Moments of seeing

To cite this article: Dieter Jung 2013 J. Phys.: Conf. Ser. 415 012081

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Moments of seeing

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Abstract. The artist invites the audience into modified spaces to experience a visual journey into the enigmatic maze of art / science / technology and hence into another reality, hovering behind light and shadow. He offers a harmonic introduction into the cosmology of light, the forces and energies which are eternally around us, including the delicate acrobatics of gravity.

1. Introduction

Ears are silent, mouths are deaf, but eyes perceive and speak, reflecting both the external world and our internal perception of it – Johann Wolfgang von Goethe.

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.
Almost 30 years later I revitalized the portraits as prints, now computer composed of “particle wave” structures. These images exist as wave patterns and only within these waves the particles of the image information are captured.

2. Traces
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. I was paralyzed by fascination. Animated by the artist Ruben Núñez I began to study at the New York School of Holography founded by Jody Burns, directed by Sam Moree and Dan Schweitzer.

This miraculous medium offered so many conceptual 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 Institute of Technology (MIT). In 1985, as a Rockefeller Research-Fellow at MIT’s Center for Advanced Visual Studies, the lighthouse 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.

Figure 3. LightMill- Motion in Space, Space in Motion-1986, Hologram/Glass,112 x 140cm
During these years I also was happy to join John Perry to produce the large size holograms *Stone of Light* and *Xcentrics*. Later on I enjoyed working with Walter Spierings on different complex projects.

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. A pleasure for the eyes and a puzzle for the mind.

For me as a LightArtist, the visible and invisible, 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.

These experiences of space and time in the virtual reality of holography – with all its spatial attractions and temptations, rituals and prophecies – sensibilized a radically different perception of light, space and colour. Flying colours, lighter than air! The wings are spread.
3. The long march
In the year 2007, my exhibition Looking Forward at the Beijing Imperial City Art Museum included the Holograms *Johann Wolfgang von Goethe, Otto Roessler*; the Drawing *Fata Morgana*; the Computer Graphic *Imperial Clothing* and Laser Graphics.
Almost simultaneously, I realized a second project at A-Space.

For the installation at A-Space each single letter of the two words LOOKING FORWARD was designed in the dimensions of 700 x 500 x 50 cm, written with almost 62,000 bricks on the floor of the factory (130m x 30m) and only conceivable as gigantic fractals. Once the letters were all built and laid out on the floor they formed a huge labyrinth.

Only from the especially built platform the observer could read the words and was invited to use a pair of binoculars chained to a table covered by a white cloth with a vase of yellow flowers. At the other end of the building 3 holograms were discernible: The Prism and two pieces of Ping-Pong, mounted on brick pedestals and projecting multicolored circular shapes and diaphanous shadows into the air.

The fourth pedestal remained empty, but it somehow embraced and connected the whole installation, including the painted portraits of Alberto Giacometti and Ezra Pound. Looking forward –
looking for what? The wings are spread and a sequence of events becomes visible beyond the limits of the known perspectives.

In September 2008 my solo exhibition UNVISIBLE -VISISIBLE was held at the Today Art Museum Beijing. The exhibition included the Mobile TAM NAVIGATOR which was placed outdoors in the open air. The TAM Navigator-2008 rotated around xyz in unpredictable constellations, powered and animated by wind, connecting Earth and Sky, Above and Below, South, East, West and North. The anodized aluminum panels with their matt and polished planes were illuminated by the sun, scattering their own iridescent optical illusions, their own fractal beauty.

Figure 11. TAM-NAVIGATOR- 2008, ca. 550 x 450 cm ø

My first Mobile constructions were built in 1999 with variously shaped colored cardboards hanging on fishing lines from fiberglass rods supplied by the Berlin kite shop ‘Flying Colors’.

These were followed by a series of more elaborate pieces out of feather steel, hand-made ball-bearings and thin anodized aluminum panels – later replaced by acrylic panels – and holograms. This marked the birth of the word HoloMobile.

