in a holographic image they say 'You guys are the first ones who haven't slung mud all over the wall. So either you a) don't know anything about holography at all or b) maybe you really are legit and you just don't try to market that way but c) we're so turned off by all of this that we've decided to stay out of it completely until this issue clears up'."

"It isn't just ABN doing this," says Smith. "This involves many people who I thought were decent people, who got hungry. We used to sit side by side in places like Lake Forest College and talk about the

excitement of doing holographic images. Now we know so much junk about each other, it's amazing we aren't all writing biographies."

What disturbs Smith is the effect on the field. "The guy who hears six different versions of the story gets the perception of a field mired in mud, and he loses his excitement over what he wanted to do. We've seen that a number of times."

The bottom line for Smith is this: Buyers are looking for high quality origination and they're going to buy it from the person who does it consistently at a reasonable price. He'd like to see holographers stop the mudslinging and unite to present a clean face to everybody.

Another problem that both Jeong and Smith identify is the existence in holography of smooth operators who want fast bucks. "To me," says Jeong, "the people who least deserve anything are people who didn't create the idea, who have no love for holography, only see the dollar sign and come in and grab it at the expense of all the people who have sweated blood through the years—who have learned the art of holography and have tried to carry the field forward scientifically and artistically. I hope people have enough foresight to see that if people stop creating holography, it won't go very far."

For Smith, the people doing the most disservice in the holography community right now are those who are marketing pulled together contracts of photo-resist and embossing technology. "The new buyers of this embossing technology think they have the whole package and all they have to do is hire a technician out of a school of science and optics for $15,000 or $20,000 a year to make very beautiful holograms for them. Then they'll include that in their costs and devalue the worth of holographic origination. These buyers have developed the view that the holography is a hindrance to be gotten out of the way." To which Jeong adds: "It's not enough to sell blank canvasses and paint brushes. Somebody has to put paint on canvas, namely the creative people."

Smith suggests that holographers interested in doing professional art take a look at the field of professional photography for pointers on how to do business. "We're image-makers in a new medium," he says. "We deserve as much respect as any other image-maker, and why not look towards that?"

SMITH says he has been contacted by some of the buyers of these embossing packages. They complain that their product doesn't look anything like his,then ask him to show them how. "I say: 'No, I do this for a living.
If you want to buy this from me, you'll get the benefit of all my knowledge as an image-maker. But I can't teach some guy standing in your studio what lighting and composition are all about. That's something that's felt. That's not something that is written on a piece of paper."

MCGREW'S new 2D-3D patent has many holographers rushing for their patent lawyers. "The patent describes a specific way of making the 2D part of 2D-3D," says McGrew. "It does not cover all ways of doing 2D-3D. The first three claims are method claims—they describe how a process is done. They are not different methods; just different ways of saying the same small thing, with small variations. The theory is that if there are arguments over whether something was properly worded and one claim gets knocked down, then you have something else that will survive."

The last claim is a product-by-process claim, McGrew says. "Any product that's made by the process is covered by that claim, as opposed

to using the process."

McGrew says Light Impressions does not intend to collect more than one royalty on any product. "Say a holographer does a 2D hologram for a client. He makes the master and has an embosser make copies from the master, which he then sends to a client. According to patent law, the inventor would have the right to charge royalties from anybody who makes, uses or sells the patented process, apparatus or product. There's more grey areas there and it's hard to say whether that's the case with ours. However, if a process makes the product possible, then it's reasonable to charge royalties for the product. The sensible thing to do is charge a reasonable royalty that won't slow the sale; that lets everyone stay in business and make money with a minimum of hassle.

"So what I've elected to do is license holographers and embossers and if the holographers want to pay the royalties instead of the embossers, that's fine. If the embossers want to pay instead of the holographers, that's fine. For the same part of a process, only one royalty needs to be paid. So there's one royalty on origination' one on embossing. And the royalty on embossing is at the manufacturers level."

Smith's question about McGrew's new patent is: How much does one owe to a patent person? "The royalty has to be indicative of the extent of the use of the patent. If you used his technique to do a totally 2D design, then you owe McGrew the full royalty. If you use only a tiny portion, say 10 percent, then you should owe only a percentage, according to my lawyer."

Smith also consulted a lawyer about the replication process, the embossing of a hologram. "My lawyer says the embosser does not owe, nor will he ever owe any money to any of these people on these patents, because the embosser is not using a technology to reproduce these images that involves anything to do with the patent."

Smith predicts that within 30 years we'll see a whole series of independent originating houses, like there are in photography today, with as many independent replicating houses or embossing companies as there are lithographers today. "This kind of creative competition is what extends the quality of the image."

Meanwhile, the debates go on. And on. Debates about the original patents and about new ones. And the interpretations continue to swing wildly back and forth depending on who is doing the interpreting. But the bottom line still is that the claims were accepted and--the patents were issued.

JEONG feels that in an ironic way, the current battles in holography are a good indication of its healthy state—the fact that people think it's of great enough value to fight over. "My hope is that once the fog clears on exactly who owns what, those who own patents will have the foresight to assign reasonable royalties and give rights to pursue the craft to people who do good work. Those who use others' patented ideas should pay royalties if it's legitimately proven that such patents are indeed sound. Just compensation should be given to the original inventor. The person who should reap the greatest benefits from holography, both in reputation and in financial reward— since people are making money—is Emmett Leith. He invented the thing!"

But Leith has no illusions about what is due the inventor. "The inventor doesn't get anything whatsoever. Companies don't share their royalties or their patent profits with the inventors. I guess our situation with the university is unusual in that we get nothing at all."

