New Media Fellowships 2005 Project Cover Form

Jim Campbell

Title Data Fictions

Genre Electronic Art

Applicant's Role in

Production

Artist / Designer

Production Format Installation / Screen Saver

Brief Project Description (do not exceed space given below)

Two projects are proposed that look at computer data as a malleable construct and suggest possible directions for what a fictional data type might be in the context of artistic based representations. The first work Walking is a dynamic light based installation that involves the representation of a series of 1 dimensional computer data streams as a series of 1 dimensional representations over time as rhythms of light and uses physical objects to bring meaning to the computer rendering of this handmade fictional data. The second work Weather Projection is a web based work that internally starts with the data of a few descriptive words that define live circumstances in a distant location and magnifies and exaggerates these words to the extreme point of creating a personal narrative movie (with the help of the viewer). These two works are at opposite ends of a spectrum that is defined by the complexity of the transformation used to represent a piece of data.

New	Media	Fello	wships
2005	Sampl	e Wo	k Form

Check O	ne: X	Sample
		Supplemental

JIM CAMPBELL

If you are sending more than one sample, please copy this page. Sample(s) must be cued: indicate how long each sample should be viewed for a COMBINED viewing time of no more than 15 minutes. If slides are included in this application, please list the title and year of the work on this form.

Title 10 wo-	try	
Title $10 \omega \sigma^2$ Year $1996 - 3$	2003	
Technical Information	· · · · · · · · · · · · · · · · · · ·	
Original Format Software Web Installation Other	Format Submitted for Viewing Software Web VHS Other O V	Prefered OS Windows Mac Unix Other
URL Browser requirement(s)	only if sample work is in Web format) (if more that	
This sample requires bro	padband connection (fast Internet connection)	
A local copy of the samp	le work has been included with the application	1
Special Information F	or Viewing:	
Description of Work	(use an additional sheet if necessary)

Documentation of 10 Works:

Church on 5th Avenue 2001 consists of a matrix of 32 x 24 (768) pixels made out of red LED's displaying a pedestrian and auto traffic scene in NY from an off street perspective. There is a sheet of diffusing plexiglass angled in front of the grid. As the pedestrians move from left to right the figures gradually go from a discrete representation to a continuous one (or metaphorically from a digital representation to an analog one).

Motion and Rest #5 and #2 2002 are from a recent series of works in which each work displays the abstracted walking movement of a disabled person. Using techniques of very low resolution, the gait of each person is distilled from other personal traits. (One starting point for these works was Muybridge, but unlike Muybridge, the clothes and hairstyles and gender etc. of these figures are gone. Only the gait remains.)

Library 2003 consists of a high resolution photogravure print of the New York Public Library with a low resolution LED panel behind it. The still architectural photograph contains no people in the image, but superimposed through the photograph from behind are the moving figures. The work combines high resolution static with low resolution movement.

Self Portrait of Paul DeMarinis 2003 is an installation in 2 parts; a transmitter and a receiver. The transmit side consists of a low resolution image stored in computer memory feeding an audio speaker. The image is encoded into a sequence of voice tones. A low pitched note represents a black pixel and a high pitched note represents a white pixel with tones between representing gray levels between black and white. As these tones (or pixels) are emitted from the speaker they are picked up by the microphone (or receiver) and decoded into a gray level and displayed as the next pixel on the screen. This transmit/receive process is based on sound and thus noise in the room can cause distortion in the image. It takes about 90 seconds for the complete image to be transmitted and displayed and then the cycle starts over again. Both the image and the voice are of Paul DeMarinis.

Last Day in the Beginning of March 2003 is a room sized installation which meshes electronic memory, representation and light. The work consists of 25 light bulbs suspended from the ceiling shining onto the floor below. Each light bulb is connected to an electronic circuit which contains an electronic memory of a specific event. The brightness of each light is modulated to the rhythm of that specific digital memory, and all of the lights together define the non linear narrative structure of the overall work. A poem chronicling the last day of my brother's life.

