Lowry Burgess

"On Holography"

Illusions on the theater stage, the history of various forms of perspective, the glass-light of mosaics and stained glass related to my holograms:

Since my very early stage set designs in the mid-1950s, I have always been deeply interested in spatial creation through illusion and visual spatial perception - all the different forms and perspectives. Driven by my academic studies of 13th Century painting - the proto-perspective constructions of Duccio, Giotto the Laurenzettis, Sassetta and others, I began a more systematic study of space making systems. Equally important were my intensive studies in Indian Art, particularly the perspective approaches in the frescoes at Ajunta, as well as other study of Chinese and Japanese spatial formulations in paintings and gardens. Further and perhaps more directly related to holography was my love of stained glass, particularly the construction of 'color-spaces' with light in the church spaces such as St. Denis, Chartres, St. Chapelle, and Ely, creating a 'pseudoscopic' light-space between myself and the windows that moved as I moved within their light. Further and very directly to my sense of holography, were the radiant mosaics of Ravenna and the holographic shimmer of those surfaces that modulated the shallow spaces directly in front of the mosaic surfaces that gave proto-holographic effects. I actively engaged many combinations of such perspectives and effects in my very large visionary paintings during the sixties.

Contemporaneously, in the late sixties there emerged an enormous body of scientific research and publication around visual perception and 3D perception with the work of R. L. Gregory, Bela Julez, George Wald, and Edwin Land - but to name a few. These I read, and attended lectures by them in Cambridge. Most certainly central to all of my thinking and optical work with light was Gyorgy Kepes and my direct long relationship with him beginning 1968 until his death in 2001. This extraordinary environment of visual perception included all the light-obsessed Fellows who gather at the Center including our light colleagues MIT: Doc Edgerton, Steve Benton and Walter Lewin.

With the presence of lasers and holography produced a revolution in my mind involving holography and the deeper processes of the brain'! For me "Holography" became for me a new philosophy - a new general model and explanation in which so much could be integrated and understood. The 'hologram' became its objective instantiation.

My first explorations in actual production of holograms was in 1971 at the Center for Advanced Visual Studies where I was a Fellow working with an early pioneer holographer, Jeff Hall. I was particularly obsessed with bringing holography out of the dark and into sunlight and in public and natural spaces and so was he.

The first holograms in 1971 were of crocus flowers that had been an obsession of mine. The holograms were small 4 X 5 inch 'daylight'

holograms, visible in sunlight. To me they were how I see in my mind, pieces of my mind in space and light - they were like visions put in the world. Here was a perceptual a way to make my visionary mind visible and show how I see in my mind to others! These small holograms were little miracles before me in my bright sunlit studio at CAVS. (I can clearly see the first moment I saw them now.) Another aspect that was particularly intriguing was that because of the vibration sensitivity of holography part of one of the flowers vanished into light - a vestigial presence that was so fundamental to visionary perception - 'the there-ness of the not there'.

Some form of holography and the holographic concept has been central to all of the large aspects of the "Quiet Axis" that is my life work and spans over 9 major Aspects in the world and in outer space, with more than 50 other 'preparations'. Holography constitutes a perceptual and conceptual core among all of the artworks in the "Quiet Axis". What I am trying to achieve is the movement of the mind to a deeper place inside itself and into an engagement with the world by understanding that perception constitutes a much larger boundary that is normally thought, whether in physics, biology, psychology, linguistics, or anthropology.

Display holography has never been the goal of my holograms that I bury, pulverize, invert, obscure, and deeply process and transform while embedding them in the domains of memory and telepathy, and environment, nevertheless, I believe that any hologram, including display holography, engages the mind in deeper perceptual processing. This engagement with deep brain spatializing prepares the mind for a more embedded engagement between the mind and world and becomes one of the connecting 'bridges' that Heidegger points to in his vast phenomenology of the mind, "Being in Time". Holography always shows the individual how perceptible images are formed (gestalted) and being formed, therefore revealing a fundamental creativity at work within everyone's mind.

my story - some notes

Dieter Jung

Just look into the mirror and you see this magic 3-dimensional inverted image behind the flat surface of the mirror. You can touch the mirror but not the image behind the glass. When you go away, this image does not longer exist in the mirror. With the Laser technology of the new medium called Holography you can “catch and freeze” this 3-dimensional virtual image and store it in holographic recording material. If you brake a hologram in many many pieces, each part contains the information of the whole !