To an inventor working for a company Leith would have this to say: "Sure, invent. It's fun. Inventing is the most fun thing there is. But whether your stuff gets patented or not is going to be determined by the policy of your company. You have nothing to say about it."

On the other hand, he says, an inventor who has his or her own private company "has to make an economic judgment right there on the basis of your profit motives."

"If you're at the university, as I am, I would say don't patent. We publish half a dozen papers in the course of a year and typically they're just full of patentable things. But we don't patent them, which throws them into the public domain. That's typical of the way things work in a university. I'm perfectly happy that way."

FOR Jeong's part, he would be perfectly happy to see holography become a billion-dollar industry. "I want to see the field be open and nourished rather than closed and restricted. I've been teaching holographers all these years and I have an obligation to see that they have something to do. I wouldn't want to train a lot of students into a field they can't work in.

"I see a possibility of a class-action suit if the holography community becomes stifled and everyone's afraid of making holograms. That means a consolidated effort, not representing one or another individual, but a group which investigates the validity of all the claims."

Jeong is planning a forum on patents to air the issues in open debate. The earliest he sees this happening is at the next SPIE conference in January. The next possible gathering would be at Lake Forest in the summer of 1988.

"There's nothing like having everybody in one place and actually responding to each other. I'd like to see American Bank Note send someone, McGrew, Smith, everyone, the community at large, including nameless holographers who are just—fearful. Let everyone who has something to say on this matter speak, so that we all know where things stand—facts, figures and opinions. Let's get together and talk about it. That is the only way the waters can ever get cleared up."

SOME LESSONS FROM HISTORY

ED WESLY OFFERS A CHRONOLOGY OF

PHOTOGRAPHIC PATENT CONFLICTS AS

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PROBLEMS IN HOLOGRAPHY. WHILE

ONE CANNOT DRAW A ONE-TO-ONE

RELATIONSHIP BETWEEN PHOTO

GRAPHIC HISTORY AND HOLOGRAPHY,

SIMILARITIES BETWEEN THE TWO (IN TERMS OF THEIR INFANCY AND

GROWING PAINS) ARE UNMISTAKABLE. PERHAPS HISTORY HAS SOME LESSONS

TO OFFER

FOR THOSE CURRENTLY EMBROILED IN A CONFLICT TO CONTROL THE FUTURE

OF HOLOGRAPHY.

Only in post-revolution France could an invention be given "free to all the world" and its inventor rewarded with a lifelong pension from the government.

That invention was the Daguerreotype process, the world's first truly practical photographic method, invented by Louis Jacques Mande Daguerre in the mid- 1830s.

Apparently, the French did not consider England part of the planet as the process was patented there just days before the official French announcement. Licenses were required to practise the art of daguerreotyping and were enforced by Miles Berry, agent for Daguerre.

Photo-historians Helmut and Allison Gernsheim speculate that the French government let Daguerre patent his invention in England as balm for wounded national pride, since a subject of the Crown claimed to have preceded Daguerre in using the "Pencil of Nature". If the English were to use the superior French process, they would have to pay for it.

In 1841, Miles Berry sold the patents to Richard Beard, a coal merchant turned daguerreotypist licensee, for 150 pounds annually. A trifling 800 pounds for the daguerreotype monopoly netted him 25 to 35 thousand pounds in 1842! The sole exception to his jurisdiction was the rooftop studios of a Frenchman, Antoine Claudet, who bought a license directly from Daguerre before the Berry patent was issued.

Many people challenged Beard's patents. A 5 1/2- year lawsuit resulted in Beard's bankruptcy in 1850, three years before the patents expired. Although his patents were upheld, no damages were awarded and that, coupled with the high legal costs, proved his ruination.

The English had a native son who also invented his own process of photography, one William Henry Fox Talbot. In his process, a negative image was formed by exposure in the camera. It had to be contact printed onto another piece of sensitized paper to re- reverse tones. There was a definite advantage to this last fact, since many copies could be produced from a master negative. But the texture of the paper base printed through, causing a loss in sharpness.

Because the image was printed out directly in the camera, Talbot's "photogenic drawing" needed more exposure than Daguerre's. Once Talbot added a development step after exposure to increase sensitivity (and rechristened his process the Calotype, herein referred to as the Talbotype) he began to get nutty about patents too.

At first, everyone had to have a license. In August, 1852, Talbot relaxed his stranglehold, allowing amateurs and landscape artists to practise freely, while he pursued the lucrative portrait market.

But since most portraitists were practising a technically superior (although patented) French process, Talbot actually hindered the adoption of his own invention with his rigorous licensing.

Talbotypes and Daguerreotypes were almost immediately abandoned when the wetplate, or collodion process, was introduced. It was more sensitive, less expensive, and its variants produced a positive in one

step directly or could be replicated through positive-negative printing.

It was this last point that threw Talbot out of control. Since he was the father of the negative-positive scheme, he felt the collodion process infringed on his turf. After a fiery, 10-year court battle, with lawyers from both sides providing as much misleading information as they could muster, a decision was reached, but not in Talbot's favor. Photographers were free to practise the wet collodion process. Or were they? In America, James Cutting patented a variation of the wetplate process called the "ambrotype". His patent also covered the inclusion of silver bromide in the collodion emulsion, essential to speed up the material for portraiture.

This "bromide patent" meant anyone practising wetplate photography was infringing on his patent, and a good many photographers ended up paying Cutting and his heirs, netting them a considerable revenue. Litigation was even attempted to make the U.S. government pay for their use of photography during the Civil War!