Description of the Memory Works 1994-1998:

These 2 works are from a series 0f 12 works, in which each work is based upon a digitally recorded memory of an event. Some of these electronic records represent a personal memory and others represent a collective memory. These electronic memories are manipulated and then used to transform an associated object mounted on the wall. Avoiding the usual notions of what a memory is, none of the original memories is an image or a sound. These works explore the characteristic of hiddenness common to both human and computer memory. Memories are hidden and have to be transformed to be represented.

Photo of my Mother 1996

A photograph of my mother slowly transforms from foggy to clear at the rate of *My Breath* as digitally recorded for one hour, as though I am breathing on the glass in front of the photograph.

Portrait of my Father 1994-95

A photograph of my father is visible for an instant and then disappears. This process happens over and over again at the rate of *My Heartbeat* which was recorded over an 8 hour period one night while sleeping.

Experiments in Touching Color 1999 consists of a small black pedestal in a small dark room. The pedestal has a glass screen in the top surface and is hollow with a video projector inside. An image is projected onto the glass rear screen from below. When the viewers first walk into the room they see an image on top of the pedestal in a silent room. When a viewer puts their hand on the glass screen two things happen at the same time. A sound from the image fades up in the space and the image dissolves to a single color. As long as the hand stays on the glass screen the sound remains and the image stays a single but changing color. As the hand moves around the image, the color field emanating from the pedestal goes through a sequence of colors. This color is based upon where specifically the viewer is touching. For example, if the image is of a talking head, as the viewer moves his fingers from the lips up to the eyebrow the emanating color from the screen changes from pale pink to varying flesh tones to dark brown. The color seen at any one time is based upon the color of the pixel that the viewer's middle fingertip is touching in the now unseen image that was there.

Involuntary Time 2003 is a variation of a work that I did in 1999 called "untitled (for the sun)". This work displays time as a percentage of the day gone. A wire from an electronic circuit winds its way to the top of the building to a light sensor, which measures the light of the day from sunrise to sunset. The results are passed to an electronic chip where the day-night pattern is detected and causes the work to phase itself to the rhythm of the sun. A video image is projected onto a wall painted black. A woman moves imperceptibly from sitting down in a chair to getting up to answering the phone. This process takes exactly the length of a day. At sunrise she is in the chair and at sunset she is answering the phone. Chalk mark outlines are physically drawn on the black wall to define the endpoints of the movement (sunrise and sunset). Three things about this work make it similar to a biological clock. First it is a "clock" that never needs to be set. Secondly it has jet lag, meaning that it takes a few days to phase itself to the sun in a new location and thirdly because time is measured by the length of daylight, the woman (or "time") moves faster in the daytime in the winter then in the summer. As it turns out this concept of time is more like the original pre-middle ages unequal hours notion of time where there were 12 hours between sunrise and sunset regardless of the "real" length of time between those two moments. The original work "untitled (for the sun)" displayed "sun time" as an LED number percentage.

Weather Projection 2005 is documentation of a prototype for a screen saver that combines interpretive images of the live weather in a distant location with personal photographs. See main proposal for more details.

Early Interactive Works 1988-1996 is a short quick sequence of interactive works from a while ago.

Artist's Statement Jim Campbell

Coming from an artistic background in filmmaking and a technological one in electronic engineering design, I began to create interactive video installations in 1988 that involved the viewer's own image and response to that image. As I continued to use computers and video in live interactive installations, I began to understand that computer systems could provide unique metaphors and analogies that could be used in pursuing psychological issues relating to perception, memory and cognition. The viewer's perception of memory and time in relation to the computer's handling of memory and time continues to be important in my work.