In 1972, I started painting a cycle of portraits of known and unknown persons, whom I captured on canvas in vertically and horizontally oscillating lines. The patterns were constructed according to the principle of warp and weft. The faces and their colours seemed to appear and disappear in this network, to be present and absent in the mesh, to become material and immaterial as one examined the interfering structure of brushstrokes at different levels and distances.

In 1977, at Posy Jackson´s Museum of Holography in New York, I saw for the first time a pure light-sculpture, an authentic mirage, a real Fata Morgana. It was a Hologram! I was paralyzed by fascination. Animated by the artist Ruben Nuñez I began to study the techniques of holography at the New York School of Holography founded by Jody Burns (a former photographer), directed by Sam Moree (a former Video artist) and Dan Schweitzer (a former actor). The laboratory appeared like a magic metrical garden, illuminated by millions of dust particles of silicon sand. On the heavy, vibration free sand table, a gas tube with mirrored ends emitted a stream of photons as a thin line of coherent, monochromatic light. This was the Laser! The Laser beam went through a pinhole, was split into two by a piece of glass, and then, the

beams guided by mirrors were expanded through lenses. One part of the beam illuminated the object and the other the holographic plate. Here they met, interfering with each other, engraving the light-woven code of the holographed object on the holographic recording material.

This miraculous medium offered so many conceptional similarities to my artwork in traditional media that I began to morph my ideas into this seductive alternative. I became part of a long process to develop holography as a contemporary MediaArt format and to share the results with a broader public audience worldwide in over 40 countries.
Furthermore I had the privilege, honour and joy to meet during the last 35 years many scientists and pioneers involved in the field, who inspired and supported my work. Just to name a few: Yuri Deniyuk (Joffe Institut, St. Petersburg) and Stephen A. Benton, the leader of the Spatial Imaging Group at the Massachusetts Instute of Technology (MIT). In 1985, as a Rockefeller Research-Fellow at MIT´s Center for Advanced Visual Studies, which was directed by Otto Piene, I had the chance to develop in collaboration with Mark Holtzbach and David Chen from the Spatial Imaging Group, computer generated and animated holograms, such as *LightMill, Motion in Space-Space in Motion* and HoloPoems.

Mainly these experiences of space and time in the virtual reality of holography - with all its spatial attractions and temptations, rituals and prophecies – created a radically different perception of light, space and colours. Flying colours, lighter than air!

Holograms are really very particular and seem to cause some strong action on the viewer´s eyes. Holograms stimulate the visual senses and apparently reveal fascinating dimensions of thoughts and emotions, awakening dormant layers in the cortex system. The viewer can interact and change the appearance of the holographic simulacrum harmoniously synchronized with his own movements. The holographic image appears in the presence of the viewer as an illusion of tangible material.

For me as a LightArtist the visible and unvisible, the natural and artificial light seems to be the most profound experience of inner harmony and a source of personal expression: holography incorporates infinite aesthetic capacities for communication *and a continuum of energy integrating multi-cultural, spiritual and religious patterns of the virtual and material world.*
In my approach to natural and artificial light phenomena, the history of spatial imaging and my own appear as a woven carpet, where warp and weft interfere as material and immaterial structures -- as ***a*** *part of cosmic weaving.*