Finally in 2001 a large scale Mobile was installed at the European Patent Office, The Hague.
In between all these activities, another type of mobile sculpture, the TransOptical Mobile, was realized in varying dimensions. It was a really fascinating apparatus, a non-holographic system constantly morphing and emanating unexpected 3-dimensional virtual images in real time in the course of its gentle movements: a real and poetic virtual ballet, choreographed mainly by air.

This system also produces a myriad of different kinds of rainbows. A special constellation occurs from time to time, the momentum when the space maker “beams” out sharp color images of its environment onto the wall. Viewers are amazed and amused by this archaic but magic space pace maker and delightedly join the dance.

Like my other mobile sculptures, TransOptics hangs on an iron chain. From the ceiling downwards, the structure of steel rods with ball-bearing swivel joints becomes increasingly differentiated. It carries various mirrors, lenses and solid materials in whatever sizes and shapes the metal shop waste bin had to offer.
But even after all this excitement it was challenging to move on towards more complex spatial constellations like those I realized in the MultiMedia Holography installation LightMill, *Motion in Space – Space in Motion*, 1985/89.

The *Light-Mill* installations are computer-generated and -animated holograms. Here, in a virtual space, the spatial operations are harmonized with the motion of each viewer: Standstill, Slow-Motion, High-Speed, Backward, Forward. The spectator can experience these moments virtual reality – the interspaces of postponed reality in “visible” time – through his own personal physical and spiritual mobility. He needs no additional visual apparatus or viewing device in order to perceive a spatial and temporal continuum of synthetic events. Moments of seeing.

Based on these experiences with the virtual Light-Mill concept, in 2003 the Mobile XYZ (160 x 260 cm) saw the light of day. A special vacuum-pumped, turnable filmholder for multiple exposures was developed for the production of the one-step Transmission Holograms, in order to receive as many reference angles as possible for the final, constantly moving artwork. But before the holograms were laminated on both sides of the panels, they were back-mirrored in a vacuum chamber and acted as Reflection Holograms.

![Figure 15. HoloMobile XYZ – 2003](image)

The following description of this Mobile was published in the catalogue *Motion in Square*, Museum Ritter:

“...When it comes to mastering the subject of movement by artistic means, there can be little argument that Jung’s work brings together the maximum number of possibilities. Doubtless it is generally considered that since Alexander Calder, the mobile is probably the most compelling solution in the search for an artistic form that integrates movement and change into the work. Calder himself described his aims as follows: ‘Why not plastic forms in motion? Not a simple translatory or rotary motion but several motions of different types, speeds and amplitudes composing to make a resultant whole. Just as one can compose colors, or forms, so one can compose motions.’”

“Jung has increased the kinetic potential of the mobile by employing holograms in which not only the colours change according to the angle they are looked at, but also the forms that have been etched into their surfaces by a laser. In addition to plastic motion comes visual motion as well. And over and beyond this, depending on the angle of the light the holograms also reflect coloured light back into the surrounding space and thus create a second composition of moving lights on the walls. While the latter
is reminiscent of Moholy-Nagy’s ‘Light-Space-Modulator’, the possibilities it offers for changing its environment by far outstrip those of the work of the Bauhaus master. In this way Jung allows the sculptural and the visual levels to interpenetrate, so that the unity that Calder conjured up is at last resolved in a form that must be redefined and grasped anew in every moment.”