Making a distinction between interactive works that are responsive from works that are controllable, I have tried to create works that are less about a viewer dominating a work and more about viewers participating in the developing personality of a work. I always attempt to go beyond the pre-scripted, control metaphor borrowed from game technology that so permeates the medium of interactive art work. I am continuously searching for more intuitive and meaningful methods of interaction. An important aspect of my working process is to explore the tools of this medium and to create new ones in the course of making a new work. I have always designed and created my own custom electronic hardware and written the software for my art work, allowing me to go beyond the limitation of using existing off the shelf technology (The proposed Weather Projection work will be the first work in which I will get help from an expert programmer as hardware not software is my real field of expertise). Because I am a technologist (I currently hold more then a dozen patents in the field of image processing) as well as an artist, my inspiration for a work can come from either side. Sometimes I have a concept for a new work and the challenge is in creating a new technology to accomplish it. Other times I have an idea for a new technology and live with it until an idea comes to me that fits conceptually with the technology. A rule of thumb for me is to throw away the first 10 ideas that are inspired by a new technology.

Nine years ago I was only doing work that was "video" and "interactive". I began to realize that the interesting interactivity in this kind of work was not between the viewers and the work but was between the viewers and themselves and that this characteristic of interactive work was useful for instigating certain types of experiences, but in some ways was very limiting. Today, some of my work is interactive and some is not. If film added the element of "time" to previous mediums, then interactive computer work adds the concept of "the present" and it is creating systems that respond to "the present" in the present that I am still fascinated with. Yet I also

believe that computer interactive based work is not yet to the point of transcending the technology. Certainly some of the ways that filmic experiences transcend the process are in an experience of the "willing suspension of disbelief" or in an experience of reverie. I have not yet had analogous experiences with computer based work, though I certainly believe that it's possible to create computer based works that are compelling enough to transcend the technology. Though not all of my current work is interactive, it is all inspired by the interactive work that I have done over the past 16 years. I still work with sensors and measurements as ways of capturing time processes, but I am equally interested in what can not be captured.

Currently I am working on a series of works utilizing my own designed LED display devices and electronics. In these works I am exploring the relationship between low information content and perceived meaning, particularly in the context of very low rates of visual information. The images in these works have been reduced informationally (datawise) to be right at the threshold of comprehensibility. The relationship between information, in the mathematical sense, and meaning, in the ambiguous or poetic sense, is changing in our computer mediated culture. From image compression techniques to content addressable databases, distinctions between information and meaning are being erased. These works explore the notion that information can be quantized, and meaning cannot. In heading on this path of less information does not have to imply less meaning my recent work "Last Day in the Beginning of March" and the proposed work "Walking" are as informationally minimal as can be done in representing a time based event. At these liminal levels of representation the visceral response and the kinesthetic response become more important than image recognition. The success of these works (or lack thereof) lie in their success of being more akin to music than to visual art.

Computers which have been called a meta-medium, are an open system and allow for an artistic concept to be over layed upon them, like no other medium of the past. One of the exciting things about using this technology is that new technology allows for new types of experiences. My passion has always been to create new experiences that reflect upon human relationships and self understanding in the context of our technologically mediated culture. Having always been fascinated with the philosophical analogies of certain scientific disciplines, my work has been very influenced by science, in particular some of the ideas relating to chaos, quantum mechanics and information theory. Using technological tools and scientific models as metaphors for memory and cognition, my work seeks to interpret, represent and mirror psychological states and processes, as well as their breakdown.

Data Fictions (2 works)

Recently I have become very interested in notions of fiction in the realm of computer data. Over the last few years I have looked at how real world information is brought into the computer using various types of information digitizers. I have explored what kinds of things are lost and filtered out in this reductive process of going from the infinite world to the extremely 1 dimensional digital representation that a computer needs. Very recently, I have been looking at the other end of the computer, that is, data leaving the computer in some sort of representational form. I have been fascinated examining the assumptions of facticity we associate with computer data, and how the facts we infer from such data are steered by its type of representation. I am proposing two works which look at representing computer data as fiction at extreme ends of a spectrum. The first work Walking represents 1 dimensional computer data as a 1 dimensional representation and uses physical objects to bring meaning to the computer rendering of handmade data. The second work Weather Projection internally starts with the data of a few descriptive words and magnifies and exaggerates these words to the extreme point of creating a personal narrative movie.

