

Bride stripped bare:  
on the problems of interpretation of holographic art

Al Razutis

Centre for the Arts, Simon Fraser University  
Burnaby, British Columbia, Canada V5A 1S6

Abstract

The inclusion of the arts in an otherwise scientific and technical conference is occasion to examine the relationship between art and science, and particularly in the newly emergent field of holography. Discussions concerning the "marriage of art and science" have been conducted before and surely will continue in the future. In this paper I wish to re-address the manner in which scientific rationalism interprets holographic art and the manner in which the arts can respond and contribute to further discussion. I will posit art holography as a kind of 'bride' to the more established and male-dominated technologies, a bride of unknown qualities. This paper presents a number of problematic conditions affecting art holography proper and examines its relationship to contemporary culture. Furthermore, the paper presents a theoretical schema for the development of a semiotic which can be employed in the study of display and art holography, a schema responsive to scientific rationalism and one which provides a point of further theoretical development of use value to both scientist and artist.

Historical Footnotes

The collapse of the ancient world of classical systems was celebrated in the age we have come to call "the modern age". Most historians agree that modernity, although anticipated as early as the Renaissance, and philosophically developed in the Enlightenment, reached fruition during the 19th century and achieved its apex early in the 20th century. The modern epoch is characterized early on by a romantic opposition to classicism; it refuses the ancient conception of order and destiny and posits the human condition as one of exploration, diversity and the acquisition of knowledge. At the height of modernity, we had the birth of the Theory of Relativity, the birth of psychoanalysis, numerous technological inventions, a general explosion of avant-garde literary and visual art practices, and political upheavals challenging the old order.

For the modernist, historical memory is replaced (in the words of Jurgen Habermas) by a "heroic affinity to the present", at least the arts in the early 20th century hear this out. Modernist art features a trend towards greater autonomy in the definition and practice of art. Culture in the modern age is fragmented and institutionalized as science, philosophy and arts, or should we say the many sciences, the many philosophies and humanities, the many arts. Modernist art movements, be they impressionism, cubism, dada and surrealism, futurism, constructivism, minimalism or expressionism are short lived, the new replaces the old with astonishing rapidity. Styles and philosophies undergo radical change and modernist culture appears as if in a state of perpetual transformation through revolt and factionalization. What is the dominant form for this age of upheaval? Gregory Ulmer, in *The Anti-Aesthetic*, points to collage: "By most accounts collage is the single most revolutionary formal innovation in artistic representation to occur in our century." Collage is both a formal device for unlocking meaning through combination, segmentation, and it allows artists to explore unknown territories of image making through analytical process (cubism) or chance correspondence (dada and surrealism). Ulmer's privileging of collage is indicative of his interests in developing a materialist critique of culture, an interest which is by far the most dominant amongst critics. The other main stream of modernism, namely abstractionism (supremacism, minimalism, etc), is ignored by Ulmer. In this paper, I will also focus on collage rather than negotiate a middle ground between analytical art and abstraction.

The modernist collage is symptomatic of an age that no longer believes in mimesis and the privileging of a referent (stable) reality. Modernist art after all features work that is self-focusing (on its own procedures), ambiguous, allegorical and at times narcissistic. It features a propensity for autonomy ("art as art") and promotes conflict with existing social and political conventions. In its worst, that is, anti-social form, modernism may result in a kind of minimalism and conceptual art that is divorced from the here and now, the social and the political world of real events.

But modernism is now displaced in art by what is termed "post modernism" which itself, and as characterized by Frederick Jameson, is a reaction against the many modernisms. The post modern reaction features work that is narcissistic and potentially schizophrenic ("awash in a sea of private languages"), over specialized and obsessed with pastiche. For the post modernist causality and history are denied and the object is no longer a mirror of subject; here, the world is all, in the words of Jean Baudrillard, "simulation...a pure screen...for all the networks of influence". Advertising and popular culture are as post modern as the arts themselves and both not only deny causality and history but feature piracy, plagiarism and appropriation on an ever increasing scale. Where once the referential "real" was resisted in modernism in favor of other realities, the post-modernist is fragmented as subject, engaged in simulation and lost in the ruins of the modernist museum.