This hovering in uncertainty of my HoloMobile, its suspense and perceptual appearing seems to be close to the compositional concept of the “moment form” by the German composer Karlheinz Stockhausen:

“...In these forms a minimum or a maximum may be expected in every moment, and no developmental direction can be predicted with certainty from the present one; they have always already commenced, and could continue forever; in them either everything present counts, or nothing at all; and each and every Now is not unremittingly regarded as the mere consequence of the one which preceded it and as the upbeat to the coming one—in which one puts one's hope—but rather as something personal, independent and centered, capable of existing on its own. They are forms in which an instant does not have to be just a bit of a temporal line, nor a moment just a particle of a measured duration, but rather in which concentration on the Now—on every Now—makes vertical slices, as it were, that cut through a horizontal temporal conception to a timelessness I call eternity: an eternity that does not begin at the end of time but is attainable in every moment. I am speaking of musical forms in which apparently nothing less is being attempted than to explode (even to overthrow) the temporal concept—or, put more accurately: the concept of duration. In works of this kind the start and stop are open and yet they cease after a certain duration.”  (Stockhausen 1963a, 198–99)>quoted from Wikipedia.

Figure 16. HoloMobile Continuum – 2008, ca. 450 x 650 cm ø

The ShenzhenMobile was conceived 2010 for the solo exhibition “Flying Colours-Moments of Seeing” at the OCT Art&Design Gallery, Shenzhen and was exhibited together with TransOptic Mobile XII, 25 holograms and 24 prints.

The Mobile merges quite naturally with the exhibition space, yet extends it with a cosmos of colors, creating delicately balanced interplays of energies and vibrations in which even the slightest movement has a magic impact. The whole construction demonstrates and performs the delicate acrobatics of gravity and light. Every moment.

Suspended from the ceiling, the structure of steel rods with ball-bearing swivel joints and holographic elements becomes increasingly differentiated and ramifies into ever-smaller sections. The largest hologram measures 100 x 100 cm, the smallest is 2cm in diameter. In total there were about 52 holograms to be balanced with each other.
These elements of various sizes are composed as Transmission Holograms, sandwiched between acrylic glass. The diaphanous holograms are realized in circular, square, or lozenge-shaped forms with differing apertures, creating a pendant to the architectural situation of the given space.

But it is the abstract interplay of colour and form which determines the immediacy of this experience: only by resisting figurative associations is the viewer finally challenged to immerse himself fully in the unpredictable flow of events set in motion also by his own movements. Ultimately the viewer constitutes a self-referential system. Every Moment.

In a skilfully contrived and sustained modulation of the relationships between the visible and the invisible, above and below, heaven and earth, science and art, the viewer receives in an open system a harmonic introduction into the cosmology of light, the forces and energies which are eternally around us.
4. Sharing the Light

Figure 21. Thinking about-2009, 130 x 100 cm, print

Figure 22. Looking at a Hologram – 2009, print

Figure 23. Looking through-2009, 130 x 100 cm, print

Figure 24. Chainreaction – 2010, 110 x 110 x 400 cm
5. **TimeCapsule**

This is an ongoing holographic project. Each hologram contains several short video sequences which occupy different spatial locations in plus and minus space. They act, according to the movement of the viewer, as simultaneous open air movies and are viewable from both sides.

![Figure 25. With kind regards – 2010, TimeCapsule (screen shot)](image1)

![Figure 26. With kind regards – 2010, TimeCapsule (screen shot)](image2)

![Figure 27. Stephen A. Benton-2006, 130x100cm, Inkjet](image3)

**Just a Moment:**

*Eight Questions – Eight Answers*

*Dieter Jung – Stephen A. Benton*
5.1. How do you envision the future role and impact of holography within the development of media technologies?

Holography has already played its most important role in media technology. It has convinced the world that there can be a three-dimensional imaging technology of superbly high quality. Holography itself may always be too expensive to use in its pure form, but it has increased people’s expectations of more practical 3D media, beyond shabby movies and fuzzy postcards. Secondly, “holography” in the metaphoric sense has redefined people’s expectations for the media technologies of the future. It has put a name on what has only been a vision of the future, and thereby given it more tangibility and hope.