Walking

This installation consists of 9 pairs of life size canes and crutches made out of cast and sculpted glass. These objects are mounted onto a slightly elevated floor that is 16' wide x 16' long by 3" high. The crutches are mounted such that their position will be as though someone were currently walking with them. i.e. The 2 crutches within each pair are mounted onto the pedestal approx 24" apart from each other and not straight up, but each at a different angle meeting where 2 underarms would be if a person were there. The glass material is treated with acid so as to reflect light and each crutch will have a focused and masked light pointed at it from above so that the spillage onto the elevated black floor will be minimal making each crutch feel as though it were a light source. Each pair of lights above are connected to an electronic light controller which in turn is connected to an electronic memory which has stored in it the rhythm of the walk of a disabled person. The lights shining on each pair of crutches will be modulated in intensity based upon the rhythm of a person walking with that particular type of crutch. Different types of crutches in conjunction with different types of disabilities create very different forms of rhythmic gaits. The dynamically changing lights gradually change in intensity to represent the continuous types of movements that occur with a human body in motion. The challenge for this work is how to represent the essence of a gait with the smallest amount of information possible(a 1 dimensional stream of data). Having recently worked extensively with representing 1 dimensional data (see "Last Day in the Beginning of March" on the DVD) I have come to the conclusion that the best way to evoke the feel of a complex multidimensional rhythm is not to measure it but to create it... a fiction, based on measuring, looking and listening. Consider a person walking. There is the audible rhythm of the sound of their footsteps. There is the visual rhythm of the

movement of their legs lifting up and moving forward. There is the bobbing of the upper body moving up and down. There is the draft that you feel as the person walks by you. Cameras and microphones, other sensors and computers can be used to gather "accurate data" of this process / event but this data is far from a complete description. How can a minimal essence of a particular "walk" be evoked? This work confronts this question by creating time-sequences, not directly from measuring, but by drawing the rhythms as a graphs over time (and then using these graphs to control the lighting on the crutches). One thing that came up over and over again during "Last Day in the Beginning of March" were people's assumptions that the events displayed were actual recorded sensory data (half of them were and half were not) and questions of the truth of the data came often. One of the points of that work and this work is that the question of truth or not has no meaning in an analogous way that the question of truth has no meaning when talking about a poem. This is simply data (the atomic structure of the computer) instead of words (the atomic structure of language) used in an expressionistic and fictional way. Having already done multiple works looking at the physicality of disabilities this work continues that exploration, not for political, but for personal reasons in that both of my parents were disabled.

This work brings together elements from two previous works: "Motion and Rest" Series and "Last Day in the Beginning of March". "Motion and Rest" was a series of flat works created in 2001 and 2002 which used very low resolution imagery to look at and isolate the gaits of six disabled people. Using my own custom built display devices, these works displayed images in which all the characteristics of the moving figures were abstracted beyond recognition, except for their walk or gait. The viewer cannot tell the gender or age or types of clothes or hairstyle etc. of the figures. This abstracting process was not exaggerated or contrived, but is an inherent aspect of these "Very Low Resolution Images" that I developed where movement becomes the most recognizable characteristic of an image. "Last Day in the Beginning of March" was a room sized installation / poem created in 2003 based on the last day of my brother's life. The work incorporates 25 focused lights on the ceiling each creating a 3 foot soft circular pool of light on the floor. Each pool of light changes in intensity based upon an event or process from that last day. Together the 25 rhythmically changing bulbs create a symphony in light. One objective/challenge for this work was to represent all of these 25 events in the most minimal form possible, simply a changing intensity of light combined with a very short text description. Some examples of the processes represented from that day and described with text were "Self Winding Watch", "Rain", "Back and Forth (Walking)" and "Anxiety"".