When the patent came up for renewal in 1869, it was denied in a classic case of "never mind". The patent office itself stated that it had erred in ever issuing the patent. The silver bromide was not Cutting's original idea, as it had been used in both Daguerreotype and Talbotype processes.

All these early processes relied on metal or glass substrates as vehicles for he light- sensitive coatings. The race was on to find a flexible, lightweight, transp?arent support for the photographic emulsions. The winner was the Reverend Hannibal Goodwin of Newark, New Jersey, who received the patent for this product on Sept. 13, 1898, 11 years after his initial filing.

Henry Reichenback, a chemist working for Eastman Dry Plate Co., was also granted a patent for a similar item, after revising his application sufficiently to get a patent on Dec. 10, 1889. It specifically stated how to make a "photographic" pellicle as opposed to the general nature of Goodwin's patent, and Kodak began manufacturing their film under this patent.

Goodwin planned to manufacture the film himself, but died in 1900 before production could start in a small plant he was building. The Goodwin film and camera company was sold to the firm of Anthony and Scovill, which started making the film and sued the Eastman Kodak Co. for infringement of their patent.

Fourteen years and 5500 pages of testimony later, Goodwin's wife and the Ansco company, holders of the patent and formerly Anthony and Scovill, finally received a $5,000,000 settlement. Maybe this suit was on George Eastman's mind when he blew his brains out in 1932.

The photographic patents have been a blessing for some and a bane for others and have even caused fortunes to crumble. It seems that photography as a process could not be patented, and the same may be true of holography. Consider the words of Minister Arago in a plea to the French government to reward Daguerre: "Unhappily for the fortune of this talented artist, the method cannot become the object of a patent. As soon as it is known, everyone! will be able to apply it."

And is it possible that once one knows the secret of holography - of comparing an object's light to a reference source, that secret cannot be patented?

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Photography and the American Scene, Robert Taft

INTERVIEW WITH SALLY WEBER

IN OUR CONTINUING SERIES OF DIALOGUES WITH ARTISTS, AND IN OUR ATTEMPT TO DEVELOP A THEORY OF ART HOLOGRAPHY THAT IS REPRESENTATIVE OF ARTISTS VIEWS, THE FOLLOWING EXCHANGE VIA MAIL, PHONE AND DIRECT CONVERSATION TOOK PLACE BETWEEN AL Al RAZUTIS AND SALLY WEBER BETWEEN SUMMER 1986 AND SPRING 1987.

SALLY WEBER IS A HOLOGRAPHER WHO BEGAN IN THE LATE 70S AND STUDIED WITH HARRIET CASDIN SILVER AND DON THORNTON AT THE CENTER FOR ADVANCED VISUAL STUDIES, MIT. SINCE THEN, SHE HAS PRODUCED A NUMBER OF ENVIRONMENTAL AND ARCHITECTONIC PIECES WHICH DIRECTLY INTEGRATE SUNLIGHT, AMBIENCE AND ARCHITECTURE WITHIN A GIVEN INTERIOR OR EXTERIOR ENVIRONMENT. HER WORK TENDS TOWARDS A KIND OF MINIMALISM FOUND IN DIFFRACTION GRATING HOLOGRAPHY OR H.O.E.S, AND IS RELATED AESTHETICALLY TO THE CONCERNS OF DIETER JUNG, ANOTHER ARTIST WORKING WITH MINIMALISM/DIFFRACTION.

WEBER S PIECES, HOWEVER, ARE UNIQUE IN THAT HER BODY OF WORK REVEALS AN ALMOST CONSTANT PREOCCUPATION WITH LIGHT (REDUCED AND ABSTRACTED), TRANSITION (LIGHT, ENVIRONMENT, SPECTATORSHIP) AND THE HUMAN ENVIRONMENT (ARCHITECTURALLY CONFIGURED OR NATURALLY GIVEN). AS SUCH, HER PIECES ARE A NATURAL BRIDGE TO THE MORE ESTABLISHED MODERNIST AND POST- MODERNIST ART FORMS (MINIMALIST SCULPTURE, LIGHT SCULPTURE AND NEON ART).

WEBER IS CURRENTLY WORKING ON A LARGE, SEVENFOOT-HIGH BY 36-INCH-WIDE PANEL (GENERATED AT ADVANCED DIMENSIONAL DISPLAY) WHICH IS TO BE ILLUMINATED BY THREE WHITE LIGHT SOURCES, RESULTING IN THREE INTENSE COLOR ARCS PROJECTING OUT FROM THIS H.O.E.

SHE IS ALSO CURRENTLY WORKING WITH THE ADVANCED ENVIRONMENTAL RESEARCH GROUP INC. (ALONG WITH ELISABETH KING, RICHARD IAN, DON THORNTON AND

HENDRICH GERRITSEN) ON THE DEVELOPMENT OF INTERIOR (OFFICE, ETC.) HOLOGRAPHIC DIFFRACTIVE STRUCTURES, WHICH THE GROUP INTENDS TO MARKET IN VARIOUS ARCHITECTURAL APPLICATIONS.

SALLY WEBER

The synthesis of Intention, materials, form end site develops r rapport An idea can dictate materials, form, site end scale but the genesis of tine Idea end its intent develop slowly out of pushing oneself Sometimes I think that we are the medium for "ideas".

The individuality of each site suggests new ideas as well as presenting problems to be solved. Outdoor sculptures, unless bolted down or mace of bronze or steel, are at the mercy of the public. Holograms are not vet robust enough to survive "out there" without vandalism. However, temporary installations always involve the unexpected.