#### A Test-tube Bride

Optical holography was first and foremost the realization of scientific experiments in coherent radiation and wavefront reconstruction. Most of the developments in optical holography in its first two decades (1947-67) were directly linked to experimentation in applied optics. Missing from this early stage of development was any clear aesthetic of producing, viewing or interpreting holography; early image making was solely concerned with technique and generic subjects which displayed controlled qualities, size, stability, colour and brightness. Holography as an art jumped into the cradle when artists and scientists began to look for something more engaging and meaningful than a hologram of a toy train, a figurine or mask or small model. Inquiries into aesthetic subject-objects produced a corresponding interest in models of interpretation more appropriate to a wider domain of culture than the one offered by diffraction theory or examinations of signal to noise ratio. As holography jumped into "art", it also became part of a number of competing styles, techniques, aesthetics, ranging from diffraction grating minimalism to neo-classical mysticism, to sci-fi, kitsch, pop art, to a number of mostly modernist art forms all displayed alongside one another by curators who tried to cram in education, art and science under one roof.

It is noteworthy that holography has become an art form in an epoch which I have previously characterized as post modern. Noteworthy, because this will be linked later in this paper to both its dilemma and its future.

To us now it seems that the early pioneers in display holography were laying the technical groundwork for a visual medium that soon would outgrow the confines imposed by decorative illustrations of spatial images comprised of light. I have argued in previous articles ("Art and Holography", *Wavefront*, Vol. 1, No. 1/2) that holographic art and scientific holography are distinct though interrelated practices, that the aesthetic subject and the empirical subject do not necessarily share the same theory and that issues of art representation must account for historical, psychological and aesthetic conceptions within a more general field of culture. Diffraction theory cannot explain how we feel about a work, or why we feel. It necessarily deals with physical laws. Aesthetic issues arising in holography incorporate physical laws (since the medium is technically reliant on these laws to exist) but include a complex interplay of other disciplines, a condition which renders the scientific-physical description as less than adequate.

#### Holography discovers Modernism, among other things

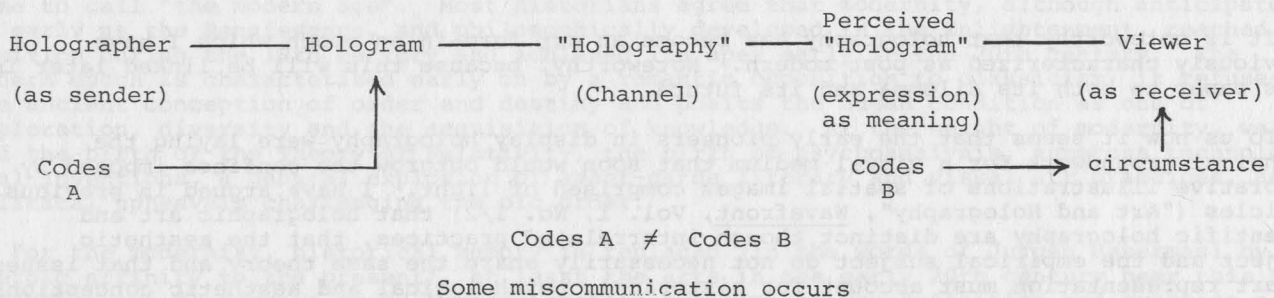
As holography developed from the early naive attempts to reproduce spatial images of objects, attempts which invariably featured holograms neatly framed and hung on a wall as if they were "real thing representations", it moved into the areas covered by the earlier modernist movements. With the advent of hybrid work, featuring the integration of holograms in complex wall pieces, featuring collage, sculptures, environments and installations, one could see some of the constructivist or cubist or futurist or surrealists issues partially resurrected. A quick survey of the holographic arts today, as exhibited and catalogued, would also reveal that holographic art is still embroiled in modernism and has yet to come to terms with post modernism. There are a number of examples where holography is now used in pursuit of such modernist problems as analysis of space and time, where concerns as to the essence of the light-diffracted medium are foregrounded, where psychic and unconscious image metaphors are presented, or where minimalism is invoked to convey a pure and unadulterated state of being and cognitive reality. It is a medium that is growing incredibly fast, and yet it still must discover the post modernist present (in this, I am sure embossing will also lead the way) and produce a critical and aesthetic theory beyond the subjective utterance of curators. And furthermore, as a bride to scientific rationalism, it has to be understood by the room as being something more than an eccentric use of an interesting physical discovery.

