

An Essential Guide to Video Art

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Contents

- 8 Acknowledgments
- 9 Preface, *David Bolt*
- 10 Foreword, *David A. Ross*
- 13 Introduction: Complexities of an Art Form, *Doug Hall and Sally Jo Fifer*

Histories

- 31 Video: Shedding the Utopian Moment, *Martha Rosler*
- 51 A Brief History of American Documentary Video, *Deirdre Boyle*
- 71 D6-collage/Collage: Notes Toward a Reexamination of the Origins of Video Art, *John G. Hanhardt*
- 81 Video Art: What's TV Got To Do With It?, *Kathy Rae Huffman*
- 91 **And if the Right Hand did not know What the Left Hand is doing**, **Gary Hill**
- 101 Paradox in the Evolution of an Art Form: Great Expectations and the Making of a History, *Marita Sturken*

Furniture/Sculpture/Architecture

- 125 Television, Furniture, and Sculpture: The Room with the American View, *Vito Acconci*
- 135 Performance, Video, and Trouble in the Home, *Kathy O'Dell*
- 153 Video Installation Art: The Body, the Image, and the Space-in-Between, *Margaret Morse*
- 168 **Video in Relation to Architecture**, **Dan Graham**
- 189 **The Rio Experience: Video's Now Architecture Meets Corporate Sponsorship**,

Dare Birnbaum

205 The Art of The Possible, *Francesc Torres*

210 **Mobility, As American as ...**, **Chip Lord**

215 **Aligning The Museum Reaction Piece**, **Howard Fried**

Audience/Reception: Access/Control

226 The Feminism Factor: Video and its Relation to Feminism,
Martha Gever

242 **The Medium Is the Mess ...** **age**, **Bruce and Norman Yonemoto**

249 This Is Not a Paradox, *Judith Barry*

259 The Wild Things on the Banks of the Free Flow, *Dee Dee Halleck*

267 The Fantasy Beyond Control, *Lynn Hershman*

275 Reach Out and Touch Someone: The Romance of Interactivity,
Ann-Sargent Wooster

304 Ethnicity, Politics, and Poetics: Latinos and Media Art, *Coco Fusco*

317 **Behind the Image**, **Muntadas**

321 **Interventions of the Present: Three Interactive Videodiscs, 1981-90**,
Peter d'Agostino

Syntax and Genre

331 The Cultural Logic of Video, *Maureen Turim*

343 The Smell of Turpentine, *Juan Downey*

349 The Importance of Being Ernie: Taking a Close Look (and Listen),
Bruce Ferguson

366 **Untitled**, **Joan Jonas**

375 Audience Culture and the Video Screen, *Norman M. Klein*
405 Significant Others: Social Documentary as Personal Portraiture in
Women's Video of the 1980s, *Christine Tamblyn*

Telling Stories

421 Video Writing, *Raymond Bellour*
444 **Appropriation of Contemporary Reality: An Anecdote**, *Tony Labat*
448 Directions/Questions: Approaching a Future Mythology, *Rita Myers*
457 Light and Death, *Mary Lucier*
465 The New Epistemic Space, *Woody Vasulka*
471 **Three Tapes by Steina, Steina**
477 Video Black-The Mortality of the Image, *Bill Viola*
487 **Phototropic**, *Tony Oursler*

496 Notes
521 Contributors
526 Selected Bibliography
547 Videography and Video Index
553 Picture Credits
557 Index

(Boldface denotes artists' pages)

Video Installation Art:

The Body, the Image, and the Space- i n- Between

MA RGARET MORSE

Introduction

The following hypotheses on video installation art are speculative answers to fundamental questions that someone rather new to video installation as an art form would ask. The answers posed here were based on recent research and interviews with artists and were conceptualized with the tools of cinema and television theory rather than with those of the discourse of art history. The basic questions-What is a video installation? What are its means of expression? How do these differ from the media per se and from other arts? What kinds of installations are there? What effects on a visitor does the art form promote? What cultural function does or could this art form serve?-are questions I would never have cared enough to ask had I never experienced a video installation. Such an experience, for instance of Bruce Nauman's *Video Corridor (1968/70)* can be stunning. To me it was as if I my body had come unglued from my own image, as if the ground of my orientation in space were pulled out from under me. Some installations jam habitual modes of sensorimotor experience, others operate at a more contemplative level, depending on the passage of images or conceptual fields through various dimensions, rather than on the passage of the body of a visitor through the installation. Yet, even then, the visitor is enclosed within an envelope of images, textures, and sounds.

We lack the vocabulary for kinesthetic "insights," for learning at the level of the body ego and its orientation in space. (Perhaps such learning principles might be considered "Deweyian," a "figuring within" as opposed to the "reading" of literature or the "imagining" of pictorial art.) These hypotheses attempt to articulate this kind of experience, in the preliminaries to a poetics of video installation art. Detailed description and interpretation of specific installations must reluctantly be left aside. The following sections address in turn: (i) the conditions of existence of the art form; (2) its plane of expression and different levels within that plane; (3) the disposition of bodies and images

in space; and (4) the temporal and experiential passage, reflections toward a metapsychology of video installation art.

The Conditions of Existence of a Noncommodity Art Form

The designation *video installation* is not an accurate guide to what is undoubtedly the most complex art form in contemporary culture. However, the term does suggest much about this art form's conditions of existence: *Installation* per se suggests that an artist must actually come and install the elements, including electronic components in the case of video, in a designated space. Such an activity presumes the support of an entity to clear and hallow the ground to be occupied, i.e., most likely a museum, but sometimes also a gallery, an alternative, or even perhaps a commercial or public space. Thus, installation is a topsy-turvy art that depends for its very existence on the museum or like institutions, whereas for commodity arts such as painting, the museum serves as the pinnacle of validation in a longer history of display.

Furthermore, the process of installing suggests a temporary occupation of space, a bracketed existence enclosed by a matching process of breaking down the composition into its elements again and vacating the site. Thus, installation implies a kind of art that is ephemeral and never to be utterly severed from the subject, time, and place of its enunciation.

In contrast, an object that can be completely freed from the act of its production, such as a painting, becomes displaceable and freely exchangeable, that is, commodifiable. In addition, this severance from the process of enunciation is what ordinarily allows a magical origin or aura to be supplied to objects of art. It is the tie to process, to the action of a subject in a here and now, whether loose or tight, which works against the installation as a commodity and also suggests why it is so hard to document. While an installation can be diagrammed, photographed, videotaped, or described in language, its crucial element is ultimately missing from any such two-dimensional construction.

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that is, "the space-in-between," or the actual construction, of a passage-for-had-ies or figures in space and time. Indeed, I would argue, the part that collapses

2

whenever the installation isn't installed is the art.

The frame of an installation is then only apparently the actual room in which it is placed. This room is rather the *ground* over which a conceptual, figural, embodied, and temporalized space that is the installation breaks. Then, the material objects placed in space and the images on the monitor(s) are meaningful within the whole pattern of orientations and constraints on the passage of either the body of the visitor or of conceptual figures through various modes of manifestation-pictorial, sculptural, kinesthetic, aural, and linguistic.

154 MARGARET MORSE

Note that the artist vacates the scene in installation per se. This allows the visitor rather than the artist to perform the piece. Indeed, she or he is *in* the piece as its experiential subject, not by identification, but in body. Thus, the installation is not a proscenium art. (Hence the choice of "visitor" over spectator or viewer.) It is not hard to see the relation of installation to other

anticommodity art forms that emerged in the 1960s, such as conceptual art, performance, body art, earth works, and expanded forms of sculpture.

But how does this noncommodity art survive? Sometimes an installation is commissioned by a museum, such as the Whitney Museum for its biennial,

or by the Carnegie Museum in Pittsburgh, or the Institute of Contemporary Art in Boston. In addition, like "single-channel" or narrative video, the form

is generally dependent on corporate, civic, and charitable art subventions and the economic support of the artist in some other occupation. Provided an installation is site-independent and can be re-erected in various places, a museum-sponsored tour can also generate rentals for the artist/installer.

Because of the nature of its economic support, some artists decry the growing "bureaucratization" of the art: that is, funding a piece requires not only formal requests to corporations, foundations, and commissions, but the

generation of detailed plans, models, and prototypes: improvisation is reduced to a minimum. But, however detailed a video installation becomes in conception, there remains an element of uncertainty and risk at the level of the material execution and installation of its elements conceived by the artist, and an element of surprise in the actual bodily experience of the visitor. Indeed, I speculate that exploring the materialization of the conceptual through all the various modes available to our heavily mediated society is at the heart of the

cultural function of video installation.

In that sense, the "video" in video installation stands for contemporary

6

image-culture per se. Then, each installation is an experiment in the redesign of the apparatus that represents our culture to itself. a new disposition of machines that project the imagination onto the world and that store, recirculate, and display images; and, a fresh orientation of the body in space and a reformulation of visual and kinesthetic experience.

While video installation as a form is not directly related to or dependent

on the institution and apparatus of television, it is just as hard to imagine the art form as it is to imagine the contemporary world without television. Not only do we live surrounded by images, our built environment and even our natural world has largely passed through image-culture before rematerializing

in three-dimensional space. Thus, though they completely overpower the art form in size and reach, television broadcasting, cable, and the videocassette as usually consumed are each but one kind of video installation that is reproduced

7

over and over again in a field of open and otherwise unrealized possibilities .

The materialization of other Possible apparatuses allows us to imagine alternatives and thus provides the Archimedean points from which to criticize what we have come to take for granted.

The following section distinguishes video installation from proscenium arts such as theater and film, as well as from traditional painting and sculpture. Then, various modes and types of installation apparatuses are discussed, drawing on examples from various artists, emphasizing first spatial, then temporal dimensions.

One Among the New Arts of Presentation

Explaining why the video installation is not theatrical or filmic does much to clarify other aspects, from its metapsychology to its modes of expression, which distinguish it from the other more illusionistic arts:

In the proscenium arts-and one can begin them with Plato's "Simile of the Cave"-the spectator is carefully divided from the field to be contemplated. The machinery that creates the vision of another world is largely hidden, allowing the immobilized spectator to sink into an impression of its reality with horror or delight but without danger from the world on view. The proscenium of the theater, and in its most ideal expression, the fourth wall, as well as the screen of film divide the here and now of the spectator from the elsewhere and elsewhen beyond with varying degrees of absoluteness. The frame of a painting likewise allows a painting not to be taken literally (as well as to be transportable and salable), and to allow a not here and not now to occupy the present. The visitor to an installation, on the other hand, is surrounded by a spatial here and now, enclosed within a construction that is grounded in actual (not illusionistic) space. (The title of the group installation exhibition and catalog *The Situated Image*," emphasizes that aspect.)

Video installation can be seen as part of a larger shift in art forms toward "liveness" that began in earnest in the 1960s, in a field that included happenings, performance, conceptual art, body art, earth works and the larger category of installation art. If there are two planes of language,⁹ a *here* and *now* in which we can speak and be present to each other, and an *elsewhere* and *elsewhen*, inhabited by people and things that are absent from the act of enunciation, then these new arts explore expression on the plane of presentation and of subjects in a here and now.