Al Razutis: *You have said that light is the most universal of*

*symbols. In your work, you're invoking probably the most ancient of symbols—light—in a context considered to be most contemporary (coherent light). Is holography and its use of coherent light related to that ancient symbology you refer to or is it something else altogether?*

Sally Weber: I'm concerned more with how light affects us—not just the effect of light as a symbol, but the effect of color When you play around with coherence and coherent color, you're looking at light in a slightly different way. But they're so related
that I don't know if you can dissect one from the other, and that's part of my question. What is this light? Is it any different? When I'm playing with sunlight and working with creating an atmosphere out of light and the coloration of atmosphere - which relates to what Turrell and Erwin are doing in environmental art—how does that affect us? Granted, installations I've been involved with haven't gone to a scale which changes the whole magnitude of place.

*Okay, but some installations are not informed by symbolic systems. For example, it could be as simple as an environmental gesture made by an architect when someone says "I need windows here because the natural light faces this way, " or, "I need an environment to give me certain pleasing cues which are not systematized within any kind of symbology, i.e. the one that comes to us from antiquity, that passes through the various schools of psychology." And I'm thinking about Egyptian conceptions of light as being related to creation and—*

Religion. The Egyptians changed and realigned their buildings periodically when the heavens changed. They made things that seem to relate to the earth and to the passage of time in a way that we don't.

*Stonehenge, for example, is based on an interest in creating some sort of a calculator, as has been speculated. Your pieces seem not so much aimed at deriving a basic knowledge, but at eliciting an emotional response on the part of the viewer.*

That's quite true. That's why I work in abstracts, mostly. Abstract music can solicit certain kinds of response simply by the kind of music that it is. I'm working with color or with light in that way, trying to get to the purest essence of what is this stuff and what does it do to us. Light has been affecting us for a long time. It has to. We are part of it in some respects. Nothing grows on this planet without light, so of course it's going to be basic to a lot of our symbolism, to the symbolism of cultures far earlier than ours, and it will continue to be. How can it not?

*But that question still exists in terms of what coherent light produces.*

It's just our type of light.

*Well, it's a pretty bizarre type of light.*

It's a new form of light. It's also a light that's being used or has the capacity, like electricity, to change technology. Light will continue to change the technologies of ours and future generations because of the interconnections with fibre optics, with computers, with new technologies using light. It's very interesting to think of the possibilities when all these forms get connected and light is driving things. The more light is used in energy work, the more you start to make people more aware of the potential of sunlight. We're not using it anywhere near the capacity it could be used.

*Are you attempting to invoke a systematic symbology? Do you have*

*a personal code which has to do with antiquity being refiltered through your own romanticism?*

I don't want to refilter anything, but you can't deny certain parallels unless you want to distinctly avoid them. It's a case of recognizing what other civilizations have done and recognizing that maybe they understood a lot more about the world they lived in than we traditionally wanted to give them credit for. Only recently, since the mid-seventies, has work in archaeo- astronomy started to deal with the orientation of buildings and what other cultures were intending to do. They had to be aware of their environment because they absolutely depended on it. If they didn't know when the crops were supposed to be planted, they died.

*That's pragmatic. The ancient Egyptians were not only pragmatic about the seasons, using calculations to determine when flooding would occur in the Nile, but also had a particular veneration of the entire creation principle of their own cosmology—Ra, which was the sun. Do you have a cosmological interest in solar and coherent light sources?*

I don't know what to call it, but I guess I would pick sunlight as a symbol of life.

*What about coherent light?*

Coherent light? No. I haven't really thought about coherent light other than just as the refinement of colon As in dissecting or microbiology, you have to look at a little bit of it before you can get a sense of the entirety.. What kind of light does helium cadmium put out and how does that affect us differently? How do you feel when you see that color as opposed to some of the lines in an argon or helium neon? I suspect that 20 years from now people will find there are very adverse affects from working with some specific wavelengths to the exclusion of others.

*Some wavelengths, for example the deep UV found in unshielded mercury vapor, can actually fuck you up by changing your RNA.*

Yeah, as does working in labs where you're looking at very high-intensity, refined coherent light for extended periods of time in very dark rooms. Your eyes must do two things at once, which causes headaches, stress and a number of other reactions if you're working with extremely high-powered lasers. The power source itself puts out different kinds of ozone. We are affected by these things whether we like it or not. I don't know if it's just coherence, but I don't know who else has really dealt with coherent light specifically. I don't see it as an antithetical component, setting up a black/white relationship to sunlight. I see it more as a component, and a very interesting one, in that we can suddenly delve into this world of light and explore it in a way that we haven't been able to before.

*What is the relationship between the Bauhaus, your work and post-modernism?*

The Bauhaus was trying to integrate both application and decorative arts: how something is used with its design. There was a synthesis of how the design functioned and how it looked, from something as simple as a teapot, to architecture. A whole aesthetic came out of that which influenced architecture,' stripping away some preconceptions about what ornament did or added, and getting down to the bare necessities of what design needed.

*Within your work, the waterfall piece (Focalpoint, 1982) for*

*example, how does that piece fiat t within that conception you've just articulated, as opposed to your outdoor piece (Lightscape, 1982), which features curved forms, basically praying the spectrum ? Are there different applications or do you see your work as fully interactive functionally and aesthetically?*

I was looking toward two very different things with those installations. Lightscape, the first installation I did using holography, was designed for a specific environment, and I used elements from the surrounding architecture—curves - curved buildings by Eero Saarinen. Also I integrated the curve of the arc of the sun which crossed that landscape during the day.