## A Semiotics for Holography

While we cannot simply reverse the modern trend towards compartmentalization and institutionalization of disciplines, a trend which makes interaction and dialogue more difficult, we can nevertheless work towards some common system of evaluating artistic and scientific holography. This does not mean that we should collapse the distinctions of each discipline, nor can we arrive at a common vocabulary that would satisfy both. Neither can we simply wish away particularities under some general metaphysical framework. We can, however, contemplate some theoretical framework which may accommodate display, technical, artistic and personal holography. This is akin to a project of detecting hidden variables through a descriptive system which is open and avoid the pitfalls of singularizing and reducing phenomenon to basic fixed operations, laws and invariants. It is a project which, if extended, involves communication science, philosophy and perhaps even the new theoretical quantum physics as promoted by Bohm and Capra.

Semiotics is an attempt to create a science of signs and its linguistic origins have by now been background in favor of a more open and encompassing study of verbal and non-verbal communication. It presents models for exploring a number of cultural phenomenon, from fashion to advertising to art to science. And it is compatible with scientific rationalism in that it identifies structures, operations and the nature of a complex of interactions between the 'sender' of a message and the 'receiver' of meaning/content. One such semiotic theory, proposed by Umberto Eco in his book A Theory of Semiotics clearly outlines the complexity of analysis in depth and, as such, is beyond the scope of this presentation. However, aspects of this theory are useful as schematic tools to identify the very complex circumstance of 'making something that means something' to a viewer. A simple semiotic schema can be outlined as follows (Figure 1).