Art on the plane of presentation can be contrasted to art as representation, an evocation of absences that been the focus of artistic exploration since the Renaissance. Representation invokes things apart from us, using language as a window on another world. In Western art, that world came to be represented as realistically as possible, using a variety of techniques such as perspective in painting and photography. Other techniques developed to suppress the

156 MARGARET MORSE

here and now in which we inevitably receive representations, for instance, separation from the realm of reception by means of the aforementioned proscenium, frame, or screen. In photography and the cinema, the separation became absolute temporal and physical separation. Cinema spectators immobilized in darkness were like the prisoners in Plato's Cave, but they are not held in place by chains but by machines of desire, enjoying the impression of mastery over

an imaginary world. We ordinarily think of fiction effect and illusionism in terms of these arts of representation.

While the cinematic machine or apparatus includes the cinema in which viewers sit and the projection room (not to mention the box office and the candy counter), "movies" are what appears on the screen, just as photographs and paintings are what is in frame. Attention to this other plane, the here and now of production and reception beyond the frame, became a rich object of

theoretical investigation and a critique of representation in philosophy and in cultural and film studies-as well as in art-in the 1960s.¹⁰

It is hard to imagine at first how much this new ontological status-presence, or here and nowness of art with the receiver of art-changes the rules of art making and receiving. In fact, from the beginning there were many who refused the work on the presentational plane the status of art. For one thing, then art and everyday life can share the same place of language. What then does distinguish art from life? What happens when "experience" must substitute for "transcendence"? What does it mean to "participate" in art? At first,

these questions may not have seemed complicated: a faith in perceiving things as they "really" are and a habit of confusing the present tense with reality and of equating experience with personal change common to the 1960s, may have been useful in exposing the fictions of there and then and in exploring the apparatuses of the past. But the disconcerting discovery of fictions and manipula

tions that inhabit the here and now i's on ongoing project of video installation. "

The impetus behind the artistic exploration of this plane of presentation and discovering its rules and limits perhaps began with Utopian desires to change society via changes in consciousness. ¹²But the impetus was also appar

ently ontological-a new and virtually unknown postwar world had yet to be explored, a world mythically first discovered for art in Tony Smith's car ride along a newly constructed New Jersey Turnpike at night. What Smith saw in the dark horizon beyond the freeway has become in the intervening period a landscape of suburbs, malls, and television in which everything, including the natural environment, is either enveloped by the low-intensity fictions of consumer culture or abandoned to decay. A subject in this everyday world is surrounded by images and a built environment that are, at times, hard to tell

apart. Three-dimensional objects are no longer a prior reality to be represented, but rather seem to be blowups of a two-dimensional world. Two and

three dimensions interchange freely with each other in a derealizing process so hard to grasp that we turn to catchwords like postmodernism in desperation."

The arts of presentation and, particularly, video installation are the privileged art forms for setting this mediated/built environment into play for purposes of reflection. Indeed, the underlying premise of the installation appears to be that the audiovisual experience supplemented kitiesthetically can be a kind of learning not with the mind alone, but with the body itself.

While the new arts of presentation have been conceptualized as "theatrical, " " it is important to note the massive difference between the two worlds of a traditional theater, in which the audience receives the events on stage as happening safe in an "elsewhere," and a theater in which events happen on the same plane of here and now as the audience inhabits. It is as if the audience in this new kind of theater were free to cross the proscenium and wander about on stage, contemplating the actor's makeup and props, able to change point of view, to hear actor's asides, seeing both the process of creating an imaginary world and-more dimly than before-the represented world itself. But the difference can be even more radical, for in performance art, as opposed to traditional theater, the body of the performer and his or her experience in a here and now can be presented directly and discursively to an audience, which thereby becomes a you, a partner inhabiting the same world, possessing the capacity to influence as well as respond to events.

Even sculptural objects could participate in this plane of presentations in a here and now: minimal sculpture in the ig60s, as Michael Fried perceptively noted at the time, offered a sculptural object, not as a monument or memorial of some world or time, but as an ersatz person that confronted the viewer *in his or her own space*. Indeed, the work consisted not just of an object, but implicated the physical space around the object and the play of light in it. The minimal object also required a subject capable of realizing the work, responding to the changing light and positions of a here and now, so that each time a work is perceived it is a different one.

Even the inevitably more narrative "single-channel" video art is part of this move toward exploring the presentational plane. While structuralist film was largely engaged in a modernist exploration of the unique properties of the medium, narrative video has long been engaged in exploring what it means to narrate stories, how stories are told, what cultural function narrative serves, and so on, so that the plane of presentation is represented over stories in a messier, "multileveled form."

Instead of offering simplicity, the presentational arts are hybrid and complex. For instance, even though the plane of expression of presentational arts is essentially the present, it is possible to explore physically more than one tense-reference to the past and future can coexist with the present, provided

158 MARGARET MORSE

that all are figured and grounded in the experience of here and now. Two types of video installation art can be differentiated by tense:

1. Closed-circuit video plays with "presence." A "live" camera can relay the image and sound of visitors in charged positions in installation space to one or more monitors. Shifting back and forth between two and three dimensions, closed-circuit installation explores the fit between images and the built environment and the process of mediating identity and power.

2. The recorded-video art installation, can be compared to the spectator wandering about on a stage, in a bodily experience of conceptual propositions and imaginary worlds of memory and anticipation. A conceptual world is made manifest as literal objects and images set in physical relation to each other. That is, the technique for raising referent worlds to consciousness is not mimesis, but simulation. In general, the mode of enunciation in video installation in terms of speech act theory is performative or declarative. ¹⁶That is, legitimated and contained by the boundaries of the art institution, a world is declared into existence. It need not match the world outside (i.e., be constative), nor does installation video command the visitor nor commit the artist nor merely express some state of mind.

One could further divide this field of installation work into the referent world(s) that symbols made literal evoke. Yet it seems seldom that these worlds are cleanly one thing or one tense-they are rather a copresence of multiple worlds, linked like stories (Mary Lucier's *Ohio at Giverny*, 1983), like sagas Uoan Jonas's, *Iceland Naples Express (Icelandic and Neopolitan Volcanic Sagas)*, 1985-881, like dreams (Rita Myers's *The Allure of the Concentric*, 1985) and obsessions (Ken Feingold's *The Lost Soul*, 1988) as condensations of public and private space (Muntadas's, *The Board Room*, 1987), or even as if they were a simile (Dieter Froese's *Eavesdrop*, 1989) or syllogism (Francesc Torres, *BelchiteSouth Bronx*, 1987-1988)In this sense, multiple channels distributed over multiple monitors are but another way of setting co-present worlds in relation to each other. And from the beginning, installation video has been a mixed medium: closed circuit with recorded video, slides, and photography.

Thus, what ultimately distinguishes the one type of installation from the other is less tense or medium than whether or not the visitor spatially enters two as well as three dimensions or remains in "real" space. The ultimate question that differentiates among the arts of presentation appears to be, who is the subject of the experience? Performance, even where it has installationlike sets, differs from installation, nonetheless, because the artist occupies the position of the subject within the installation world. Interactive work differs in yet another way, for room is made for the visitor to play with the parameters of a posited world, thus taking on a virtual role of "artist/installer" if not the role of artist as declarer and inventor of that world. ¹⁷In a larger sense, all installa

tion art is interactive, since the visitor chooses a trajectory among all the possibilities. This trajectory is a variable narrative simultaneously embodied and constructed at the level of presentation.

The Play of Apparatuses: Passages in Two and Three Dimensions

Television as a kind of primordial video apparatus already encloses the viewer within a virtual space of the monitor in several ways: light from the screen (as emphasized in the title of another group video installation *The Luminous Image*,) bathes surrounding space in shifting tones and colors. " In addition, what is on the television screen typically begins by presenting itself as if it were a here and now actually shared by viewer and media presenters and personalities. That is, television has developed a mode of presentation that envelops the viewer and presenter in a virtual space of an imaginary conversation. This "fiction of discourse" or of presence is furthered by the habitual and distracted way in which we receive television.

If, however, the television apparatus were a video art installation and not a part of a habitual home environment, then awareness of the charged position in space in front of the television set (that is, the position of a virtual subject of address) would be part of the experience of the visitor. Furthermore, one would be aware of the television set itself as a object, with a shape and position in (living room) space. One could walk around the "news" and note the backside of the "window on the world--the annexation of our own three-dimensional world by the two-dimensional image would be obvious not only to our conscious minds but a part of our sensorimotor experience.⁹

The development of video installation as an art form and the discovery of its parameters can begin, as in John Hanhardt's work on Wolf Vostell and Nam June Paik, with the use of the television set itself as sculptural object. To become aware of its sculptural aspects, this object had to be freed from its context, as in Paik's displacement of the monitor into clothing for the (female) body (Charlotte Moorman's *TV Bra for Living Sculpture*, 1969) or as in his reorientation of television sets into *TV Clock* (1968-8¹),²⁰ in a literalization of the temporal order of television programming. The displacement of TV sets into a natural setting in *TV Garden* (1974-78), on which *Global Groove* (1973), tape compiled from all over the world was played, demonstrated an image world as natural and international environment. That is, our image-surround no longer represents a world apart; it is our world. The computer processing

of images, in which Paik played a pioneering role, is another indication that images were now themselves our raw material, the natural world upon which we exercise our influence as subjects.

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Rather than pretending to timelessness , these early TV sculptures were subjected to the processes of mortality, in a literal kind of deconstruction, sub

mitting the object to destruction, decay, and disappearance as in the performance of physical burial in Wolf Vostell's TV *Di-collage 0961*). The performance of Ant Farm's *Media Burn (1975)* comes to mind as well. Mary Lucier's closed-circuit installation, *Untitled Display System 0975/87*, displaying on a monitor the "live" image from a camera burned and scarred by light, is an

22

other example of the machine made mortal. The contrary process (to the death drive), of building sets into greater and greater unities, is exemplified in Paik's work, with his robot family, and continuing to such symbolic forms as *Video Flag X (1985)*, in the collection of the Chase Manhattan Bank), *Video Flag Z (1986)*, collection of the Los Angeles County Museum of Art), *Flag Y (1986)*, collection of the Detroit Institute of Art), and *Get-Away Car (1988)*, collection of the American Museum of the Moving Image).

The physical arrangement of television monitors into sculptural objects continues to be significant in installation video, though when an artist wishes to suppress the immediate reference to the primordial American video installation—the home TV set—that TVs and even video monitors inevitably bring to mind, then how to mask or distract the visitor from these connotations becomes a problem. Then, various housings and sculptural enclosures for monitors are part of a strategy for allowing other apparatuses to emerge.

Developing the parameters of video installation beyond the monitor image/object itself, video sculpture can present an act of inverting what is inside to the outside: for example, in Shigeo Kubota's video sculpture *Thre~ Moun*

23

tains (1976-79), it is as if the TV image of mountains were emptied out, its contents taking geometrical shape in the pyramids surrounding the monitors. These pyramids are, then, no longer imitations of mountains, but processed, so to speak, through our image culture and offered to us again as image ghosts and mental apparatuses in three dimensions.

But the act of inversion is not limited to image culture per se: Ken Feingold sees his installations as exteriorizations of his own interior, mental life. Alternatively, as I interpret an installation by Mary Lucier, *Asylum, A Romance (1986)*, the symbolic map of our culture with its dated and inadequate opposi

24

tions and boundaries is made manifest *and* undermined as obsolete.