*Did it use space in relationship to the viewer?*

Of course, because the distance the viewer was at determined what color they were seeing, and as
they moved toward it they saw the installation go from blue to various colors: reds, oranges, yellows and greens. The closer they were to the arcs, the redder the spectrum, and in its own way, it was very simplified. Those were all the same hologram - mass produced by me. I whipped out millions of them and put them together to make a modular structure wherein light was the changing element. The structure itself was very simple.

*But could it have been on a distant, grassy plain irrespective of what buildings were around it; without people around it?*

It could have, but it would have been too small in some sites. It needed something to bounce off because it was so simple. Focalpoint was designed for a different reason, to experiment with focusing with light and what would happen if the primary spectrum was focused on the ground and therefore migrated in accordance to the sun. I never saw that gradation of color to a point where the spectra itself makes white light between green and pink, and I was interested in the projection of magenta and that color of magenta light which I just personally like. People know what the usual rainbow colors are like—the primary spectrum —but the secondary spectrum—the secondary higher orders— are not often utilized. I was very interested in the integration of color and water and light and movement and how that could be combined in one unified body such that it would open up the viewing angle. The glass pipes were lenses basically—so that the viewing angle wasn't just directly in front of the sculpture, but opened up the viewing distance by another 100 de-grees. As you walked, you saw the sculpture going from just very thin lines because of the lensing of the water pipes catching the gratings on an angle, to full view and out again. And then the sound, of course, was part of it.

*How long was that piece up?*

It was up for about six weeks at MIT (that was a thesis project actually) at the Whittaker Medical Science building. Then it was re-exhibited for three or four months at the Museum of Science in Boston as part of a 3-D show in '83/84.

*How does your aesthetic translate into the holographer's darkroom technique 7 One detail of your work may have 20-by- 30 inch configurations, within which will be what appears to be a spectrum. Why is the spectrum limited to that ? Is it an accident, is it deliberate, or are you working against certain limitations of the medium—and what are those?*

Ok, let's take Focalpoint, the water-fountain sculpture. It had a

focus in that you could see the entire installation in one color at about 10 feet. When you stood in the focus spot - you almost couldn't see the thing because it was so bright. As you walked back, the color relationships changed. You saw much more spectra the further back in space you got. Also, between 10 and 20 feet on the floor, there were spectrums thrown across that migrated in line with the sunlight that crossed the floor. So there were multiple layers happening at once.

*Were you able to calculate all these things ?*

When I did Focalpoint I had a lab. When I did the two installations at MIT I had a lab to myself, so I worked out those installations in there.

*So you engineered it in your mind first?*

Yeah, they were trying to teach me tricks. No wonder they thought it couldn't be done because most of the stuff I do is with the higher order and nobody has the calculations for that stuff. Nobody wants to deal with it, so I have to look and see if it's going to work. I was just doing it place by place by place by place in the lab, then taking it outside and looking at it: back and forth, back and forth. So I knew what was going to happen, but I had three or four months in the lab.

*What about the viewer? When I mounted my first abstract pieces, they became uninteresting after a while because I didn't get any viewer response. Viewers would look at this material and not know what they were looking at.*

Well, I'm running into that one now with an installation. Because of the water, Focalpoint worked pretty well. People like entertainment. People like water. Also, water adds a really nice element to light. When I was at the Museum of Science, it was really nice. Kids would try and pitch pennies down the pipes from the upper balconies. Needless to say I wasn't thrilled about this, but there wasn't much I could do about it. One day when I was there, a whole group of grade 6 kids came through. After having been primed on science all day in the Museum, one of them looked at it and said, "Hey, look, a spectrum of stars." That blew me away because he had connected with it on certain levels. You don't know how people are affected. I hear more comments afterwards then I ever hear during an installation. I never hear a thing about it because I've never had a review.

I do like working with the public in that you don't know what the response will be. People will read work or not read work depending upon their own interpretations. Sometimes I'm very surprised at how that perception can deal with some of the deeper issues I've been dealing with. Public work has to have a very broad appeal. Gallery work can be much more aesthetically oriented conceptually because a more specialized public will be coming through. In an office building or the atrium of a shopping center, people sill respond just to the basics: color, light, water, sound— simple elements. They won't spend a lot of time analyzing an image, or be interested in its structure, how it works together, and what kinds of concepts I'm dealing with. It's got to be a gut approach, and I'm very interested in appealing to people through emotive response—you hit them through the gut or the middle and not as much through the head. However, other installations I've done have been much more intellectually based.

*Let me pursue one aspect of your work's formal properties—what you refer to as its spatial dimension. You have said there's a spatial, sculptural quality to light, and what is immediately apparent in your work as opposed to that of most other holographers is that you don't*

*deal with concrete representation as a spatial property of light.*

No, I don't think there's any point to it. Because there is finally the ability to get away from the materialistic object, from the thing sitting there in space. There's finally the ability to transform that thing into something else, to play around. If it doesn't have substance, why try to make it look like a three-dimensional object? I don't see the point.

*Well, we live in a world of three- dimensional objects. I assume this is why holography has been so obsessed with 3D wavefront imagery construction*

I don't see the point. Suddenly you can begin to dematerialize things. You can look at life and the transformation of an object into, if you will, a nonobject, or something more than we generally see. You can work with suggestion, you can work with innuendo, you can work with two things at once.

*But you're not working in an area that mediates between the two. You're working in a process that almost rejects concrete objecthood and you work in an area that is much more...*

I work in a metaphysical area. There's no question about that.

*It's tied to an idea conveyed in painting in the '20s and '30s—to evacuate all superfluous elements from the art and go back into a pure form and the essence of a medium.*

Constructivism.

*Yeah, and Suprematism.*

...and de Stijl—most of them were interested in theosophy.