5.2. Are moving interactive, holographic 3D images the only solution for creative holography?

You could say that moving interactive 3D images are a kind of ultimate virtual reality experience, if you include sound and touch. And this is definitely one research path that holography is shaping. But there will always be a role for the classic laser transmission holograms too, which stimulate contemplation and wonder. And in between are possibilities for a kind of optical sculpture, a gamut of colors unmatched by conventional media, and visual kinetics that catch people by surprise. Every year, new synergies with holography seem to arise, so I think it is much too soon to say what the palette of creative holography will eventually become – the research stage is only half over.

5.3. Are there any artistic experiments/projects done with holographic video/haptic holography?

The development of the interactive aspects of haptic holography has been in the hands of an art-science dual-major student, Wendy Plesniak, and I think its progress is very much shaped by these dual points of view. But holographic video is still too limited in size and image quality to be of much help in its present form. It is meant as a proof of concept for a much larger display, which now awaits some new inventions in scanner technology. And there is only one of these displays, and it will take two of them to start exploring the aesthetics of haptic holographic communication, which will certainly uncover some promising artistic possibilities.

5.4. After your long historical experience and as a pacemaker in the field of holography where would you see the paths of emancipation for holography in the intellectual, social and artistic fields?

I am skeptical that technologies ever become truly emancipated – they are instead tools in the hands of emancipated individuals. The prejudices against technologists who have mastered holography makes it hard for those individuals to operate freely in the world of fine art. It is the vision of holography that has become emancipated, or I would rather say “appropriated”, by intellectuals and so forth, as part of the dialogue about the future. Artists themselves still find the technology intimidating as a working tool, I fear, because it is still quite complex and not entirely reliable.

5.5. The CAVS has been, for more than 20 years now, a “ball of energy” and inspirer for the international growth of the art-science-technology complex. How do you – as the director – see the present and the future role of the CAVS in respect of the MIT (Media Lab) and the art world?

Actually, the CAVS has experienced some major “ups and downs” over the last decade, and I am pleased to be helping renew its energy quite a bit recently, with the support of Dean William J. Mitchell. It is still quite a modest operation, compared to when Otto Piene was Director, and it will probably not grow rapidly in the next few years. We will move next door to the Media Lab in 2004, and we expect that a whole new synergy will develop with this, mediated largely by students moving between the Fellows at the Center and faculty at the Media Lab. Relationships with the art world are mediated largely by the Fellows themselves, most of whom have their home base there, and to which they return after a few years at the CAVS.

5.6. Is the Center moving towards a virtual/digital community?
The strongest theme at CAVS these days is interactive installation art, which is highly tangible and concrete, but powered by sophisticated digital engines. It is the digital engineering that provides the common ground with much of the rest of MIT, and allows the participation of students as apprentices and seminar members. The style of art-science-technology collaboration that emerges from this is very much based on physical overlap, shared equipment and skills, and accidental meetings among participants. If anything, this is a type of adverse reaction to what happens in virtual communities – CAVS is still based very much on physical presence.

5.7. What is the new program and which initiatives are taken for positioning the Center?

Development of the Center is preoccupied with funding the next Fellow or two, rather than promoting the Center per se. The artwork that happens during and especially after being at MIT will have the biggest influence on the Center’s positioning. There is no degree program associated with the Center for the time being, but students come and go as apprentices, and as members of various seminars and colloquia.

5.8. Will the artist become an “art engineer”?

In the tetrahedral constellation of art-science-technology-craft, artists have much more in common with scientists than with engineers. Researchers are expected to “build” things that are likely NOT to work (else there is nothing to learn!), while engineers are expected to build things that definitely WILL work (the bridge should stay up!). And there is already a history of artist-scientists to demonstrate this point. For an artist’s work to become finished and ready to have a public impact, of course it should be well “engineered”, to stretch a concept, but this is not the interesting part of the process.

Figure 28. Stephen Benton

Text was published in “Holographic Network”, by Dieter Jung, Rasch Verlag Bramsche 2003, ISBN 3-89946-003-0