The interiority of such exteriorized images becomes most obvious, least anchored in materiality in video projections, such as Peter Campus's *Mem*

25

(1975). There is no monitor, only the visitor's body and perceptual system in relation to an image projection system, an interrelationship embodied in ghostly images, nothing but light. In contrast, this projection of interiority can be given massive form, equivalent to the very walls around the visitor in Bill Viola's *Room for St. John of the Cross 0 98 3*.²⁶ The saint's imagination is projected as the visitor's overwhelming subjective view of a risky flight over mountain peaks. (Meanwhile an exterior surface of calm contemplation is pre

162 MARGARET MORSE

mage of a snow-capped

sented within the interior of a hut with a still video i mountain.)

There are also different degrees to which installation work occupies threedimensional space, e.g., the video wall, the kinetic painting, the relief, the sculpture, and the installation. Insofar as spatial positions outside the two-dimensional field are charged with meaning that is an essential aspect of the work, all these levels partake of the poetics of installation. The spectator thus enters a charged space- in-between, taking on an itinerary, a role in a set in which images move through different ontological levels with each shift in dimension, in a kinesthetic art, a body art, an image art that is rather an embodied conceptual art.

Once multiple monitors and multiple channels of video were used, other parameters for comparison and contrast came into play. In Ira Schneider's *Manhattan is an Island (1974)*, for example, an informational topographic map was created from video recordings taken at various height levels (a boat, a helicopter) and locations (downtown, midtown, uptown) of Manhattan. ²⁷ In *Time Zones (A Reality Simulation)*, (ig80), Schneider attempted the same on a world scale, displaying a circle of twenty-four (recorded, but ideally simultaneous satellite) images, one from each zone. These pieces are technologically complex, but conceptually simple elaborations of the notion of place.

In their collaboration on temporality, *Wipe Cycle (1969)* ²⁸ Frank Gillette and Ira Schneider used nine color monitors around which pretaped material, live broadcast television, and live closed-circuit television images from the entrance to the gallery were subjected to time delay and switching. Here the possibility for an image track to migrate from monitor to monitor was exploited, as well as a series of contrasts between three different types of "liveness" and time delay. In his own work, however, the serial contrasts Frank Gillette makes are not restricted to the same conceptual realm. For example,

29

in *Quidditas*, a three-part installation from 1974-75, images and ambient sound were collected in Cape Cod, Vermont, and New Hampshire, in a display that compared three different rates of "nature time." (Here, rather than establish equivalent series, the camera could establish rhythms counter to that of natural process.)

Beryl Korot's *Dachau* (1974) was the first video installation to systematically explore the juxtaposition of the material on monitors, in a process that could be compared to serial music, or, as Korot noted, to weaving.³⁰ The spatial disposition of four monitors recreates a kind of broken proscenium space; it is the play at the temporal level that makes the piece, as intended, "impossible to put on television" (Korot) and that forces a viewer to watch the images differently. The ascetic, black-and-white video images show a rather banal tour of the contemporary concentration camp in Dachau, the Holocaust an absence

like horror left unspoken. The monitors use architectural features in the image to create vertical and horizontal patterns. The images from two channels alternate across the monitors: a/b/a/b. However, the pattern is not true—there is a slight delay that puts every repetition across the visual field a little off. The whole reflects a complex relation to recording and memory, to images and what they do and don't convey.

I have come to think of this possibility for repetition, contrast, and migration of images across a shape as a poetic dimension of video installation; that is, it is a practice that deemphasizes the content of images in favor of such properties as line, color, and vectors of motion, with content of their own to convey. The choreography of these properties is another kinesthetic dimension of transformation."

The transformation from monitor to monitor, from two to three dimensions and back again, is most visible when these ontological levels do not match and the conceptual is transformed in its passage through various material manifestations. Curt Royston's installations (such as *Room with Blinds*, 1987, or *Flat World*, 1987) are like large paintings folded over, creating such mismatches at an optical level: two and three dimensions intersect—but the information one gets by examining the three-dimensional painting/relief/sculptural objects up close contradicts the (false) perspectival image one gets from a distance or by viewing a video monitor. (Note that Royston's video image can potentially include a visitor within the "painting.")

Dieter Froese's installation *Eavesdrop* (1989) is an example of a transformation at the conceptual level, in a piece on the socioeconomic relations of art as an institution from the point of view of artists. One part of the installation makes an idiom, "eavesdropping," literal by dropping a live-video camera from the eaves of the museum where the piece is to be installed. The subjective display of rapidly encroaching ground on a monitor gives the notion a new kinesthetic dimension (of risk, of terror, and, potentially, of failure).

Several of Muntacclas's pieces illustrate another kind of mismatching: that is, the conceptual realm of the installation is not contained within a gallery space, but spills over into public space. *The Board Room* shown, in Barcelona at La Virreina, 1988, is an example. Or, in another piece, *haute CULTURE Part I* (Montpellier, France, 1983) a seesaw with a monitor at each end, tilted one way in a mall and the other way in a museum, makes an implicit comparison between them. In Part II (Santa Monica Mall, 1984) the difference between the two social-institutional spaces is virtually moot—one seesaw with monitors tilts slowly this way and that. These pieces suggest that an installation need not coincide with its container or exist in contiguous space; what unites an installation is the conceptual space that breaks unevenly over a spatial realm charged with social meaning. Another Muntacclas technique, the evacuation of all the image material from the installation *Exposicion* (1985), leaving only the

164 MARGARET MORSE

shell or spatial frame, is yet another exposure of the mismatch of realms ordinarily so liquid in our commercial image culture that the seams are virtually invisible to us. Thus, we learn that ideas and dreams are not utterly interchangeable with images nor are either exchangeable with bodies and objects.

Experience in One or Four Dimensions

If there is transcendence in the presentational arts, it must come not from elsewhere, nor in a controlled regression to a preconscious state via identification with the not-self as self. These arts address the wide-awake consciousness that we call experience. Such a realm is not immune from its own fictions and intensities, nor does it lack spirituality; play, ritual, and revolution are part of this plane of presence. Experience implies that a change has taken place in the visitor, that he or she has learned something. This learning is not a kind of knowing better . . . but, nevertheless . . . , nor is it knowing unleashed from the habitual realm of a body that never learns, but rather endlessly repeats. Rather, it exploits the capacities of the body itself and its senses to grasp the world visually, aurally, and kinesthetically. If the first kind of transcendence in the arts is the kind denigrated in Plato's "Simile of the Cave," the second kind of transcendence, while not a peripatetic philosophy in motion through the groves of academe itself, could be compared with the trajectory of a prisoner in motion from the darkness to light. (If it is possible to do so, I would prefer not to adopt Plato's idealism or his hierarchy of values along with his simile.) An installation without this intertwining of corporeal and conceptual transcendence would be nothing more than an exhibition, a site for learning knowledge always already known, transmitted by the authorities who know it—governments, corporations, schools, and other institutions of all kinds.

To describe the things we can learn from installation art requires each experience itself and its interpretation. These things are left to the detailed treatment they deserve in other venues; but, the range of subjects treated in installation art is easy to summarize as vast—from the spatial and temporal notions of identity, to the exploration of image culture, reaching from the technological sublime to institution of art itself, to mourning the loss of the natural world and the desire for the renewal of a spiritual dimension in material reality.

"You Had to Be There . . .": The Limits of Video Installation

Beyond whatever failures there might be in specific installations that, for whatever reason, might offer visitors an experience of puzzlement or boredom rather than insight, there are limitations intrinsic to the art form. Perhaps the most intransigent problem is the relation of video installation to temporality, a sub

ject left virtually unaddressed until now: As a spatial form, installation art might appear to have escaped the ghetto of time-based arts into the museum proper, leaving single-channel video art to fend for itself. Video installation, however, remains a form that unfolds in time—the time a visitor requires to complete a trajectory inspecting objects and monitors, the time a video track or a poetic juxtaposition of tracks requires to play out, or the time for a track to wander across a field of monitors, and, one might add, the time for reflection in the subject her- or himself, that is, for the experience of a transformation to occur.

Temporal unfolding is commonly organized within video installations in repeating cycles that allow a visitor to enter and leave at any point. (Some installations cycle a kind of narrative instead.) There is a contradiction between cyclic repetition in the art form and the transcendence of repetition through experience that is the desired result—yet at the level of each individual visitor this contradiction may be moot. A more practical problem with temporality has to do with the dominant mode of perceiving in museums and galleries. However long the cycle, at whatever rate the installation unfolds, this unfolding is incompatible with taking in visual objects all at once, in a matter of seconds. If, in response to this dominant mode, one were to reduce temporal unfolding to the barest minimum, what would happen then to the notion of experience or transcendence? This incommensurability of perceptual modes is, of course, related to the difference between the arts of presentation and the arts of representation, and the different planes of language that have come to cohabit in the museum.

In this light, the museurnization" of installation art can be evaluated in two diametrically opposed ways. In one way, installation art could be said to transform the nature of the museum itself, now a place fraught with problems related to the commodification of art and the penetration of corporations with economic agendas of their own into the command of the art world, Installation art in this setting reinvigorates all the spaces- in-between, so that the museum visitor becomes aware of the museum itself as a mega- installation, even to the point of self-critique: an installation full of spatial positions charged with power, full of fetish-objects transposable anywhere, a site that oils the fluid transpositions of concepts and commodity-objects between ontological realms.

On the other hand, installation art begins to partake in a long overdue recognition afforded to arts of presentation. In the process, installation art itself could become more commodifiable, a prestige art, and its practioners a relatively closed elite. I personally see that there are intrinsic limits to the

commodifiability of installation art that brake what some would see as its corruption as well as its acceptance. More problematic is the accessibility of the art form itself to a general public. "You had to be there . . ." to know what an installation is. Even then, until recently a general lack of discourse on

166 *MARGARET MORSE*

the arts of presentation has led to incomprehension or misunderstanding about the premises or goals of this art form as well.

Most recently, particularly in Europe, video installation has achieved a new plateau of display and recognition. There is yet another kind of temporal unfolding involved in this art form; its relative rarity means that its potentialities are discovered at a very slow rate. Thus, much remains to be explored in the art of experience.

167

Reach Out and Touch Someone:

The Romance of Interactivity

ANN-SARGENT WOOSTER

And what is an artifact? Artificial intelligence research suggests ... An artifact can be thought of as a meeting point-an "interface" in today's terms between an "inner" environment and an outer environment, the surrounding in which it operates. If the inner environment is appropriate to the outer environment, or vice versa, the artifact will serve its intended purpose.'

-Pamela McCorduck

The current fascination with interactivity by avant-garde video is a beneficiary Of 150 year old avant-garde ideas about form and content and the relatively recent computer revolution. A little over a hundred years ago artists produced painting and sculpture and the most common form of symbolic interactivity was letter writing. Then, the phrase "reach out and touch someone" with its shrill note of aggressive intimacy would probably have suggested to anyone hearing it that they should go and actually visit someone, perhaps bringing food and good cheer to a shut-in. Today, the phrase is part of the telephone company's advertising campaign and everyone understands that the slogan means you should pick up a telephone and call someone. Increasingly, we live in a world where people are connected by an electronic interface. The current call for interactivity on the part of video artists is part of a larger societal development of machine-augmented simulacra of intimacy. Technology has shortened distances and accelerated communication so that widely separated individuals are no longer isolated and are now united in a global information net. Computer scientists and philosophers once dreamed of a world where people would be able to communicate with each other more effectively through machines than face to face. That dream is now a reality.