*We're going to talk about space and light again. You've rejected the notion—*

I wouldn't say reject. I don't think that's appropriate. Parsifal—that installation used objects, granted. It doesn't use objects to make objects. It's really trying to deal with: what is a maze? That questioning point in your mind when things have not quite solid)fied. If anything, I'm usually trying to play on the edge where there aren't quite words, there aren't quite definitions, things haven't come to an absolute state, time, place all the time. They're still in that fuzzy zone where you're feeling, and maybe that's part of the point: the experience. Later we translate that into our good old objective reality.

*So it's prelinguistic7*

Yeah.

*Preconscious ?*

But it's felt.

*A psychologist would say that's preconscious—the state between dream and waking.*

Right. That's it exactly. It's a visionary state where things are not quite as they seem. They're not actual. It's a metaphoric state where things are still in the processes of dream.

*Ok, what exists in that state' this question concerns itself with content now more than form. Surely not nightmares and things that are horrible to conceive of In your case it seems harmonic...*

Well, it had a lot to do with light.

*A certain kind of light.*

Color.

*But a certain content based on order, symmetry, harmonious relationships...*

At this point it's very simplified. The next installation is a focus of three lines of light in space. They'll be one-by-two metre holograms. I'm pushing all this stuff to the final minimal point so I can finally see what this light business is about. Then I'm sure the whole thing will change. I haven't a clue what kind of work I'm going to do after this. I might go back to making apples. I don't know.

*Right now with my work I'm going into scary stuff places I haven't been and not necessarily representative of my own mind. I'm doing a series on incest, not because I'm committing or involved in incest, but because I live in a world that is dominated by that— Vancouver in particular. It's one of the incest capitals and what incest survivors go through is pretty horrendous to contemplate. I see aspects of holography being influenced by that, when we talk about getting preli nguistic and things becoming. This is an area Edvard Munch might have liked to and did explore. The unconscious is not a very pleasant place.*

You're moving into the shadow.

*But in your work you seem to be drawing out really harmonic, pleasant things at this point. Things that are inspirational from a different...*

Well, that's just where I am. That's why I don't know where I'm going. This next installation takes that to the final point. But, you see, the trouble with minimalism is that you get to the point of being sterile.

*Well, it ends up with a black square, doesn't it? Or the white square.*

Yes, and that's the problem. I'm ending up with a line or a series of three lines that you see as white light when you are in line with them. Now, that has a hell of a lot of connotations, but it also has a point of being sterile. So if I want this installation to work, I have to go back to sculpture, drawing, and all sorts of other things in order to get those concepts across. I find that in holography it's impossible to take it to that final point, ripping out the guts so all you have is the skeleton.
The trouble is, most people can't handle the skeleton. The skeleton of a concept. The skeleton is like the Suprematist square. You get it down to the most refined point and most people go, huh? Because they're used to all the gloss.

*But that also implies that art forms—and this would be an art critic's view of an art medium—would aspire to a certain direction, a certain development and chronology, process, whatever, and in this particular case, if you go toward purity, it's called teleological, where it finally assigns itself an ultimate cause. Kant believes in a priori conditions, i.e. the mind is organized by a priori principles.*

*That's why he was interested in mathematics as one of the pure sciences. It affirmed for him the notion that knowledge is derived through combinational rules which are a priori, and everything that occurs after that is reason's attempt to fit itself into those categories. Now, that presupposes a transcendental reality and transcendental purity of form and content which is all synthetically organized in what he called a schema. If that's the case in the art that you 're referring to, then it does, by necessity, end up at a certain point like blackness, whiteness or reduction to what is an attempt to become a priori but would never become so because you're dealing with material things. So, that is the case then, right?*

Well, to a certain extent. I play with materials, and I guess I've always worked with materials. I'm a sculptor. I try to work out what language that material uses. It's taken a long time to get to a point where I wanted to say something. For a long time I used the material to say something. What's strange about working with light is that you can't ever work with the light itself. You're working with lights, with holography, with film — you're working with all these other things.

*You can't materialize light.*

Yet holography gives you the ability to materialize light in a very different sense. It allows you to make something into a form that appears to be out in space. Now that is pretty interesting.

*Well, that's magic stuff*

It's nothing too glamorously new, but it's still conceptually a wonderful thing.

*What you're talking about, isolating essences, is what I consider the modernist preoccupation. Other writers have echoed this over and over—that modernist painters. sculptors, etc. were all interested in this process and this is where minimalism became a necessary ingredient, etc. From an art-historical, critical perspective, aren't you repe.ating the modernist experiment with holography?*

No, because I'm not trying to cut away all its references to past, present and future. What you're allowed to do though is say that it's referential, that it has connections. I don't see sculpture unrelated to its environment. It's much more referential. The work and the place have a conversation. The work has something to say to that place and the place has something to say to that work. I'd like to see what happens between the two. They can compete with each other; they can contrast and become a very starkly different scenario, or they can combine in a way which makes you much more aware of the place—the negative space of the place.

Sculpture somehow becomes negative and the space itself becomes positive - the space between the wall and the window, if you will. That becomes the active area. When sunlight and changing light or changing color comes through a place and people see something different every time they walk through, it repersonalizes places that have become either architecture or areas they can't relate to. I'm trying to bring person, and respect for person, back into a place. I think it's really important. Most places are not built for people. They're made to impress people.