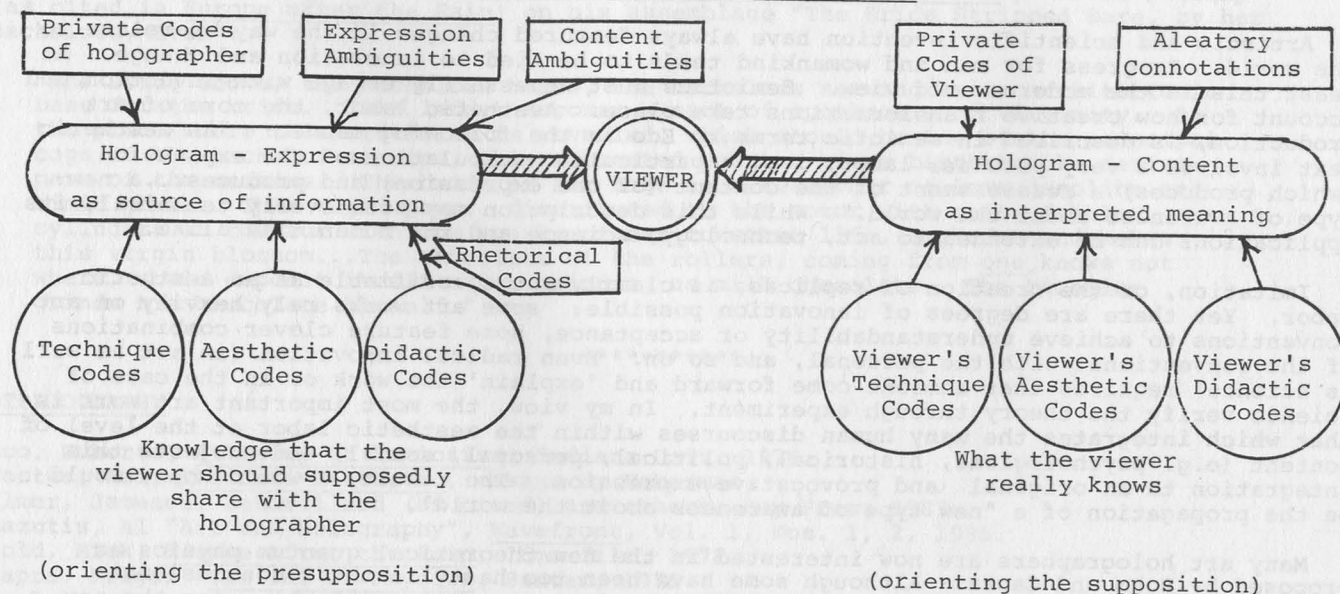
Figure 1 Basic Model



It is important to recognize this only as a basic schema, one capable of greater elaboration. In its simple form, communication is described in terms of expression "codes". The basic holographer makes a hologram employing simple codes of composition (centering), lighting, display presentation, and of course holographic techniques (single beam volume reflection, bleaching, etc.) to produce a message or statement about something (his lab, his favorite objects, an advertising example, etc.). The viewer has to know something about the channel of information (holography), how holograms are lit, what are they, their history, uses, etc. Sometimes the holographer fouls up the message, creates an unrecognizable image, or does not give any information as to how it should be viewed; sometimes the viewer has no clue as to what to look at, how to look at it, or what a hologram is, and communication breaks down. As Eco maintains: "When the addressee (viewer) does not succeed in isolating the sender's (holographer;) codes or in substituting his own idiosyncratic or group subcodes for them, the message is received as pure noise."

If we now complicate the issue by including aesthetic codes pertaining to art movements, artists and history, a number of expression and content ambiguities on the part of the artist, his/her particular idiolect (style) as signature, personal references mixed with cultural-political references, scientific technique mixed with personal inventiveness or aberration, and combine this with the viewer's personal experience and knowledge or ignorance, in art and science, in historical issues and holography, we have a complex interplay between hologram (message) and interpretation (content) that can be schematized in Figure 2.

Figure 2. Complex of Influences



What happens if a viewer has never seen a hologram before?

This basic introductory schema identifies the relational network of codes and expression gestures within most acts of communication. In the arts, ambiguity and idiosyncrasy are foregrounded, since the arts are more concerned with "rule changing creativity" and a resistance to precedent (whereas the sciences it could be said are more concerned with "rule governed creativity" and reliance on precedent). It is apparent from these models that changing rules through creative invention sometimes produces a condition where the work is completely misunderstood, since there may exist no aesthetic or perceptual code which would allow a viewer to understand the meaning of the work. Certainly, much of art history features numerous examples of a new form being ridiculed or ignored because it 'doesn't make sense'. Radical inventions or artistic expressions rarely "speak for themselves". Rather, they demand that a new semantics base arise, new codes be identified, and a new type of awareness be entertained. This is why the development of a critical and aesthetic theory for art holography is so crucial; this is why these new theories must take into account not only aesthetic but technical and scientific principles as well.

Semiotics is a descriptive system which is less concerned with finding basic laws, elementary building blocks and invariants than it is in studying the complex interaction between expression and meaning through a process of identification of components, functions and their interrelationships. For each code, there are subcodes; each expression can be broken down, segmented, in search of more hidden variables. We know that different people may respond differently to a similar message; different artists-senders may express the same concept or idea ("force", "harmony" etc.) differently. This history of art is full of compositional assertions with regards to 'harmony', 'force', 'weakness', 'balance'. When holographic art discovered collage, by the creation of hybrid forms of graphic and sculptural proportions, it also discovered the other modernist arts, and with them shares some common "codes" of expression and content. Extended to the general level, perception and understanding are guided by cultural codes (social conventions, scientific precedent, artistic convention, ethics and morality, etc.) and thereby rely on a shared semantics base to achieve validation. Even paradoxical situations such as optical illusions teach us that the perceptual real is rooted in psychological and physiological factors.

A semiotics of holographic art is not a strategy of containment and prescription but one that may better facilitate expression and communication of content.

### The aesthetic labor as challenge to criticism

Artistic and scientific invention have always featured changes in the way we relate to the world. Progress for man and womankind tends to be tied to innovation and change. At least this is the modern world view. Semiotics must necessarily engage with invention and account for how creative transformations take place. Aesthetic labor, the core of art production, is described in semiotic terms by Eco in the following manner: "An aesthetic text involves a very peculiar labor, i.e. a particular manipulation of the expression (which produces) a reassessment of the content (of the expression) and produces...a new type of awareness about the world." While this description may seem overly technical, its applications can be extended to art, technology, science and the humanities alike.