Whereas technology has created a new electronic community, it has also been part of the process that has witnessed the destruction of physical, social communities. Cars, airplanes, telephones, television, and computers have facilitated the decentralization of society. One kind of meeting has been substituted for another. In the late nineteenth century almost everyone played a musical instrument or sang, and people entertained themselves by playing music together. The phonograph and the radio brought a wide range of quality music and entertainment to a large audience but, in the process, has made public

music making a rare experience primarily limited to professionals. Instead of the coffee klatch, where neighborhood women would regularly meet around pine or Formica tables in each other's kitchens, women now share their hopes and problems by talking to each other one to one on the telephone. The communality of an outing to a baseball game with its noises and smells and mass joy and sorrow has now been replaced by each person's watching the game alone on television.

The telephone was introduced in 1876 and for the first time allowed people to be two places at once. Until fairly recently long-distance telephone calls were an exotic phenomenon and were only used in extreme circumstances such as a death in the family. I remember a time when it was a daring, almost erotic experience to call a boyfriend long-distance instead of writing a letter simply because the kind of intimacy the telephone makes possible was not yet the everyday experience it has become and long-distance telephone calls were regarded as expensive, extravagant luxuries on a par with a dozen longstemmed roses. Today, we have to use the telephone "to reach out and touch someone" because families are fractured into ever smaller units separated by vast geographical distances. Atlas Van Lines estimates typical corporate managers move fourteen times during their lifetimes. Transience and isolation have become characteristics of suburban family life, and only 5 percent of American children see their grandparents on a regular basis. Physical intimacy is being eclipsed by an ongoing dialogue between computers and humans that has already led to a symbiotic, co-evolution that is central to artists' dreams of interactivity.

Art

A work of art is an externalization of the artist's consciousness; as if we could see his way of seeing and not merely what he saw.

Whatever else art does it has to feed into an ongoing discourse on the nature of art, or we will judge it trivial."

-Arthur C. Dante

Video art is the heir of the new set of assumptions in art, science, psychology, and literature about what constitutes reality that developed in the nineteenth century. This was a time marked by a revolution in consciousness as notions of hierarchical order as expressed in Renaissance perspective and the proscenium stage were replaced by a multiplicity of spatial and temporal points of view. The causal or parallel developments in mathematics

(especially non-Euclidean geometry and the fourth dimension), physics (Einstein's theory of relativity), and philosophy, and the invention of new forms of transportation

and communication altered the previous linear and static perception of time and space to a simultaneous, fragmented, and conditional one. Based on developments in psychology from William James's concept of "stream of consciousness" and Freud's and other psychologists' work on dreams and the unconscious, artists, in their works from the novels of Proust to Juan Downey's *Thinking Eye* series of videotapes and Graham Weinbrun's interactive videodisk project *The Erl King*, have structured their images into chains of interleaved fragments corresponding to these psychological models of reality and their own experience of the world.'

Many artists from Marcel Duchamp, Guillaume Apollinaire, and Jean Arp on wanted to reduce the total arbitrariness of their increasingly subjective visions and to renounce specific goals in favor of a "pervasive openness to new impressions" by giving over control of part of their compositions to "external arbitrary forms" through the use of chance or aleatory composition. Chance allowed them to create open-ended structures that produced "a kind of chaos characteristic of nature." It was also a device for bridging the gap between art and life because many like John Cage believed "art should not be different from life but an act within life. Like all of life, with its accidents and variety and disorder and only momentary beauty."

Recent computer studies have shown that use of chance in art only symbolically reduced the artist's control by substituting one kind of order for another more limited one. McCorduck has noted that by "deliberately using chance, tossing a coin, we derive not uncertainty but a very large measure of certainty that can not be achieved otherwise. Chance produces not only certainty but simplification. Artists' reasons for using chance anticipate the new reality models (the mainstay of postmodern science), which are concerned with such things as "undecidables, the limits of precise control, conflicts characterized by incomplete information, fracta, catastrophes, and pragmatic paradoxes."⁹ While denying us any sense of free will by showing us subject to unseen whirlpools of fate, mathematical theorems and computer modeling have shown that the nonlinear twists and wild disorder of chaos have their own structural logic, albeit one composed of infinitely spiraling subatomic coastlines of fractals.

Artists were prophetic in their understanding and acceptance of new mental and reality models. From cubism, surrealism, and the elaborate four-dimensional web of James Joyce's *Ulysses* to the films of Stan Brakkage, Yvonne Rainer, and Anita Thacher, artists have created artifacts that humanized the new reality postulated by science and technology. Until recently, their work was limited to static and/or linear media such as painting, sculpture, literature, and even film, and they could only create simulations of their vision of a mutable, fragmentary world. It was not until the development of computers' capacity for random access memory and the most complex interactive video

disks that they could fully realize their vision of a complex simultaneous web of images and ideas.

One of the consequences of these intellectual and technological developments was the shift from an external, Euclidean, and generally knowable reality to a more private subjective one. The avant-garde and the bourgeoisie took up opposing positions on consciousness. The creators of such bourgeois art forms as realistic painting and sculpture or Hollywood films asserted that their works represented *imitatio naturae* and were the true mimetic art forms. Building on new notions of science, psychology, literature, and art, the avant-garde argued that their private visions of and manipulations of form, color, and space constituted the true mimesis.

Avant-garde art has had a strange, aloof, and often hostile relationship with its audience. While avant-garde artists have sought to render a more authentic and universal depiction of reality through their use of abstraction and disjunction, their abandonment of a shared visual language based on the illusion of a harmonious reality offered by enclosed forms and logical narrative of Hollywood film, television, and realist painting for a personal vision has isolated them in an ivory-tower solipsism outside the praxis of society. Alienated from common discourse, they are left to communicate with a small group of like-minded people. Not even in the last quarter of the twentieth century when we live in a world of ever greater speed and the pulsating beat of MTV, a world in which people nightly create their own kaleidoscopic collages by flipping channels and playing the channel buttons on their cable boxes like a rocket jockey on a race to the moon, is the artist's subjective mosaic available to a general audience. One hundred years of experimental art has taught us it is one thing to experience the world as parallel and simultaneous fragments and it is another thing to be able to decipher another person's nonlinear, kinetic tapestry. Placed in the position of being accidentally or deliberately an "outsider," artists have sought to break down the separation between art and audience and art and life. They have adopted various strategies to make the audience part of the creative process. This is most striking in artists' theater and performance throughout the twentieth century and the hybridization of art forms that occurred in the 1960s.

At the end of the nineteenth century the illusionistic fourth wall of theater was toppled and works by Alfred Jarry and Guillaume Apollinaire and others eliminated traditional distinctions between stage and audience with new and more environmental theater configurations. By the middle of the twentieth century happenings used all the available three-dimensional space, including that occupied by the spectator. In destroying theatrical conventions

they anticipated the synesthesia of discotheques and the experience of participating in the mass spectacles from peace marches and rallies to rock concerts like Woodstock that characterized the late 1960s and early 1970s.

Marginalized by the hermeticism of their art and exempted from the needs of Hollywood films, Broadway musicals, and broadcast television to please an audience, some avant-garde artists decided that the opposite of pleasure was cruelty and assaulted their audiences. The futurists shouted at their audiences, bombarding them with noise and insults, and their audiences responded by petting them with eggs and tomatoes. Susan Sontag has pointed out that one of the key elements in happenings was their assault on the audience:

Perhaps the most striking feature of happenings is its treatment (this is the only word for it) of the audience. The performers may sprinkle water on the audience, or fling pennies or sneeze-producing detergent powder at it. Someone may be making near-deafening noises on an oil drum, or waving an acetylene torch in the direction of the spectators. . . . There is no attempt to cater to the audience's desire to see everything . . . in fact it is often deliberately frustrated. . . . 1110

Sontag saw the avant-garde's deliberate withholding of information as another form of attack on the audience:

The Happening operates by creating an asymmetrical network of surprises, without climax or consummation; this is the logic of dreams rather than the logic of most art. Dreams have no sense of time. . . . Lacking a plot and continuous rational discourse, they have no past. And this withholding of a sense of structure is, if sublimated, as much an attack on the audience as the physical menace of the lawnmower. "

Nam June Paik's early music performances featured screaming, throwing beans at the audience, smashing glass, and other violent and aggressive acts to disturb the passivity of the audience. During Paik's 1959 *Etude for Pianoforte*, he jumped off the stage and cut off John Cage's tie. Cage said of

Paik's concerts, "You get the feeling anything can happen even dangerous things." 12 Paik, Chris Burden, and other artists incorporated danger into their art to add a "climax" to indeterminate, nonhierarchical work that lacked an internal conclusion by putting both themselves and their audiences at risk.

Audience participation was an integral part of the art/theater/music works of the 1960s. This incorporation of the audience into the work of art and letting them shape it is an important precedent for the role of the viewer/participant in current interactive video disk projects. Cage rejected the notion that music was entertainment that was passively received by the audience. He wanted the audience to be participants (active listeners) who must "realize that they themselves are doing it, and not that something is done to them." Along with other Fluxus composers, La Monte Young was fascinated by the audience as a social situation. Three of his 1960 compositions were ostensibly "audience pieces." In *Composition 1960 No. 3* listeners are told for a specific period of time or other they may do anything they wish. *No. 6* reverses the per

former/audience relationship—performers watch the audience in the same way as the audience usually watches the performers. Nonperformers are given the choice of watching or being the audience. ¹⁴

The centrality of audience participation in Alan Kaprow's happenings and other work was extremely influential on later concepts of interactivity. Michael Kirby has defined three kinds of audience participation in Alan Kaprow's work: "

1. Pseudo participation, in which plants in the audience come on stage and take part in the work.

2. "Token" or "selected involvement," for example in Courtyard the audience is offered brooms and invited to sweep on stage. Only a few members of the audience took advantage of the offer, but the few people who did take part symbolically represented the audience's participation.

3. Pieces in which there were only participants—performers and accidental spectators.

To these three modes of audience participation, which are all found in current video disk projects, I would add a fourth, a variant of there being only participants, artworks in which the spectator is a necessary component of the work and completes it. In Michael Fried's 1967 essay, "Art and Objecthood," he observed that all work that does not have the "presentness and instantaneousness" of modern painting and sculpture tends toward theater, especially works like earthworks, and process art that extend into real time. ¹⁶ With some dismay he noted that instead of withdrawing into an aesthetic space, separate from that of the spectator, these works were clearly dependent on a situation in which the beholder of the works of art was actually their audience.

Many video sculptures and installations grew out of Fried's "theatricality." Paik's early video sculptures such as his 1965 *Magnet TV* and his later *Participation TVs* required audience participation to change them from static forms to dynamic variable ones. Early closed-circuit video installations by Bruce Nauman, Keith Sonnier, Peter Campus, Dan Graham, and others used the instantaneous feedback of these systems to make the viewer an integral part of their work. In the late 1970s Buky Schwartz switched from abstract sculpture to closed-circuit video installations involving disparities between the appearance of three-dimensional objects in a room and how they appeared as twodimensional shapes on the television screen as a way of deepening the viewer's involvement in the work and compressing the distance between the sculpture and the viewer. As Rosalind Krauss pointed out, these projects with

their use of lived time put "pressure on the viewer's notion of *himself* as 'axiomatically coordinated'-as stable and unchanging in and for himself. ¹⁷ In speaking of audience participation it is important to distinguish between film and theater's

collective audience where a group of people have a shared experience in a common public space and the idea of theatricality in sculpture in which the audience at any moment is essentially one person at a time. This sequential audience is identical to time-sharing in computer terms and the one-at-a-time interactivity of computers or video disks.

