

Holography - A digital community on the Internet?

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Abstract

Could the World Wide Web be a viable channel for workers in holography to support each other and a way of establishing some form of global community which could strengthen all aspects of the medium? This paper looks at the speed with which holography has embraced the Internet, and gives examples of the way it has been used to support global information exchange. A special WWW site will provide working links to many of the sites discussed and so act as a digital resource.

Introduction

As promised during the presentation on Saturday 30th, here are Internet resources and World Wide Web sites which I mentioned. Many of the sites listed have further links to even more holography related resources, so they are worth exploring, particularly the individual 'link' pages they each contain.

Many people were contacted, by e-mail, to give their comments and opinions for the conference talk and this digital version. I would like to thank those who did respond for contributing to the 'community' discussion. All text in quotation marks are direct quotes from those people I contacted over the past month.

The information here is probably not a good example of the power of hypertext publishing. It is linear, a limitation imposed by attempting to keep the essence of the physical presentation in London, on 30th, and add relevant material which could not be discussed then. It is also contained on a single page, which I know is frowned upon by Web designers, but I wanted to keep it as simple as possible. I have not attempted to make this an all singing all dancing, reference service, but hope the material and links are of use in maintaining an ongoing discussion of the 'digital holographic community.'

This page is experimental - an 'electronic point of reference' - a way of providing instant access to the core details of the paper I gave. If you have any comments on its usefulness, or otherwise, please e-mail me.

Rapid development

Some indication of the speed with which the World Wide Web has embraced holography, or perhaps, holography has embraced the internet, can be seen from the increase in sites on the subject.

On 15th January 1996 Webcrawler, one of the many Web search engines was asked to find sites with the word 'holography' and returned 123 references. On 17th May 1998 it found 317, an increase of almost 100% per year. More spectacularly, AltaVista was searched for 'holography' in May, this year and returned 36,650. Many sites are listed more than once, as the engine searches through the various sites, so this enormous result is not conclusive. However, even taking into account the duplications, it is clear that references to holography on the Web have rocketed and that there is more information available to the connected millions.

The difference in references found by different search engines is due to how they work. Yahoo, for example found 47 because it searches its own database for sites which have been individually submitted. AltaVista, on the other hand, is a 'Deep Search Engine' and found so many more references because it uses software 'robots', which 'visit' the various sites and follow links 'deep' into a site as well as following links they find during their 'travels'.

New Materials

As this conference in London is looking partly at new materials it seems poignant to focus on the new suppliers who are using the Internet as a sales and contact service.

GEOLA is located in Lithuania and has been marketing its new materials electronically for some time. They use e-mail to send out advertising 'mail-shots' for their emulsions and a web site (www.slavich.com) to increase their audience. Here they provide details not only about these emulsions but laser products, systems and optics. Margarita Taranenko confirmed that they have made sales via their web site and consider the main drawbacks are its slowness, and lack of personal contact. Mail them at geola@post.omnitel.net

The 3Deep Co, based in Boston, USA (www.3deepco.com), not only uses the Web as a marketing tool, but for the exchange of information on the new emulsions. The 'added value' aspect of their site, is what begins to make Web publishing interesting and often useful. It is relatively simple to place a corporate brochure on the Web, a presence is established, the company might be found by search engines and there could be the digital equivalent of 'passing traffic', but these digital visitors are beginning to want more from their visits. The discussion forum at 3Deep offers that exchange of information and experience which is so important in developing fields.

Alex Cheimets of 3Deep, Acheimets@aol.com, commented that the Web was "...the most economical way to get the message out (and)... the best way to give holographers 24 hour access to the most up-to-date information there is from anywhere in the world." As people working with holography have been 'Agfa' based for so long, the new emulsions obviously produce new challenges and any open exchange of information can only help push the use of these materials. 3Deep's customers include academics, corporate research, hobby and artists, who they sell to over the net. They have not established a secure credit card 'shopping' system, but prefer purchasers to fax their details and confirmed that "...all in all, customers do not seem to mind using the web, but the phone would be better for most..."