Paula Dawson

As an undergraduate in the 1970s I found out about holographic art and was fortunate that Dr Steel of the CSIRO, Australia arranged for me to have an artist residency at the Laboratorire de Physique et Optique, Besançon, France.
Despite the language barrier I began to absorb the profoundly individual approach to holographic image making of my mentor, Dr Nicole Aebischer. However my money soon ran out and I had to return to Australia. My former sculpture lecturer, Ken Scarlett arranged sponsorship for me to return to make the lounge room hologram I had been planning, for a show at the Gryphon Gallery, on the basis that it was going to be the world's largest (1500 x 950mm plate , 3000 x 3000 x 2400mm volume) hologram. As I left for France he jokingly said to me "If its doesn't work just don't come back."
Well...even with the facilities of the 20 meter long floating floor lab, a big argon laser and the enthusiastic assistance of three brilliant scientists Dr Nicole Aebischer, Dr Bernard Carquille and Dr Claudine Bainier, when we eventually made the hologram - it didn't work!

It was a completely blank piece of glass, without the slightest hint of a three-dimensional image. A total failure. The next one was also a failure. We only had a few more days till I had to return to Australia and one more hologram plate left to expose. Under this extreme adversity the collaboration took on a whole new dimension. Everyone from the director to the workshop staff got involved in intense speculative thinking as to why it might have failed and how best to adapt the experiment.

The story has a happy ending – the problems were solved and “There’s No Place Like Home” is now in the collection of the National Gallery of Australia.

The collaborative spirit of intellectual and personal generosity of this first major work of mine has been repeated time and time again in projects in different labs all over the world.

It’s my intension though my holographic works to enable people to see things in a different way and thereby to come to a new understanding. My artistic strategy has drawn on the model of interference in which light is superimposed on itself.
As Hecht describes :
Optical interference may be termed an interaction of two or more light waves yielding a resultant irradiance that deviates from the sum of the component irradiances.

Often my holograms on their own wouldn’t mean much, but when overlaid with something else, in the viewer’s mind, causes interference and a new idea or understanding to form. This understanding is much more than simply the sum of the hologram and the place, space, idea or thing to which the hologram’s subject refers.

Homeland, the work in this exhibition, refers directly to use of this type of hologram by the army for situational awareness. The grasshopper light used to mount and view *Homeland* was design especially for durability in a bunker.
The 10,000 or so army holograms made so far are generally monochrome green terrain models which are sometimes overlaid with a sheet of acetate with wide red lines indicating the approach path.

Homeland also refers to the commonly held association of the lifelines of the hand as predicting agents of a person’s future. The red lines, which float above the terrain in *Homeland*, are spatial tracings of lifelines from 3D models of people’s hands and the terrain is also made from models of casts of several people’s palms. Conceptually, the red lines superimpose the objectified intension of the approach path onto the subjective destiny of the lifeline.

The distribution of the red life -lines at different heights in the viewing volume make noticeable the difference between the sharpness of the lines close to the terrain and the blur of the ones nearby the viewer. Visually this conveys a sense that things close to us are indefinite, cloud like and when they are distant we can be objective and finite. Though the viewer may not know that in the traditional fine arts, green under-painting was used to achieve vibrancy in flesh, this effect is achieved in the hologram by the softening of the red till the green background comes though.

Homeland employs the visual language of holographic terrain modeling for situational awareness and the subjective associations of fragile lines and forms of the human body to examine states of Being.

Maurice Merleau-Ponty:

The thickness of the body, far from rivalling that of the world, is on the contrary the sole means I have to go unto the heart of things, by making myself a world and by making them flesh.

It has been argued that the prevalent forms of representation of space and time in imagery reflect the attitude of the culture of the time. However I believe the ways of storing and transferring visual information also most defiantly play a part in forming the attitudes of a culture.

The pictorial qualities of images literally enable us to “see” things in a certain way and enable certain courses of action to be pre-visualised. This is the case with the holographic terrain model maps, which have been found to be so effective by the army.

Fundamentally images received to the human visual system by diffraction provide a completely different experience from other images. The laser transmission optical hologram being probably the most unusual image type in its form of representation of the spatial and temporal environment. Our culture is richer for having this diverse range of imaging.