Video Art

"Interface" originally came from the physical sciences, where it applied to events and properties peculiar to the boundaries between materials. The surface of the ocean, for instance, is an interface between air and water; and reactions occur there that do not occur in kind or quantity anywhere else in the air-water system. An interface is an area where substance or energy is exchanged.

The term was adopted by the computer industry as being excellently descriptive of the juncture at which information is exchanged between two processes. An interface is whatever happens to be the medium of that exchange; a piece of equipment, or a program that transfers information from one process to another."

-Phil Berton

The genesis of video art in the late 1960s was directly attributable to the introduction of low-cost, portable, 1/2-inch consumer-grade video equipment to the United States by Sony in 1968. The early black-and-white portapacks were a far cry from today's home equipment. A portable recorder, black-and-white camera and monitor cost between \$1,500 and \$2,000 dollars, about the same price as the comparable low-end equipment today, but the dollar was worth more then and the tape had to be threaded on an open reel. Also, the unit produced an unstable signal that was adequate in closed-circuit situations but was close to "junk" compared with broadcast television. In spite of these disadvantages, this ugly duckling immediately appealed to several constituencies that were virtually identical at the time: artists interested in new art materials, especially sculpture in an expanded field; technological or kinetic art; conceptual art; avant-garde film; and political activists. These groups eventually separated into several different camps-documentary, video installations, and video art. However, elements of the issues and ideas present at the initial nexus remained.

Video art was born at a time when the monolithic power of broadcast television as a mass communication and entertainment medium was being examined critically. As David Ross pointed out, "Television was no longer viewed as the activity of the culture, it was the culture."⁹ Video artists came

to their new medium with "seven channel childhoods."²⁰ Video art is more closely associated with broadcast television than a house painter is to Rembrandt. Not only do they share common tools and similar imagery and imaging systems, video art constantly compared itself to broadcast television and defined itself as being different from its jumbo elder relative while secretly yearning for a share of its power. Many video pioneers saw independent video as a revolutionary and utopian tool for giving power to the people and changing the world. "Video offered a means to decentralize television so that a Whitmanesque democracy of ideas, opinions and cultural expressions made both by and for the people" could correct the bias of broadcast television and

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enfranchise the disenfranchised .

Almost a decade before Sony successfully introduced Betamax and Matsushita UVC and Panasonic introduced VHS (Video Home System), the videocassettes and recorders that turned television audiences into active participants, artists were farseeing in their immediate understanding of implications of the half-inch revolution. As Erik Barnouw has pointed out, videotape has become "low cost . . . reuseable and could be expended . . . as freely as a novelist uses paper. Suddenly all sorts of people-alone or in schools, churches, groups and businesses-were in video production."²² The compact, paperback-book-sized 1/2-inch cassette offered many new possibilities of distribution. Artists were among the first to realize the liberating aspects of the new format and sense its value as both a political tool and a new art form.

The late 1960s witnessed a massive redefinition of what constituted "art." Many would have agreed with Paik, "There is no difference between ritual, classical, high art and low mass entertainment, and art. I live-whatever I like, I take."²³ Artworks often consisted of activities and situations and incorporated time and space. Drawing on the tenets of conceptual and performance art, which emphasized using the materials of mass communication to disseminate art to a wider audience and the concept of art as information, artists wanted to compete with television on its own turf to challenge and ultimately usurp some of television's ability to directly enter people's lives. Television and radio were perceived as one-way sending mediums that were

passively received by machines in individuals' homes. Using symbolic actions, some video artists wanted to shake up the passivity of television audiences and make them aware of television's limitations and possibilities.

In 1974, Douglas Davis broadcast three works on Austrian television. In all of these he addressed the audience directly saying, for example, "Please come to the set and place your lips against it. Think about our lips meeting now." Davis described his goals at this time:

I don't hold with the performance aesthetic-that the art is only what happens to me. What happens to me is only a means of making contact with the viewer, and with the

world. . . . My first thought about the television set was to activate, as a link in a live sending as well as receiving link. We are almost blind to the two way nature of television. Bertolt Brecht . . . correctly pointed out that the decision to manufacture radio sets as receivers only was a political decision, not an economic one. The same is true of television, it is a conscious (an unconscious) decision that renders it one way. My at

24

tempt was to inject two-way metaphors-via live telecasts-into our thinking process.

Although calling for intimacy and interactivity, Davis's projects underline the isolation and limitation of intimacy the electronic interface imposes.

Video artists were not content with showing their work in lofts, art galleries, and museums. They wanted to be "on the air." The Television Labs at WGBH, WNET, and **KQED** provided early and substantial support both for the production and exhibition of artists' television on their channels. The development of cable and low-power television in the mid sixties seemed to offer a chance for even greater access. In 1968 the Supreme Court gave the FCC the right to regulate the cable industry. In 1972 the FCC's Cable Television Report ordered cable systems to have four different kinds of public access. To give this legislated "access" any real meaning, the cable facilities were required to provide low cost production facilities. This opened the door for artists. Soon video artists were asking, "How soon will artists have their own channels ?," .25 There were many successful projects on cable television. These included the early TVTV (Top Value Television) and also Jaime Davidovich's Cable Soho, which began in New York City in 1976 and the next year became the Artist's Television Network. Another project also starting in 1976 was the Video Art show on Los Angeles, Thet a Cable and Long Beach Cablevision. More recently, Paper Tiger Television in New York City has had a series on public-access cable television in New York City for seven years, examining the communications industry through a critical analysis of print media in a hard-hitting style that resembles aspects of performance art. None of these projects could be called truly interactive. In all of them the artists functioned primarily as senders on the same level of the many kinds of special-interest and personal programming that became a feature of cable television. Artists' programming generally lacks both the genuine interactivity of call-in radio shows and the lesswell-understood interactivity of broadcast television's audience. Broadcast television can be regarded as advertising interrupted by programs, and one way the broadcast audience interacts with television and determines what they watch is by buying or not buying the

products that are advertised on the air. Artists' Television does not rely on the financial support of the audience to stay on the air, so interactivity with the audience is immaterial. The act of simply being on the air is enough to satisfy the concept of increased communication.

Some of the more radical developments in interactivity made possible by cable television were found in social services and grass roots democracy. In

284 **ANN-SARGENT WOOSTER**

1971, the Lister Hill Center for Biomedical Communications, National Library of Medicine under the direction of Dr. Harold Wooster built the New Hampshire-Vermont Interactive Network complete with a television studio at each site to allow doctors in rural Vermont and New Hampshire to participate in medical meetings long distance. The doctors could hear the papers but also participate in the question and answer period as if they were present in the room where the paper was given. Here, the necessity for knowledge causes the development of real interactivity whereas artistic projects, with a few exceptions, merely play lipservice to it. The system is still in use today.

Soon after tri-communications satellites became available for private use, artists began to design projects that employed them. Douglas Davis's 1976 *Seven Thoughts* broadcast from the empty Houston Astrodome "to the global mind" is credited with being "the first attempt by an individual to use the global satellite in a personal way."²⁶ Most satellite projects—such as the ambitious interactive satellite teleconference *The Artist and Television* (1982), which interleaved performances and commentary in New York, Los Angeles, and Iowa City via the communications satellites West Star 3 and 4 and Sat COM3R—have focused on the artist's ability to be in several places at one time, the reconciliation of lost or "ghost" selves, and symbolic expressions of an expanded sense of "community." Only Kit Galloway and Sherrie Rabinowitz's *Hole in Space* (1980) extended their projects to a more liberal form of interactivity. Galloway and Rabinowitz set up a live satellite link between New York City and Los Angeles and, by placing large video screens in the street, provided a free videophone between the two cities. Many ordinary people spontaneously took advantage of the occasion to visit with friends and relatives on

the other side of the continent .

With the exception of Nam June Paik's *Good Morning Mr. Orwell* (1984), artists' satellite projects lack the polish of broadcast television. Their shoestring budgets impart a homemade, hand-touch quality that not only distinguishes art from industry but also reveals the fragile and artificial nature of the electronic mosaic of time and space made possible by the latest technology business. In all particulars they are virtually identical to teleconferencing or TV coverage of a global news event. The significance of the satellite projects lies less in their quality as good "art" and more in the fact artists managed to access commercial technology for the relay of personal and aesthetic information, thereby demystifying the hegemony of corporate technology, saying, If I can do it, you can do it.

A branch of twentieth-century art has always been interested in machines and a machine aesthetic that was an artistic response to new technologies and new ideas of perception. On a practical and theoretical level groups such as the Raindance Foundation and publications such as *Radical Software* and *The Spaghetti City Video Manual* sought to demystify the technology of television so

that it was easily accessible. Many video artists were dedicated to achieving sufficient machine literacy to be able to use their tools effectively and imaginatively. A small group concentrated on video's soul and hardware, inventing new machines that, freed from television's constraint to generate recognizable universal product, produced new and often abstract images. Woody Vasulka has stated, "There is a certain property of the electronic image that is unique. . . . [I]t's liquid, it's shapeable, it's clay, it's an art material, it exists independently,"²⁷ These artists saw video's special properties as the basis for a new art form, the art form of the future. Along with Paik they believed, "As collage technique replaced oil paint, so the cathode ray tube will replace canvas."²⁸ Borrowing the ideas and terminology of computer programming, they began to think of these manifestations as a kind of language, and their work with video hardware as, in Vasulka's words, "a dialogue with the tool and the image, so we would not perceive an image separately. . . . We would rather make a tool and dialogue with it."³⁰ This led to the development of new machines such as colorizers and synthesizers, which, in turn, affected the development of special effects generators used today in the television industry.

Video art's ongoing acceptance of the latest technologies has left it committed to exploring the cutting edge of an almost science-fiction vision of art. Because they are unfettered by the necessities of the marketplace, video artists are often the first to see an artistic application for technologies developed for information processing, storage and retrieval (computers), or communications, advertising, and entertainment (television). Since the first years of the twentieth century, artists have produced visual expressions (artifacts) of how they felt about the way new technologies have changed time and space. In addition to producing artifacts, video artists frequently follow a model of production and creativity that more closely resembles that of science, especially the think tanks of computer science where research consists of "having ideas" and new projects are invented by imagining what might be possible from each new technological advance.³¹ Video artists' ongoing involvement in exploring what machines can produce has led to the recent fascination with high-end technologies such as computer graphics, special effects and editing, and current experiments with interactive video disks. Video art is well on its way to losing its earlier democratic promise because high-end technologies are more expensive to produce than low-end ones. Only a few artists will receive the funding to complete interactive video disk projects from state and local arts agencies, limiting the possibility of artistic success to an elite few. The rarity and high cost of viewing mechanisms further limit the accessibility of interactive video disk projects because only a few places will be able to afford the elaborate, high-end playback mechanisms and only a small number of people will be able to have a firsthand, hands-on experience of this new art form. Video art's current tango with interactive video disks puts the field in danger of falling into modern

medicine's Catch 22, where limited resources are squandered on expensive, state-of-the-art equipment at the expense of more basic and needed health care because high-end equipment is more glamorous than spending money on nurse's salaries or bed-pans.