Obviously the 'one to one' contact via telephone can be beneficial, to both buyer and seller. The buyer has an opportunity to have questions answered and the seller has a chance to sell more! But the global element of the market makes the web attractive, removing the problem of time zones and geographic restrictions. It also means that 'marketing' can continue round the clock.

Sales Potential

Most people using the Internet appear to have made sales via the Web or e-mail, but as there is no way of auditing these claims and, for commercial reasons, almost everyone is reticent to give numbers, it is impossible to assess the usefulness of the net as a sales channel for holography. With the increase of secure Web sites and online commerce systems, this area of the Internet is developing quickly and people are definitely ordering and paying for goods over the Internet.

Secrecy versus generosity

Holography has suffered a great deal from 'secrecy'. In physics and research, developments are 'protected' in case they are commercially viable, in the visual arts, early techniques suffered the same 'restrictions'. Many artists, after taking a great deal of time to master a particular technique or process were reluctant to 'give it away'. This is particularly true of creative works which used a technique on which much of the creative work survived. The possible thinking, and I am hypothesising here, is that many considered the holographic 'cake' to be finite, and they wanted as large a 'slice' of it as possible. This is completely understandable. If an artist has developed a body of work, tied directly to an optical or holographic technique, they would not want others having access to that technique and the ability to produce the same, or similar sort of work.

Things have changed. Perhaps due to a greater confidence, a physical maturity, increasing acceptance of creative holography and general 'settling' down of the field, people are becoming more open. Take artist Rudie Berkhout, (rudieberkhout@mindspring.com) whose stunning work is in private and public collections world-wide. 18 years ago he was as protective of his working methods as most, although always encouraging to those starting out. Now he has not only spoken at SPIE about how he makes some of his pieces, but published it on paper and the net <http://rudieberkhout.home.mindspring.com>

The graphic and multi-media aspects of the Web have, not surprisingly, attracted many artists from holography. It is a cost effective method of producing an electronic catalogue, they can have total control over layout and content, and they have the potential to reach millions. Berkhout has used his site as an information centre, rather than an ego focus. His biography and exhibition list is there, but he sees his site as a way of encouraging others to become involved. With that in mind he has constructed a site with a great deal of information, full texts of papers he has written and links to other sites. "...I want to give content with little self promotion. The field of holography is still in the stage where first steps are being made. This is all due to the slow development of new tools, especially lasers. To inspire a younger generation is more intriguing than making new artwork at this time for me".

Even though this very 'generous' site is not primarily a sales channel, it has resulted in sales. "I get students contacting me ...and had a nice sale through the net and several commission jobs, even though I am not very clearly asking for that on the site." Berkhout goes on to say, "The sites I enjoy are the ones with just a few graphics, but lots of relevant data, so I am trying to return the favour."

British artist Margaret Benyon (benyon@holography.demon.co.uk), has a different perspective on the Web. She does not have her own Web site, even though her Internet Service Provider, Demon, allows her free space and she obviously has the facilities to produce one. She is known for her generosity and has, like Berkhout and many other pioneering holographers/artists, been very supportive and encouraging to people who make contact. Her view is that she receives enough requests for information and help, without the need for a web presence, and the traffic that would probably generate. She prefers, at the moment, to keep a low 'digital profile'. When asked what she considered to be the negative aspects of the Internet and Web, she, characteristically, approached it from a wider view point. Her concerns are that it is difficult for independent artists to maintain the 'technological' edge and constantly upgrade their equipment, software and skills, simply to stay part of the 'digital revolution' when they are not part of institutions who can maintain this for them.