*Your new piece attempts to explore truth, and the truth value of the piece is not to be derived from ord inary logic. It has to d o with what Kant called transcendental logic. Now, ordinary logic abstracts, so*

*ordinary logic would have to do with your compositional schema, and it's easy to discuss. "Transcendental logic is the logic of truth which involves the application of a priori forms or rules of thought to sensuous content." I.e., if you choose a line, or if you choose a triangle, or if you choose a circle, that is related to perhaps what C G. Jung would have called archetype. But that is what Kant would have called a priori. How is that therefore implicated as a truth value in your piece itself .. which is a philosophical question?*

Well, what are you saying? Am I trying to deal with truth in working with light? What you're really asking is what's the basis of the symbolism and am I dealing with using light as a representation of truth. I haven't been thinking about it as truth. I suppose on some levels it's a question of what holds things together if there's going to be any kind of common bond. Maybe in my own personal philosophy, that might be some form of energy, and the simplest representation that I can think of for that is light. So, it's totally idealistic. Now whether that is truth with philosophical ramifications, I don't know. I don't think I have the understanding to deal with these questions yet. I'm not even sure I've formulated the complete question. That's part of what I expect the process to do.

## TORONTO S CLAUDETTE ABRAMS

by Al Razutis

CANADIAN HOLOGRAPHER Claudette Abrams is currently preparing a solo exhibition, entitled Personal Effects, at Interference Gallery in Toronto in May.

This exhibition will feature the installation of three large-format holograms produced at John Perry's Holographics North. The imagery will be suggestive of the ocean floor (with scattered remnants of our civilization). Transmission holograms of the ocean scene will be integrated with actual aquariums containing live fish, the intended effect being a kind of live-holographic interactive seascape. This project seems to be an extension of her earlier Aqua Scape #1 (1985) which also featured holograms integrated with aquariums.

Abrams started her holographic studies in 1977 at the Ontario College of Art and later continued with Dan Schweitzer of New York Holographic Laboratories in 1982.

Her main focus is holographic installation work which integrates multiple plates (in a kind of animated sequence) with constructed settings. For example, her Still Life (1984) combined eight white-light reflection holograms suspended in a gallery space (in a horseshoe configuration) around a bed; the holograms were illuminated by lights controlled by a sequencer or chaser which produced an animating flicker effect of images simulating movement. In her artist's statement, Abrams asserts the following:

"As an artist, I pursue the evolution of thought. My works are my thought contrived. I say contrived because it is impossible to express one's experiences in thought in any other form..."

Drawing on a background in photography and gallery administration Abrams has continued to explore the holographic medium from an other than representational (mimetic) perspective. Her interests in " thoughts contrived" seem to be akin to some aspects of surrealism, in which much effort was aimed at making the unconscious "concrete".

Although Abrams has exhibited extensively as part of group holographic exhibitions, her works are limited in number This condition, we may speculate, is largely due to the scarcity of holographic facilities in Canada. Some of her work was produced in the artist-in-residence program at Fringe Research (1984) but even in this project, she indicated that hands-on access was limited by lab policy.

Abrams' current work, however, represents a more ambitious direction and this is partially due to a holography grant she received from the Canada Council in 1986. Lacking access to Canadian facilities of a required quality, she has taken her work to the state-of-the-art lab at Perry's Holographic North. "I am continuing to work in large-format trans-mission holography," she adds, "and the new work I have in progress calls for pulsed masters." It is too early yet to determine whether this new direction will be carried out in Toronto or whether Abrams will again have to go to the U.S. for state-of-the-art facilities.

## HISTORICAL PLACEMENTS
by Al Razutis

Bill Molteni is certainly no stranger to the international display holography community. He has pioneered many production and display techniques, notably full-color and black and white holographic stereograms and achromatic animated holographic portraiture. Molteni has worked with the Polaroid group, in conjunction with Stephen Benton, to develop what some term the most advanced discoveries in new holographic recording techniques. Currently, Molteni is Associate Scientist with Polaroid and is involved in the research and development of the new photopolymer film for holography.

The above credentials are perhaps one of the reasons why Molteni was given a retrospective by Interference Gallery director/curator Michael Sowdon. The Toronto exhibit ran from Dec. 13, 1986 to Feb. 28, 1987. The show was far more interesting from a historical perspective than one which implicates an aesthetic use of the medium. This retrospective, as Molteni's curriculum vitae suggests, is primarily a technical- display show featuring some of the "firsts" in display holography recording techniques: one of the first computer- generated holographic stereograms (Starwars), an early color computer-generated stereogram (Digital Rose, in collaboration with Mingace and Benton), a number of two-color reflection holograms (notably ZYoyo), one of the first achromatic transmission holograms (Stripes), reflection stereograms and more.

Molteni's work is historic, in the way that early photography is interesting from an historic point of view; content is completely secondary (even incidental) to technique and medium. Formal exploration of the aesthetics of the medium is also lacking. All of the above in no way takes away from Molteni's technical stature and Molteni himself probably would be quite content to let his work, and its place in the history of technical evolution of display holography, stand in a context which is consistent with the original intent.

As a fine arts critic, I'm not too excited at Starwars (it resembles some early attempt by Atari to generate geometric graphics), Mask (a pre- Columbian facsimile of no aesthetic consequence), Crayons (literally crayons, mimetically arranged), Dad (a nice snapshot), or any

number of other examples of his craft. If this were the early or mid-seventies, I might say something critical with regards to how display holography has been misunderstood as art by curators and holographers and how toy locomotives have become a pseudo-aesthetic standard for fine arts evaluation. I might even explain why curators and art critics in the rest of the art world are not going to be impressed by crayons or masks while they ponder the calamity of postmodernism. A trip to the contemporary arts museums would be in order for those who need further illustration as to the vast gulf between holography and the rest of the arts. But this is the late '80s and holography is big enough to accommodate the differences between art and technical display, and big enough to celebrate both.