Computers and Artificial Intelligence

Collections of facts, memories, perceptions, images, associations and predictions are the ingredients in our mental models, and in that sense, mental models are as individual as the people who formulate them. The essential privacy and variability of the models we construct in our heads create the need to make external versions that can be perceived and agreed upon by others.³¹
-Howard Rheingold

The advent of each new technology potentially increases our ability to reach out and access an ever-widening world. Technology alters our picture of the world and fundamentally transforms us as well. Widespread literacy and the advent of printed books changed us from intuitive to analytical thinkers and expanded our ability to generalize and reason about cause and effect." The development of computers in the post-World War II era has brought profound and far-reaching changes in our social interactions and our concept of the universe. Although it is possible to trace current involvement in interactive video disks as a new art form primarily to the history of avant-garde art and its aesthetics, many of the issues in contemporary art and life can be traced more directly to the evolution of computers and the structures and terminology necessary to facilitate relationships between people and machines.

In the late 1940s and early 1950s the air was buzzing with "new scientific ideas having to do with what had not yet been called information theory." In a 1948 publication, "A Mathematical Model of Information," Claude Shannon showed through a series of theorems that "any message can be transmitted with as high a reliability as one wishes, by devising the right code. The limit imposed by nature is concerned only with the limit of the communications channel."³⁴ Howard Rheingold pointed out, "The key to life itself proved to be information theory . . . information- and communication-based models have proved enormously useful to the sciences because so many important phenomena can be seen in terms of messages. Human bodies can best be understood as complex communications networks than as clock-like machines."³⁵ Norbert Wiener coined the term *cybernetic*,

based on the Greek word for "steersman," to describe the new field, and cybernetics were "the science or mechanism of maintaining order in a disorderly world." -16

It was less than thirty years ago when the term *interactive* was first used in reference to computers, and it was used to describe the then breathtaking but now humble function of being able to interrupt a computer run. Computers were primarily thought of as number crunchers; in the 1950s, and programming consisted of converting information into boxes of cardboard cards punched with holes (IBM cards). These cards were "batch processed" by a computer the size of a room and you received a printout of the information several hours later. In the late 1950s, Dr. J.C.R. Licklider discovered while working on a mathematical or electronic model of the brain to simplify the task of understanding the complexities of the brain that he spent more time gathering information than using it. He began to imagine a sort of electronic servant who could take over these tasks and not only calculate but formulate models for him. In 1960 Licklider got to try out his ideas for the first time on the Digital Equipment Company's new PDP-i, a minicomputer (a fast, compact computer the size of a refrigerator). Instead of "programming via boxes of punch cards over days," the data could be feed into the machine by high-speed tape and it was possible to change the tape while the machine was running, "allowing the operator to interact with the machine for the first time." ³⁷From this small beginning Licklider and others focused on interactivity as the way to achieve a partnership between people and computers that will produce computers capable of learning and, in Doug Engelbart's words, "augmenting man's intellect." ³¹¹

It is not well known that the United States government has been in the information business since the late eighteenth century when the first patent act established a governmental committee to review and grant patents in 1790, ³⁹ and the Library of Congress was established in 1800. In the 1950s the government was concerned with how the huge quantities of new technical information being generated could be quickly and easily available to increase our scientific and military capabilities. The Soviet Union's launch of Sputnik in 1957 made the government realize the inadequacies of the current system of information storage and retrieval. The Soviet Union's scientific prowess was attributed to the superiority of their educational system (Why Ivan can read and Johnny can't) and their All-Union Scientific Technical Information Apparatus, VINITI. The first reason spawned the 1958 Defense Education Act, which authorized a Science Information Service and Council in the the National Science Foundation NSF. The same year the National Aeronautics and Space Agency was established and NSF established the Office of Science Information Service, OSIS. Beginning with the Baker Panel's 1958 report to President Eisenhower's Science Advisory Committee, which urged that a large research and development program in information sciences and technology be mounted by the federal government, some thirty-five studies, reports, and congressional hearings have attempted "to create VINITI-on-the-Potomac." The Department of De

fense began to extensively fund both applied and basic work in the computer field. The development of greater interactivity was given priority because the ability to have a dialogue between user and computer increased the user's productivity and facilitated the development of ever more sophisticated machines and software.

In the days before personal computers, a significant obstacle to developing a fruitful human/computer symbiosis was the lack of easy and flexible access to computers. A key element of the development of interactive computing was the concept of time-sharing, computer systems capable of interacting with many programmers at the same time. Time-sharing gives each Of 20, 30, or 1,000 people the illusion that he or she has the computer's exclusive attention, while the computer is actually switching from one user's task to another in tiny fractions of seconds. Programmers were able to submit their programs a piece at a time and receive their responses in the same way. By eliminating the wait and see" aspect of batch processing, time-sharing made it possible for programmers to treat their craft as a performing art. ⁴⁰ The first time-sharing computers were primitive, but soon individual keyboards and simple forms of graphic display made interacting with computers more comfortable, or *user friendly*, a term coined in the 1980s.

In the late 1960s and the early 1970s the way individuals shared information in time-sharing communities (a group of people using the same central computer) was seen as a model for a global network of computers connected by common carriers (telephones) interacting freely with each other, united by a commonality of interest even before they existed.

These new computer systems we are describing differ from other computer systems advertised with the same label: interactive, time sharing, multi-access. They differ by having a great deal of open-endedness, by rendering more services, and above all by providing facilities that foster a working sense of community among their users. ⁴¹

it was believed that the dialogue caused by the free exchange of information would lead to the rapid development of new ideas because as Licklider and Taylor have pointed out, "When minds interact, new ideas emerge. ⁴² A few people realized that instead of being more democratic, computers might simply substitute one kind of power for another and create a new subclass of people made up of those who did not have access to information.

For the society, the impact will be good or bad depending mainly on the question: Will "to be on line" be a privilege or a right? If only a favored section of the population gets a chance to enjoy the advantage of "intelligence amplification," the network may exaggerate the discontinuity in the spectrum of intellectual opportunity. ⁴³

The utopian dream of a world united in an equalitarian web of free-flowing information has not materialized. The computer networks have become a reality,

but the passage of the Mansfield Amendment in 1970, which stated the government could only spend money on research that had a direct military application, ended the days of free-form experimentation. As the government withdrew from the business of information and reduced or abolished the dissemination mechanisms and increased the cost for the information it continued to supply, the information business was taken over by the private sector. Unlike the public library system, which is equally accessible to rich and poor alike, there is always a user fee for computer information, and that information became a commodity that was bought and sold like any other.⁴⁴ Even in 1988, media philosophers like Gene Youngblood continued to imagine a world where global communications networks made possible by computers would allow people to communicate with each other freely. The reality is different. In our society power lies in the hands of those who control information, and since the government went out of the information business information is an expensive controlled substance. Aspects of computer networks have become an integral part of society from electronic mail to the folk culture that has sprung up around computer bulletin board systems and electronic magazines.⁴⁵ Even when the networks are used primarily for business, as they almost exclusively are, they also become vehicles of interpersonal exchange. As the moviejumping *Jack Flash* clearly illustrated, it seems that whenever people are offered an opportunity to talk to each other, they take advantage of it to exchange ideas, sell a car, find a date, or just chat.

Fundamental to the evolution of the computer from a number-crunching tool to a dynamic medium for creative thought was the ability to talk to the computer in a version of human language rather than the programmers' mathematical hieroglyphics. If you can type a command in simple English and receive a reply from the machine or it prompts you with a question, you feel as if you are dealing with a person and not a thing and this in turn fosters greater involvement with the computer. One of the first steps toward creating "a genuine language understanding program" was the program Joseph Weizenbaum created for ELIZA at MIT in 1964. This program and a later variant called DOCTOR mimicked human interaction and created the illusion of being "a wise, all knowing computerized psychiatrist." The program encouraged people to talk to the machine by playing the users' thoughts back to them. Weizenbaum was surprised that even sophisticated people "were drawn into conversations with the machine about their lives."⁴⁶ The users' belief that they are dealing with a responsive entity that they can communicate with in their own language has facilitated the widespread use of computers and the development of more complex forms of interactivity. Computers have gone from the most basic form of interactivity, INTERRUPTION TO SELECTION, where the user can choose to do something; to the highest current form of interactivity, RESPONSIVENESS, where there is an exchange between users and computer (I do

something, you do something).⁴⁷ Today, high-end, "expert systems" tailor information to the user's specific needs based on a conversation between the computer and its user.

Human beings are highly visual, and it was not until the first crude graphic display screens were introduced in the late 1960s that computers began to change our relationship to information and forge a new kind of space. Computers are largely based on the structure of the way the human brain processes information. It is one thing to understand that human memory is organized in lists and lists of lists cross-referenced by associations between them, and it is another thing to see that system on a screen "modeled not on pencils and printing presses but on how a human mind processes information."⁴⁸ The computer's new "informationscape" presented a world atomized into relatively equal permutations and choices. Within this world, which is both real and not real, the user can freely rearrange that information and impose new structures on it or make it vanish. Seeing ideas as visual objects changes your view of the world because "when everything is visible: the display becomes the reality."⁴⁹ Partially because of the way children were observed learning programming with the graphic displays of the LOGO system a greater emphasis was placed on developing interactive graphic displays. Scientists observed that the visual display of information psychologically created a better human machine interface, which in turn improved the quality of thinking and made the users more productive. With the advent of user-friendly personal computers, bank machines, computerized offices and schools, and electronic cottages in the 1980s, the experience of the world seen through the window of a computer is a commonplace one.

For most people the computer remained a tool for processing information until the video game fad of the 1970s demonstrated the computer's ability to create external symbols and artifacts and actively engage people in their manipulation. While most of these new forms were primarily toys or games, many of the advances in artificial intelligence have occurred by watching how children learn by playing games. Games such as interactive fiction, which lie between play and literature, suggest the possibilities and drawbacks of aesthetic uses for computers' responsive, branching structures. Interactive fiction promotes itself as "a whole new dimension in storytelling. Think of your favorite story. Now think of the main character in the story. And imagine YOU have become the character. . . . The decisions are yours and so are the consequences. . . . The plot unfolds as you decide what to do next, drawing you into a world so involving that it taps your adrenaline as much as your intellect."⁵⁰ Interactive fiction does not live up to its promises. The stories are presented

in a series of short blocks of text that appear on the screen. At frequent intervals the story is interrupted by a problem, danger, or puzzle for the viewer to solve. The player has to then step out of their identification with the characters and the story

and type instructions on the screen in short phrases made up of the computer's 700-word vocabulary like, "PICK UP THE STONE" or "KISS GEORGE," to which the computer may reply, "George takes you in his arms and kisses you. You soon discover he is as masterful at kissing as he is a swordsman . . ." or "I don't know the word kiss." Depending on the viewer's response to that dilemma, the story continues to the next problem or the player may be killed. The narrative stops if you cannot decide on an appropriate course of action. Interactive fiction offers neither the pleasure of being swept away given by watching a film or reading a book nor the joy of creating something new. But by breaking the story into paragraphs that must be interpreted by the viewer, interactive fiction presents a relationship to narrative different from that presented by conventional media (books and films), one that is more like critical exegesis than a video game like *Space Invaders* or *Pac-Man*. Although viewers are ultimately trying to solve a puzzle by figuring out the game designer's mind, in the process they experience a world that is fragmented, conditional, and subject to their control, if only by their ability to turn the story off and on.