Practicalities, Sales and Services

It is clear that the web is an economical publishing tool, a forum space, a sales venue and information resource. But how do different organisations use these various aspects? I asked Jeffrey Robb (holograms@globalnet.co.uk), of the UK based company Spatial Imaging, www.holograms.co.uk why they were using the web and what results they were having. His reaction was clear and succinct. It is economical, easily changed, provides a platform to distribute interactive software relevant to their

business and, "...you can guide 'time-wasters' there." This last aspect is an interesting one. Businesses have to maximise their potential, and if staff spend a great deal of time on the phone explaining to potential clients that they cannot have a full colour, larger than life, talking hologram hovering over Central London, they have less time to make the holograms. Spatial Imaging's site has masses of very practical information. A potential client can be directed there where they can educate themselves, in their own time, and then come back to Spatial Imaging with some relevant requests. For a modest outlay there is a maximum reward. Spatial receives around 1-5 inquiries a day from their web site and one assumes these are now informed requests. The entire web deal costs them £200 plus £100 per year to keep it there. This does not take into account any costs for producing the site, Robb does that himself. In comparison an advertisement in the Creative Hand Book, a media directory, costs around £1,700 a year and they have not received a single lead from that!

Education

As Robb points out, "We don't really sell though the internet, more, we educate to a point that the client feels that

- We are not a marketing company
- They can use holograms like they would use more traditional media
- Students - no you can't spend six weeks during the summer at our studios free!"

The benefits of this can be enormous! Spatial find that most of their clients want holography to solve a visual problem for them (they don't want millions of stickers to 'enhance' their product). They have decided to use holography and do not want to be sold something - as Robb commented, "they sell, we provide". So finding an economical way of educating your client, before you have to deal with them, is an immensely powerful way of conducting business.

Some sites on the Web have no desire to sell anything but are there to help educate, or act as a global resource. Two such sites, chosen here because of the depth of material they provide and the different concepts involved are The Internet Webseum of Holography and Holonet.

The Internet Webseum of Holography (www.holoworld.com), is run by Frank De Freitas (director@holoworld.com), who has been active in the area of 'digital content' since the mid 1980's. What now exists is a vast site of quality material utilising many aspects of digital transmission technology. It has changed over the years to provide content and facilities you would be hard pressed to find on any other Holography site. There is not only text and graphic based material, but streamed video, a regularly changing video/movie theatre which presents video material on many aspects of holography. The great advantage is that archive and 'hard to find' video programmes or clips are globally available, even if you do have to watch it on a postage size widow in your web browser. As De Freitas points out. "No special hardware or software is needed on the viewer's part, just log on and enjoy the show. The Multimedia Theatre has allowed me to digitize videotapes and broadcast them using streaming Real Video." The current 'show' is Holography in medicine by Dr. Bert Meyers, MD of the Veterans Administration Hospital in New Orleans.

A live web camera provides the visually curious with a view into the mysterious life of an holographer and his lab. This has included the inside workings of a laser, images of holograms placed under a microscope, with attached webcam, and how a hologram is made in the lab. Many of these images can have text overlays, increasing the clarity of any required explanation. There are 'question and answer' sessions with 'multi-choice' answers which then provide background detail on the questions HoloTalk, a weekly Internet 'radio' talk show delivered, via RealAudio, via the web site. Here De Freitas has taken advantage of the 'narrow casting' concept which allows listeners "... to log on and hear timely information on the field - along with phone interviews with special guests involved with holography around the globe. Once recorded, edited and uploaded, the show is available 24 hours a day, 7 days a week - so listeners can tune in at their own convenience no matter what time zone they are located in."

This amount of changing content and innovation is obviously a great deal of work so why bother when the site does not generate income from sales? "... the Internet has allowed me to do things and reach people like nothing else could. How else could someone have their own weekly holography radio show? Would never happen with traditional radio. With the Net I reach the world. The numbers are not staggering by any stretch of the imagination, but they will never get smaller, they will only grow. I would still do this even if no one was listening or watching at all. I think that is what makes the difference." But he is not simply 'shouting into the digital black hole,' he keeps track of visitors and numbers. His regular site statistics give him a view of who is visiting, from which county, where they were before they visited and what they are looking at. Mondays are the busiest days as HoloTalk is loaded onto the site on Sunday. The largest number of visitors on record to date was 1,133 on a Monday represented by 40 countries. This 'accounting' can be an extremely useful tool for designing and delivering content.