Imitation, or the creation of replicas, is clearly not classifiable as an aesthetic labor. Yet there are degrees of innovation acceptable: some art works rely heavily on art conventions to achieve understandability or acceptance, some feature clever combinations of the conventional with the personal, and so on. Even radical innovation (in art as well as science) requires that someone come forward and 'explain' the work or in the case of science verify the theory through experiment. In my view, the most important art work is that which integrates the many human discourses within the aesthetic labor at the level of content (e.g. psychological, historical, political, personal, social) and subjects this integration to an original and provocative expression. The result, I would hope, would be the propagation of a "new type of awareness about the world".

Many art holographers are now interested in the new theoretical quantum physics as proposed by Bohm and Capra. Although some have been too hasty in their conclusions (accepting hypothesis as fact with near religious frenzy), most are looking for the new physics to provide a "new type of awareness about the world." Bohm has even gone so far as to use the hologram as an analogy for what he terms the "implicate order" and this has obviously been provocative to many holographers. The new physics conception of reality is exemplified in the following statement by Bohm (as quoted by Capra):

"One is led to a new notion of unbroken wholeness which denies the classical idea of analyzability of the world into separately and independently existing parts... We have reversed the usual classical notion that the independent "elementary parts" of the world are the fundamental reality, and that the various systems are merely particular contingent forms and arrangements of these parts. Rather, we say that inseparable quantum interconnectedness of the whole universe is the fundamental reality, and that relatively independently behaving parts are merely particular and contingent forms within this whole."

Clearly, these assertions pose a challenge to science, philosophy and art alike. On the one hand, they represent an effort to further develop the knowledge of the quantum and sub-quantum regions and attempt to integrate western thought with eastern mysticism. On the other hand, they completely challenge the credibility of much of present day theory. As an art critic, I am interested and will continue to develop this interest in these theories, especially as they affect holographic art theory and semiotics. I am concerned about any retreat into a past romanticism or even worse a past classicism that sought to singularize art experience under the idealized umbrella of some metaphysical "Reality". It was in the pre-modern age that classical comments like "the whole life of the cosmos breathes within the artistic representation" or that "every artistic representation is in itself the universe and that in the artistic imagination there lies the entire drama of Reality" were uttered. This was certainly the credo of the symbolists who themselves were opposed by the modernists, namely the futurists and formalists.

But while fearing the rise of a new theosophy, we can remain open and supportive of new insights. Any discipline, science and art alike, that is worth its name must be open minded and questioning. An open and receptive semiotics must be able to accommodate the changing nature of the conception of the real and how we communicate it. Expression and content are not static or in equilibrium but dynamic and constantly shifting registers, codes, forms. In the wasteland of post modernism, in the ruins of the museum, holography is like an orphan with a privileged future. It does not come from the machine age and classical mechanics; its aesthetics are tentative, and it will outlive post modernism by producing a trajectory of art and theory that is not based on reaction and negation of the past but affirmation of future. How this is exactly to be done is not at the moment clear. We do not have a theory of aesthetics or a semiotics of holography than provide an answer. We cannot predict or prescribe with certainty, except to note that there is work to be done.

I would like to close with a poetic quote, as riddle, from notes by Marcel Duchamp (as cited in Europe after the Rain) on his assemblage "The Bride Stripped Bare, by her Bachelors, Even":

"The bride above, the bachelors below, the bachelors serving as an architectonic base for the bride. This ladder becomes a sort of apotheosis of virginity. At the place where this eroticism is revealed, which should be one of the principal cogs of the bachelor machine, this tormented gearing gives birth to the desire part of the machine. The bride at her base is a reservoir of love gasoline or timid power. This timid power, distributed to the motor with quite feeble cylinders in contact with the sparks of her constant life, explodes and makes this virgin blossom...The chocolate of the rollers, coming from one knows not where, would deposit itself after grinding as milk chocolate. The bachelor grinds his chocolate himself."

\*\*\*\*\*

#### BIBLIOGRAPHY

- Eco, Umberto, A Theory of Semiotics, Indiana Univ. 1976.  
Foster, Hal, The Anti-Aesthetic, essays by Habermas  
Ulmer, Jameson, Baudrillard (as cited) and others, Bay Press 1983.  
Razutis, Al "Art and Holography", Wavefront, Vol. 1, Nos. 1, 2, 1985.  
Gold, Mick, Europe After the Rain, 16mm film, 1978  
Capra, Frijof, The Tao of Physics, Bantam, 1976