Novelist Thomas Disch has written an interactive novel, *Amnesia*, and his experience offers insights into the dynamics of interactivity as an art form and the resemblances and differences between designing a story to be experienced interactively and other forms of writing. He said that the processes of writing a novel and a work of interactive fiction were highly dissimilar. Interactive fiction is filled with stops and starts for both the writer and the reader. Unlike the streak of good writing that is the author's closest approximation of the entrancement the reader feels reading a book, the process of writing interactive fiction is extremely calculated, "like a tennis game in which the whole game has to be figured out in advance. -12 The narrative has to be written in small units of high-impact, vivid prose that is always "going toward overstatement." Every few screens the story has to be interrupted with "significant interactivity and then the story branches and then goes off in a wholly irrelevant direction."

Disch observed that the writer's relationship to the reader in interactive fiction is similar to that of a writer of a whodunit. In both genres the author is playing a game with the reader, and they both focus on manipulating the reader by trying to figure out what a clever person's response to a particular situation might be and stepping a little sideways and pulling the rug out from under their feet. Readers, he noticed, become involved in interactive stories in ways different from reading. They are often driven with a compulsion to finish the story and fill up the imaginary space the author has created by searching for the key to it, which the author has hidden like a grown-up's teasing a child by hiding candy in their closed fists. As long as readers cannot add new words to the story and change it, Disch has felt that the creativity of interact

ive fiction lies solely with the author. While acknowledging that interactive fiction in its present form is extremely limited, Disch imagined a future where puzzles and stories will be geared to your own psychology and then he said, "The possibilities for vicarious involvement are total."

A drawback to seeing interactive fiction and other video games as a model for a possible future is their current sexual exclusivity. The vast majority of computer games are geared toward men, and interactive fiction is no exception. Most stories feature a male hero engaged in typical male genres of science fiction and action adventure stories. So far only Amy Briggs has written an interactive fiction that deals with a woman's genre, a romance and has a heroine as the main character. Except for these novelties, *Plundered Hearts* is identical in structure to other kinds of "interactive fiction." Yet, these changes in gender and genre did make some difference. I found myself instantly at home in the plot and liking the characters and becoming involved with them for the first time. Games from *Wizardry* to *The Leather Goddesses of Phobos* require the ability to create elaborate maps of the characters' journey. These maps involve an analytical relationship to an imaginary space that is more masculine than feminine in our culture. Perhaps this will change when learning how to use computers becomes as central a childhood experience as learning how to read, and the structures and imaginary space computers create will be available to everyone. Kristina Hooper of Apple Computers observed that when there was a computer available for every student, boys and girls were equally involved with them, but when there were not enough computers to go around, more boys than the girls used the computers. She also noted because of the different socialization of boys and girls, boys were more likely to be allowed to become obsessed with computers, whereas girls were given less latitude for self-absorption and were expected to interact with people more and help around the house." This means that boys tend to develop advanced computer skills by being allowed to play with them freely, whereas girls have less access to computers because of socialization and gender typing (girls aren't good at mathematics and machines) causing their computer literacy to lag behind.

From the time of Marcel Proust's *A la recherche A temps perdu* artists have created works of art expressing the mind's ability to wander and think of many things at the same time. Only recently has technology caught up. Recent developments in computer software such as Dynabooks, expert systems, and Hypercard have made it possible to duplicate the mind's "jumps and lands and flights of consciousness" and "completely randomize your access to a

body of data." Computer theoreticians such as Brenda Laurel, formerly of Atari, have been working on programs that would let you experience *Hamlet* from six different points of view by being able to see the world through each of the characters' eyes. They see a world where the viewer can become an active partici

pant in the story by being able to intervene in it and make decisions that affect the course of the story. The viewer would then become a creator who would be able to remake an imaginary world to satisfy his or her own needs and desires. As yet, that is not possible because it requires a marriage of three cultures: cinema, storytelling or narrative, and computers. Although not able yet to achieve this level of interactivity, video artists have begun to dream about it and make work based on its promise with the tools at hand.

Interactive Videodisks

Interactive processing "Conversational" style real-time processing, wherein a user issues instructions and queries and the computer responds in a timely way, in many cases prompting or setting up further user queries or instructions.⁵⁶

RAM (Random Access Memory-- A memory unit wherein one given location is as accessible as any other (unlike a serial access medium, a tape for example, where you must proceed through or past a series of elements to get to the elements of interest)."

-Phil Bertoni

Currently, video art is under the glamorous spell of interactive videodisks. In many ways interactivity is a chimera. Not only is it expensive to produce, but there are virtually no playback mechanisms available so that the few projects that have been completed are virtually impossible to see. The current romance of interactivity promises such things as being a better or more democratic art form and/or the art form of the future. Many of these siren songs are based on a false understanding of the term *interactivity*. The word *interactive* sounds like it will alleviate the alienation of modern life by generating a dynamic alliance between artists and their audiences, joining them together in a splendid waltz that lets viewers become equal partners with artists in creating art. Yet interactive videodisks do not empower the viewer to create a wholly new work with the materials they are given, and they only appear to eliminate the alienation of artist and viewer present in most avant-garde art. Finally, interactivity is primarily a computer term and has historically had specific and limited meanings based on the degrees of interface" between computers and people made possible by developments of computer hardware and software over the last thirty years.

At the same time Japanese engineers were developing "first one inch and half inch helical scan recorders, then three quarter and half inch cassette recorders,"⁹ American and European engineers were concentrated on videodisk

technology in which visual information was stored on a disk like a phonograph record. When videodisk players were introduced in the 1970s, they were heralded as a revolutionary new advance in technology. Low-end players such as the pressure-transduction system jointly developed and marketed by Germany's Telefunken Company and Britain's Decca Company featured a limited, physical playing mechanism that employed a stylus like a phonograph needle. Each 8-inch diameter disk only had ten minutes of material and a symphony or a movie required multiple disks. The high end, reflective disk systems jointly developed by MCA, which owns Universal Studios, and Phillips, the Dutch electronics firm, were another story. A reflective disk the size of an LP could hold a feature length movie or 100,000 or more separate frames in a nonperishable format. Visual information was laid down in concentric circles on the disk, and "the computerized, laser read videodisc player could" either read the information linearly from the disk spinning at 1,800 RPM or if the arm was stopped over a single circular groove (equal to the two interlaced fields of one video frame) it could produce perfect freeze frames in an instant. When I first heard about videodisks in the late 1970s, I was fascinated by the idea that all of the slides I would need for a year of teaching art history could be available on a videodisk and instead of pulling slides from the drawers of the slide library and arranging them in carousels I could look at the disk's index and type in the numbers of the slides I wanted for each class. Although Jerry Whiteley has recently finished a videodisk of the National Gallery of Art's collection for Pioneer Video Disc and is currently working on a similar project for the Metropolitan Museum's collection, both disks and players have so far remained too expensive to revolutionize college teaching.

Contrary to expectations videodisk players did not become the next must-have electronic appliance when they were introduced in the 1970s. They failed in their initial foray into the consumer market for various reasons: both disks and players were expensive, and although widely discussed in the trade press, not many of them were actually available; they offered only a playback function, and they were able to do something (play movies) that people did not yet know they wanted to be able to do. Videodisk manufacturers took a conservative wait-and-see attitude, while Betamax and VHS cassettes and recorders were introduced in 1975 and 1976 and aggressively marketed for their ability to give the viewer greater control/freedom by allowing viewers to record television programs off the air and time-shift them to a more convenient viewing time. After some initial consumer confusion over formats, with

VHS becoming the popular favorite because it offered two hours of recording time versus Beta's thirty minutes, 100,000 Beta and VHS recorders were sold in the first

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year and three years later over a million had been sold . Videotape and the

home VCR came to occupy the place manufacturers of videodisks had hoped

their product would occupy because videotape is more flexible and democratic than videodisks are and because, by allowing viewers to assemble their own programming, videotape turned the television audience into active participants. Simultaneously, with the widespread acceptance of VCRs, the rental videotape market grew out of almost thin air to mammoth proportions by providing a new way for viewers to control and domesticate entertainment by renting almost brand-new movies and seeing them at home.

The recent proliferation of compact disks and compact disk players may create a new climate of acceptance for videodisk players. Although the majority of videodisk players permit only playback, a new format called W.O.R.M., "write on once and record and play many times" permits limited recording. In recent months several computer companies have introduced magneto-optical disk drives as a rival for hard disk drives in computers. These computers use a laser-read and written "optical storage system," which allows the user to place information on a removable, erasable magneto-optical disk. Just as compact disks store more information with a higher fidelity in a smaller space, magneto-optical discs make it possible to store a whole library of information on a single disk. It is possible to imagine a future in which videodisk players, CD players, and computers will all use the same format and be able to work in tandem, making subtle, interactive videodisk projects accessible to a wide audience.

It is important to understand that most of the interactivity of current videodisk players has been present in other electronic forms of entertainment. Retrospectively, we can see the degree of interactivity that already exists in the world. Traditionally, handling video artists' equipment has been taboo for the audience. One significant difference between current interactive videodisk projects and older video art is that interactive projects relinquish some of the artist's control and the audience is now permitted to touch the machines, something that may be an everyday experience at home, but up to now has been one of the distinguishing differences between public and private entertainment. These projects also offer the novelty of open-ended structures and multiple endings that are partially determined by the viewer.

An understanding of current videodisk system architecture reveals what is actually possible in an artistic use of this medium. Currently there are three levels of videodisk players and two different videodisk formats. Videodisks come in two different formats: Constant Linear Velocity (CLV) and Constant Angular Velocity (CAL) and each offers different advantages.

CLV disks are able to hold a large quantity of real-time information because the disks do not have to be uniformly formatted. Information is placed on the disk in concentric circles, rather than the graduated spiral of a phonograph record, and the whole surface is available to hold information. Each side holds approximately one hour of linear material, and a movie usually fits on

two sides of the disk. Because of its high visual fidelity, many video artworks will be placed on these videodisks in the future, especially work that requires repeated play such as installations. CAL disks hold less information, but that information can be accessed in a more complex way. The disks have to be uniformly formatted so that the random access memory (RAM) of the videodisk player can locate each frame address. Uniform formatting can be visualized as fitting a square grid inside the circle of the disk and some of the space on the disk is lost this way. Other space is taken up by the extra information placed on the disk so the videodisk player can access the frames. Level 11 (level-two) and above videodisk players use the CAL format.

A level I (level-one) videodisk player is primarily a R.O.M. (read only memory) playback unit with the same level of interactivity possible with a home VCR. Interactivity at this level is a form of viewer-initiated interruption. Viewers can stop, start, and pause the tape/disk at their own volition. Games such as Penn and Teller's *Dirty Tricks for Dearest Friends* have been designed for videotapes with this degree of interactivity.

A level 11 (level-two) video player has an internal computer (CPU), which is operated by an external key pad. To access a frame or chapter, users press a search button on the key pad and enter the number or chapter they wish to see. Level-two videodisks use the CAL format, and still images can be combined with brief real-time sequences such as documentaries or interviews. When the section is finished, it returns you to an on-screen menu. This level has been very successful in presenting art and training people to use forklift trucks or M-16 rifles.