Information overload

The most recent development on this site reflects the way the web and holography on it is changing. There has always been a links page on the site, probably one of the largest on the web. Last week it contained 128 links to other holography related sites, each annotated with a short description. This was generated by hand, meaning that someone, I assume Frank De Freitas, has collected, typed, linked and annotated the list over the years. From the 24th May it was replaced with a Java based search system, designed specifically for holography and lasers. Here it is possible to request a search from several different sources which are correlated into a single web page, holding the results - with active links. There are advantages here. The user does not have to log onto individual search engines and request the same search over and over again and it extends beyond normal engines to include searches through the web, newsgroups, newspapers and books. Certainly a very valuable service for the researcher.

Academic Resource

Another large site which is developing into a useful archive for holography is HoloNet (www.Holonet.khm.de), founded and maintained by Urs Fries (urs@khm.de). It is based at the Academy of Media Arts Cologne, Germany, and partially funded by a grant from the American Shearwater Foundation. This also contains masses of material, is searchable, and provides details about artists and creative workers in the field, as well as student work from the Academy. some with downloadable QuickTime movies. It differs from the Internet Webseum of Holography in that it is archiving material from many sources - the 'digital sponge' syndrome and offers space to 'guest' sites. This includes, for example, a large section by Al Razutis, which apart from details of his 3-D video projects and holograms, provides access to back issues of Wavefront Magazine, full collections of which are almost impossible to find in libraries. There is a large list of artists and their work, critical writings and comment, a calendar where holographic related events can be posted, and personalised to the visitors requirements as well as experimental sections. HoloNet receives between 250 and 1000 visitors a day, who access large amounts of data and , according to the site statistics, appear to come back again and again.

Two sites were added to HoloNet at the end of May, giving some idea of the speed with which it is expanding: Jonathan Ross (jross@holograms.demon.co.uk), has launched his own 'digital catalogue'. The Jonathan Ross Hologram Collection, (www.holonet.khm.de/jross), provides details of holographic work in this respected UK based collection as well as recent exhibitions, reviews and comments from the artists represented in his collection. The Shearwater Foundation, (www.holonet.khm.de/Shearwater) the only Foundation which exclusively supports creative holography projects, has launched its site within Holonet, aiming to function very much as an information and 'client education' site. They hope to cut down on funding requests which are not

relevant to the programme while at the same time provide possible applicants with the confidence to apply for support, once they know what the criteria are.

One of the advantages of HoloNet is that it is 'community based' to the point where in theory anyone can provide their own site and say anything they wish to. One of the great benefits of the net in general. It does make it difficult to know what material is accurate or true. An artist publishing a catalogue on paper will probably have the contents 'proofed' by the gallery or publisher. On the net they can say anything they like and there will probably be someone logged on who will believe it.

This 'wild' claim factor is something which concerns Ian Lancaster (ian_lancaster@compuservc.com) publisher of Holography News. When asked what his comments were on the web and holography he felt that there were a lot of people making "wild" claims (one assumes for commercial gain). This is obviously an area of concern when you publish a paper based news resource which customers have paid for, in order to receive accurate and timely market sensitive information. Reconnaissance International, which publishes Holography News, as well as other specific holography market publications, can now be found with its own site on the Web (www.Reconnaissance-intl.com). The International Association of Hologram Manufacturers (www.ihma.org), which aims to bring holography companies together to protect the integrity of their business dealings, is also accessible via the Web and reflects one aspect of the attempts made to group together. It should be noted that the IAHM was formed before its web site was launched.

Integrity of information has always been problematic, and is now even more complex with the Internet being able to deliver massive quantities of information, which anyone with a computer can 'broadcast'.

Commercial/resources/finding people

As mentioned above, there are thousands of holography web sites. Some combine free material in the hope of stimulating sales, or collect different sites, designed by different people, under a semi commercial 'umbrella' HoloCom (www.holo.com), run by Ken Harris (arts@holo.com) in the States, is a good example. It was one of the first to arrive on the web and has, over the years, maintained a curious mix of sites and information on art, commerce and information. It not only contains material about HoloCom and their holography activities, but information on Ross Books, publishers of the Holography Handbook and Holography Market Place, Holos Gallery Online, the digital version of Gary Zellerbach's original Holos Gallery, Search the Light, the online version of the Creative Holography Index, plus many others. This page is on that server.