Thus, a black and white stereogram (one of the earliest) like Dali' can be celebrated as a technical achievement (the miniature portrait that it contains of the artist working) and as a historical signpost (holography intersects with Dali). But as an aesthetic achievement (surrealism) it is hopelessly out of date.

But the venue (Interference), the curator (Sowdon) and the gallery press release lead to speculation on several factors, most of which have to do with the gallery's conflation of the term "display" and "art" (which was applied liberally to Molteni's work). It seems that a fine arts gallery of holographic work, Interference, has undertaken the task of historicizing display holography. This decision is meritorious on one hand, for work such as Molteni's would not be available through any other venue and one may presume Sowdon was motivated to bring it to the Toronto area because of the lack of other holographic exhibition spaces.

However, I must take issue with the curator for his inability to differentiate this work as technical or to properly contextualize this work as anything but "holographic artworks". Sowdon himself, on the occasion of a recent Chicago symposium on the arts, publicly denounced fine arts holography on the basis of arbitrary curatorial standards or indiscriminate groupings of art works, which he said was symptomatic of much of current exhibition practice in North America.

Molteni's retrospective, while legitimate on its own terms and perhaps more suitable in the Smithsonian or the N.Y. Museum of Holography, is a curatorial anomaly in the fine arts context of Interference, where issues of what is vanguard or most important are yet to be fully explored. To be safe with history or the "big names" of art is to be ultimately conservative and one would hardly expect this to be the new direction at Interference.

## SMALL WARS

## THE HOLOGRAPHY OF MICHAEL SOWDON

by Melissa Crenshaw

MODERN POLITICAL MOTIFS give one the impression that the future and survival of this world rest solely in the hands of powerful men itching to press the big red button. It is as if we are expected to believe that evil is sporadic and ideologically based.

Such ideas disintegrate as one comes face to face with Michael Sowdon's recent body of work, titled:

'For our Friends Everything,

For our Enemies Nothing, And the Indifferent, the Law"

President Alfredo Strozner, Paraguay

Aided by a Canada Council grant, Sowdon executed his metre-square film rainbow holograms at Holographics North in Vermont, with technical assistance from Dave Stephens and John Perry. The work premiered at Interference Gallery in Toronto on Oct. 4, 1986.

The figurative content of the work necessitated the format size. The work depicts human figures recorded in real time with a continuous wave argon laser. As Sowdon planned and expected, the scenes composed of real people didn't record as reflective objects, but left black voids replicating human form and volume. Another element of the work was interferometric recording of heat waves rising from the figures as they were caught in violent action - creating striking heat displacement effects.

We have no visual record of what happens during the millisecond in which incineration and death occur. Sowdon's holograms leave one with the impression of what might perhaps occur. It's startling and terrible, and one does not leave the gallery with anything resembling exhilaration. The terror of that last helpless moment, coupled with the individual terror captured within the small wars of Sowdon's images, makes one ask disturbing questions about what the hell is going on with our species.

The shadowy voids left in the deep scenes are perhaps the best visual representation of the lack of consciousness and lack of spiritual direction that seem rampant in our global societies. Desperate scenes, mutual self-destruction, one on- one. The idea of global genocide is repugnant to all of us, but the slow, methodical destruction of individuals appears to be a fact we have all decided to live with as long as we can.

As well as scenes of people caught in their last acts of life, the holograms contained text painted on back-lit frosted glass. All except the Strozner quote were found urban graffiti.

One hologram depicts the stabbing of a woman. Her outstretched arm attempts an offense, the long fingernails appearing clawlike yet totally defenseless against the male figure and the knife initiating its thrust towards her body. Here the heat displacement effects are most startling, as we see waves emanating from her open mouth - a silent scream. The text reads: "Life doesn't give a rat's ass who lives it."

Another hologram depicts the volumetric outline of a spike-coiffed punk, head turned to the sky, tongue sticking out at some unseen enemy, middle finger gesturing upward. The text reads: "Jesus hates you."

Another piece shows a hooded figure and a hanging noose. Is this figure the hangman or the victim? The text reads: "For our friends everything, for our enemies nothing, and the indifferent, the law."

*"My intention was to portray a nuclear holocaust by recording live human figures as blackened three dimensional bodies blasted by intense radiation."*

Sowdon's work reminded me of a photo taken in the aftermath of the Hiroshima annihilation. At the moment of incineration, a man was sitting casually on the steps of a building near where the bomb was dropped. The faint outline of his lower torso was somehow etched into the surface of the steps.

Pushing the technology to such limits produces some images which are less successful than others. In a couple of holograms, the figures were not clear cut, the outlines a bit confusing, requiring some explanation as to their intent. However, for the most part, the body of work succeeded in conveying each message. There often seems an abundance of arbitrariness in holography. Format, scale and use of color sometimes have no real effect on the final image and add nothing to its ability to convey a particular message. In this work, Sowdon has clearly synthesized the tools available to the holographic artist. Each element supports the intent of the other. Nothing appears arbitrary or the result of some uncontrolled application of technology.

Perhaps people attending the opening on Oct. 4 had expected scenes of the annihilation of innocent people and the more passive members of society. Not so. The gallery was quiet and sombre as they studied the images, witnesses to all the little wars that go on and that are the ultimate precursor to self-annihilation.

This show was no fun. It made one think. Considering all the novel destructive applications we have found for our new technologies, it was an interesting counterbalance to see technology used to draw attention to the darker potentialities. Sowdon had the guts to show us a side of life that is often disregarded as we focus on large issues and big wars. His work says it is all happening now, in our cities and our neighborhoods - millions of little buttons being pushed every day.