In 1984, Lynn Hershman used a level 11 system in *Lorna*, generally credited as being the first artistic use of interactive videodisks. *Lorna* is a branching narrative about a 41-year-old woman with agoraphobia. At key plot points the viewer is allowed to choose the direction of the narrative from a series of options including three different endings for the story. Although all of the branching structures that interlock the various versions of the story

together are predetermined, Hershman gives viewers the feeling that they are collaborating with the author in making decisions that affect the outcome of the story. Hershman feels handing the controls of the story to the viewer provides "a new area of individual freedom and empowerment. .63 Because of the clarity of the narrative and the transparency of its structure, Hershman's work speaks more to the potential of interactivity as a new, populist art form than do most other artists working in this medium.

A level III system multiplies the quantity and complexity of information that is available because it is controlled by an external computer (CPU) with a larger memory. Based on software and a wide range of possible input devices including touch screens, a mouse, or even sensors in your shoes, the computer translates the information (the signal) it receives from input devices to instruc

tions (frame addresses) to one or more videodisk players. One way to understand the different levels of interactivity possible between level I and level III videodisk players is to compare how the National Gallery of Art videodisk functions differently in each kind of player. When the disk is used in a level I player viewers are offered an on-screen video catalog produced by Anne Marie Garty that allows them to choose which artist or work of art in the collection they want to see from Chapters 1-16, and frames 1-3,353. Using an external key pad you type in the number of the painting you want to see and the painting then appears on the screen. It may be accompanied by a brief, realtime documentary on the artist. Played in a level III system, you could do what has just been described, and in addition, you could select a painting, deliberately or at random. When the painting appeared on the screen, you would be asked to give it a name such as "lovers " or "figure in a field." Based on the painting and the name or category you supplied, the computer then offers you a group of similar works of art from the museum's collection for your pe

64

rusal .

Using a level III system combining a Macintosh and a videodisk player, Jerry Whiteley and Andrew Phelan have produced an electronic version of Joseph Albers's book, *The Interaction of Color* for Pratt Institute. Albers often stated COLOR IS THE MOST RELATIVE MEDIUM IN ART, and in his courses he assigned problems such as, "Make three colors look like four" or "Make warm colors look cool." The interactive program graphically demonstrates these concepts and others. Whiteley and Phelan say the system is capable of producing 16 million variations of true color. While it is impossible for the human eye to distinguish all those colors, the project does offer a more dynamic experience than listening to a teacher or reading Albers's book. The computer-generated colors are also richer and more complex than the clay-coated papers normally used by students to execute color theory assignments based on Albers's

65

teaching .

In a world where the sum total of human knowledge has doubled in the last five years, the most common usage of interactive videodisks is informative and/or instructional. Ordinarily, videodisks are used to customize information on a one-on-one basis. The viewer is given a menu or decision screen listing options, and manually or verbally the viewer selects the information they want to know. In subsequent screens they are led from general to specific, detailed information by their choices. At any point they can choose to go ahead or return to the beginning. Ideally, the goal of the interactive videodisk designer is to make the structure underlying the progression of choices transparent to the viewer. Leo Steinberg has pointed out that unlike the clear, direct message of a street sign, one of the qualities of great art is its ambiguity. When artists use interactive videodisks as an art form, they bring a different system of goals

298 **ANN-SARGENT WOOSTER**

and values to its use. A technology that has up to now been primarily used for the semicustomized transfer of information visually in a clear, easily understood manner has become subjective and opaque in the hands of artists.

While offering brave new worlds, the new technology is a different and often more demanding mistress than either single-channel tapes or video installations. There is a big difference between offering the viewer an opportunity to experience the the artist's personal vision of the world as a variable mosaic and the backstage work necessary to create. Instead of just creating images and editing them into linear sequences that are permanently fixed, the artist must now either alone or working with a computer programmer design complex branching structures that up to now have been the province of computer scientists to interlink multiple stories into a mutable electronic web that is open to change by the viewer.

Artists like Juan Downey are drawn to interactive videodisks because they allow them to express a fragmented, disjunctive vision of reality that they previously had to approximate in linear forms such as the single-channel videotapes of Downey's *Thinking Eye* series. For Downey, interactivity opens up the

Reach Out and Touch Someone 299

potential of storytelling. Unlike a single-channel videotape, which is physically linear, he no longer has to compose an artificial spine for interactive videodisks and make either/or editing decisions about the placement of material. The RAM memory of videodisks allows him to have both/and in a kind of narrative structure he first experienced in the layered and open-ended narratives of Latin American authors such as Borges, and *Hopscotch*, an interactive novel by Julio Cortazar that was the basis for Antonioni's movie *Blow-Up*. Most computer programmers describe the design of an interactive videodisk as being like a branching tree. Downey has visualized his narratives as rhizomic structures resembling the way potatoes and strawberries grow. "Every unit or module of the story is the whole story and if you have more than one you have a network. ,67

Downey looks forward to a time when he can do a melodrama based on six characters' variable, interlocking triangular relationships on videodisk in which the viewer or chance determines who kills whom, but *J.S. Bach (1978)*, his first videodisk project, has limited level 11 interactivity. Side one of the disk is his single-channel biography of J.S.Bach. It's divided into chapters that could be watched in any order the viewer chooses, but there is no reason to restructure Downey's already idiosyncratic, fractured biography. Downey explored several ways to use interactivity on the second side of the disc. He found himself repeatedly drawn to the fugue, a musical form featuring short subjects or themes that are varied and played against each other. The second side of the disk offers "fourteen versions or possible ways of interpreting Bach's Fugue #24 for three voices and harpsichord. These choices include hearing Elaine Comparonb, the harpsichord player, playing it through alone or each of the voices alone or in combination with other voices as well as upside down and backwards. -68 An on-screen menu lets viewers choose which one they want to hear. Downey has acknowledged that interactivity does not democratize media and that the viewer/player only has the illusion of choice. In *J.S. Bach*, the extended artistic control interactivity offers gave him an opportunity to share his personal enjoyment of listening to counterpoint and allows the viewer to briefly experience the world through his eyes and ears.

Grahame Weinbrun and Roberta Friedman's *The Erl King* is the only level III project to be completed to date. Weinbrun has seen *The Erl King* as being about "a relationship with a machine. The machine imposes certain forms. It tells you what it wants in a way that conventional media doesn't."69 His goal was to find "images that are conglomerates of not necessarily consistent themes and then letting the apparatus make the viewer aware of the interlocking elements. "70 Using the structure of dreams and "the way the mind can coalesce different lines of thought, images, beliefs, desires and memories into a single image," Weinbrun and Friedman have combined an updated version of Schubert's lied *Erlkoenig*, a fairy tale about a father who would not listen to his

son's fear of the evil king, and about his three daughters, and "The Burning Child" from Freud's *The Interpretation of Dreams*, another story of a father's failure to pay attention to his son's premonition of danger. Using three videodisk players controlled by a microcomputer and software designed by the team, the viewer can touch the screen at any moment and the story will branch to a relevant tangent, allegory, metaphor, or commentary. Shot in 16mm film, the *mise-en-scènes* have a rich sumptuous surface like a tapestry that constantly shifts from figure to ground—a living person becomes a bust on a shelf, a myth becomes real.

Weinbrun and Friedman's project is both the most complex to date and the most opaque. The viewer has to explore *The Erl King's* structure or lack of it by exploring what they are given, a journey made more difficult by the lack of any of the conventional hooks to guarantee viewer involvement such as wanting to know how the story comes out or solving a puzzle or beating a machine playing a game. Since there are no right or wrong decisions, no past or present and Weinbrun and Friedman have supplied all the elements and have created the pathways linking them, ultimately *The Erl King* is about the experience of the world as a series of permutations. Although very beautiful, this kind of abstract, open-ended video project will only appeal to a very small group of people.

From using bank machines to being able to participate in choosing the name of the new baby on the nighttime soap opera *Santa Barbara*, or deciding whether Robin lives or dies in the first interactive comic books, a certain level of interactivity has become normal in our society. Is it logical to predict a future in which entertainment and art are primarily participatory and interactive based on the evidence of expanded interactivity in our society? I wonder. The single greatest change in American life, especially family life, over the last forty years, I might argue, has not been computers but the increased number of women earning money. Where once it took one salary to achieve our parents' standard of living, it now takes two salaries, not to surpass them but merely to remain at the same level. In 1950 only 12 percent of married women with preschoolers worked. Between 1960 and 1972 "the number of mothers of children five and under who worked outside the home tripled," and today, nearly half of all children under the age of six have a mother in the

work force . In a world where simultaneously you may be getting ready to go to work; the baby-sitter is late; the phone rings; the dog grabs your sandwich from the counter; the baby cries; a siren is heard outside; you are worrying about whether you can make your mortgage payment this month and whether your mother will survive her operation scheduled for tomorrow, there is such a thing as too much excitement and activity. I question whether people, especially women, will have the time or inclination to enjoy the luxury of creating their own stories. Soap operas and regular series such as *Star Trek* or *Family*

Ties are popular because they allow you to get to know the characters in time just as we get to know real people, but without all the hassles. The characters' ups and downs become part of your life, especially when seen on a daily basis, but unlike your family's or friends' problems, they do not directly affect you. Watching the ongoing stories of soap operas and regular series unfold at a certain time every day or week supplies a sense of constancy and order in otherwise chaotic times.

I can imagine a world like the one described in Ray Bradbury's 1953 science-fiction classic *Fahrenheit 451* where the electronic "parlor walls" showing an ongoing soap opera surround the viewer and parts are written into the show for the viewer at home who interacts with the characters by filling in the missing bits of dialogue.

*"This is a Play fthad comes on the wall-to-wall circuit in ten minutes. They mailed me my part this morning. I sent in some hoxtops. They write the play with one part missing. . . . The homemaker, that's me, is the missing part. When it comes time for the missing lines, they all look at me out of the three walls. . . . Here, for instance, the man says, 'What do you think of this whole idea, Helen?'"*⁷¹

You might also be able to rent the interactive equivalent of a photonovella which would allow you to alter the relationships between the characters and choose your own endings and make Rhett Butler give a damn. Yet, I doubt if, in the near future, people will be able to spend the concentrated, self-absorbed time necessary to fully engage in this kind of work.

What might really happen now that we are no longer tourists in McLuhan's global village and Orwell's 1984 has come and gone? In the near future computers will definitely be able to learn the way you think and act and intuit what we need based on that information, somewhat like the perfect nineteenth-century servant. As a friend pointed out, "anything that intuit down to this level of interactivity is potentially addictive and dangerous and whether that is good or horrible depends on who controls it."⁷³ Similar technologies could be used for a fantasy amplifier that creates customized stories based on what it has learned about you. "Every spectator would be in conversation with the spectacle, -74 and you would participate in a story that changed according to your actions. What is the artists' role in this? Although many video artists are committed to incorporating the principle of interactivity and viewer involvement in their work, most artists' video continues to be a personal vision that is not readily accessible to a general audience because of the opacity of its structures. Most uses of interactivity will probably be confined to mass-market populist entertainment like soap operas, and rigidly controlled by media merchants because the cost of producing them will be very high, and only "stories " that appeal to a wide audience will be profitable. The artist's role will re

302 **ANN-SARGENT WOOSTER**

main what it has always been, going boldly where no one has been before, being the first to see the artistic potential of new technologies and, as Nam June Paik said in 1969, "The real issue is not to make another scientific toy, but how to humanize the technology and the electronic medium . . . and also, stimulate viewers' fantasy to look for the new, imaginative and humanist ways of using technology."⁷⁵

Reach Out and Touch Someone 303