HoloCom can be seen as a hybrid site. Harris offers free hosting of web sites, which provides a diversity of information to attract visitors. While there, they also have access to commercial information, which might result in sales, or contacts, for the host and its associates. Everyone benefits. They have fast and dedicated connections to the internet and receive a great deal of 'traffic'

European Holography On-Line (www.euroweb.com) acts as a digital directory and new service. It has collected many European contacts and is now including companies and organisations world-wide. They provide a 'holosearch' facility to look up the e-mail address of people working in holography and have around 350 addresses stored. This is a more specific way of searching for someone than using some of the 'yellow' or 'white' pages search sites which exist on the Internet. Searching is free, disregarding what it costs you to access the Internet, but if you want to search through a larger database, you can purchase a computer disk with a directory of around 3,000 addresses. This is not online, you have to buy the disk, which is updated regularly, and contains addresses, phone, fax and e-mail contacts for individuals, companies, universities, institutions, artists, researchers and commercial people. Contact Intergraf in the USA, (T.J.Jeong, jeong@lfc.edu) or Hans Bjelkhagen in Europe (hansholo@aol.com).

Focus Points

The Museum of Holography, New York, acted as a physical focal point for the world of holography during the 1980's and just into the 90's. Its collection was purchased by the MIT museum in Boston, (<http://web.mit.edu/museum/home/index.html>) USA, where many examples of pieces in the collection can be seen. The fact that they have published material about the museum and its MOH collection on the web, means that it is beginning to become globally accessible. This, together with research and project information about the work carried out by Steve Benton and his students and associates at the Spatial Imaging Lab - (<http://spi.www.media.mit.edu/groups/spi/>) part of the Media Lab at MIT, and the added benefit of activities in the Centre for Advanced Visual Studies, (<http://cavs.mit.edu/>) means that visiting MIT on the web can deliver a great deal of material.

The conference in London had an impromptu presentation by Steve Benton, who gave an overview of activities relevant to holography at MIT. But only the people in the room at the time could benefit from this, unannounced, extra speaker. Using the MIT web site can provide details on much of what he introduced in London and indicates some of the potential in this type of digital delivery to 'top up' material and provide more 'background reading'. There are also very useful lists of Benton's key papers, which form some of the pioneering work in the field. It seems that Professor Benton also has other interests outside holography with the promise of material on the Benton Family Farm (although this page appears to be 'under construction').

Although, during its existence in New York, the Museum of Holography provided hard to find archival material for its visiting public, artists, scientists and students, not everyone could take advantage of it. Perhaps its partial presence on the Web will offer scholars and researchers access to its archive (albeit virtually), and act as a focal point for the community.

As the majority of research into holography is being undertaken within institutions this can often be a good focal point to access information as most of them have their own web sites. However, the nature of these sites is that it can be difficult to locate specific details relating to holography - you often need to visit pages of staff/student announcements, course/class details and University PR before you find what you might be looking for. Take the Academy of Media Arts Cologne, for example. Although it has a very high profile holography lab, initiated by Dieter Jung, and designed by Urs Fries (with direction by Jung), it does not have an holography section within its site. The pioneering work of Nick Phillips is almost impossible to find at the De Montford University Site (<http://www.dmu.ac.uk/>). You would think that due to the current competitive nature of UK Universities, they might wish to 'shout it from the rooftops'.

The Great Leveller

Knowledge used to be power, and that power used to be, partially, underpinned by access to the right information on which to base decisions. Access to the great libraries or repositories. The Internet can now provide millions of users with the information they might need. In one sense it places everyone on the same level (except, of course, those who are becoming part of the digital third world - those without computer and Internet access). Power is now based on what you do with the information you have access to and the knowledge it can help foster.

Exchanging information can certainly help build a community. The speed and relative ease with which the Internet, in general, and Web, in particular, can facilitate global exchange has already proved itself. We are obviously not quite ready to give ourselves completely to the digital world. We are geographic in essence, fixed on our individual land masses. We like the reassurance of physical groups and face to face exchange. This 'paper' is an example of that fixation. It is the result of an invitation to speak at a physical meeting, which is currently taken more seriously, by the majority, than a digital/cyber conference.

Perhaps as telecommunications and cyber-space speed up and become more and more reliable, (by that I mean machines that work EVERY time and systems which are transparent to the user), then perhaps we will be willing to embrace the digital world with more enthusiasm. Several people at the London conference commented that they still preferred to “talk on the phone”, rather than use e-mail or the web.

It is easy to jump to the wrong conclusions here. This ‘electronic paper’ (perhaps it should be called a ‘digital’) was written directly into a web layout program - never intended to go onto paper, it was sent to the host server, in America, using cheap telecommunications connections and free software. There are thousands of artists, like myself, around the world who have these resources and are willing to maintain them. The limiting factor is keeping up with developments - and the costs involved. There are tens of thousands of researchers and scientists who have the same facilities, maintained by their academic institutions. There are millions of people on the Internet. But, all these are only a fraction of the global population. When we talk about the ‘digital global community’ we are really dealing with a micro community on a global scale and those interested in holography are a tiny minority. The holographic ‘digital community’ does already exist, it just needs a little time to realise its strength.

May 30th 1998

As I mentioned at the beginning of the presentation in London, this is not a definitive view of the subject. There is potential here to add material and contact information. If, after looking at the above, there are links or contacts you feel might be relevant, then please e-mail them to me and I will add them to this page, which will be available, at this location, until the end of June. Send your links to pepper-paper@monand.demon.co.uk

- Details of speakers at the London conference can be found at <http://ourworld.compuserve.com/homepages/rpsholog/conferen.htm>
- The RPS Holography group has its own web site at <http://ourworld.compuserve.com/homepages/rpsholog/>
- Several sites produced by Monand Press, who published the Creative Holography Index, can be found at <http://www.monand.demon.co.uk>
- Joyce Peck’s work can be seen at http://ourworld.compuserve.com/homepages/Joyce_Peck_2

Some background reading

Holography on the Internet: a useful resource or expensive distraction?

A review of holography on the Internet, including case studies. The original paper was presented at Holography X, San Jose Conference Centre, January 1996, and published in SPIE Proceedings, Volume 2652. The version listed here, was placed on the WWW by Gary Zellerbach, in his Holos Gallery Online. This version takes advantage of the web and provides hypertext links to most of the web sites and e-mail addresses mentioned.

Art in Holography2, The International Symposium

This site formed an electronic 'hub' and information exchange for the Symposium, which was held in the UK in 1996. It was launched almost 9 months before the symposium took place and developed during and after the event. There are details about the speakers, topics, organisers and events which focused on creative holography. This site is soon to be incorporated into a larger and more expansive web site which will bring together material from the first International Congress, held at St. Mary's College, Indiana, and the Nottingham meeting. Updated texts and information from the St. Mary's meeting, organised by Douglas Tyler, will be joined by complete papers and discussions from Nottingham. A review of the meeting, by Rebecca Coyle can be found there as well as articles by Edward Lucy-Smith, and Brigitte Burgmer, who were both invited speakers.

Is it Art Yet?' Art in Holography, Take 2

Rebecca Coyle gives a detailed review of the symposium, speakers and topics. Convergence, Summer 1997.

The International Symposium "Art in Holography 2"

Brigitte Burgmer reports on the symposium and interviews delegates. Interferenzen, 2/3, 1996

A 3D triumph for the future.

Edward Lucie-Smith found paranoia as well as enthusiasm at a conference on holography. The Spectator 5th October 1995

Holography, Visual Medium or Cheap Trick?

A background article, published in Art Monthly, which explores the development of holography in the visual arts. This has nothing to do with the Internet, but provides an interesting background, and has been given a new lease of life by being distributed on the Web. Other critical writings on the subject of Art and Holography can be found at Search The Light, the online version of the Creative Holography Index.

Many thanks to HoloCom, for hosting this page on their server, to all the people who responded to my questions and to the RPS Holography Group for inviting me to speak on the topic in London.