Weather Projection

"Weather Projection" is a web / screen-saver based work that plays off of that common psychological projection process that we all experience upon hearing about a major weather condition in a distant place where a close friend or relative lives. That powerful form of imaginative projection where

somehow, you put yourself into someone else's weather with that person in that place. The weather is the "live" conduit for this imaginative projection simply because it's happening in the present. This process of imagination, in my experience, even extends beyond death where hearing a weather condition in a distant place, where someone lived, can trigger memory associations to that person in that place. After interviewing many people about this psychological process it is of interest to note that memories of architectural sites (the facade of a building) and objects (a park bench) can also be evoked from hearing of the weather in a distant place.

"Weather Projection" is quite simple. It's a screen saver in which, during installation onto your computer, you put into it a few digital pictures of people or sites or objects that you know in distant locations, along with their respective zip codes or cities and countries. When the screen saver appears, the images come up with an effective piece of glass between you and the still image and a "live" representation of the weather in that far away location is seen on the glass. For example, if it is raining in this distant location, then it is as though you are looking through a pane of glass at a photograph and there is rain hitting the glass and dripping down it. Or if it's freezing cold there then a pattern of frost would grow on the glass making it hard to see the image on the other side and the photo itself would be desaturated in the fleshtone color (made pale as though cold). The screen saver also displays a representation of day / night (and sunrise and sunset) in the distant location.

The language or "look" of the screen will be taken from film, rather than from computer games. For example, from day to night (in the distant location) regardless of the coloring of the original photograph, it would gradually turn towards orange at sunset (unless it was cloudy during the day there) and go towards blue at night. No silly effects will be used as in video games etc. i.e. the picture will not twirl around when there is a tornado etc. All of the weather effects will be subtle and as filmic as possible.

The goal of this project is not to bring a "live" representation of someone distant to your desktop, nor is it about inducing nostalgic or sentimental feelings of a far away place. It is an aid to an already existing imaginative process that involves memory over a distance of space by merging the past-local with the present-distant.

One last part of the program is that when one moves the mouse or hits a key to stop the screen saver, the weather/image process freezes in time and becomes the desktop, creating sort of a snapshot of that last moment of the present. The work will function on any computer with an internet connection. The program looks at the weather on-line at a number of weather sites (in case some of them go off-line) and triggers off of key words describing the present weather to create the current effect on the screen. When the weather changes the visual changes on the screen will be gradual (dissolves not cuts).

To test the feel of the work I worked with programmer Jonathan Cohen to create the single weather effect of rain superimposed on an image(not yet tied to the internet).

Budget for both proposed works:

Whether Projection:

Software Design (working with software programmer Jonathan Cohen):

Weather effects that still need to be created : 6,000.00

sunny ,cloudy, partly cloudy, various levels of showers, rain, thunderstorms, snowing, freezing rain, frost, fog, degrees of wind, degrees of humidity, degrees of heat, degrees of cold, time based events: day / night sunset sunrise, possibly moon cycles.

Subtotal:	10,000,00
Ported to the Mac operating system	2,500.00
Tying the screen saver to the web and interpreting the weather data:	1,500.00

Walking:

Subtotal:	16,100.00
Custom Controlling electronics will be reused from previous projects	0
18 projection lights	3,600.00
Video production for the motion studies of 9 people walking	2,500.00
Moldmaking and glass casting of 18 unique canes / crutches (partial)	10,000.00

Both Works:

Subtotal:	8,900.00
Misc	1,900.00
Artist Fees	7,000.00

Total Budget:	35,000.00
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JIM CAMPBELL

Born in Chicago in 1956. Live and work in San Francisco.

Massachusetts Institute of Technology Education:

B.S. Electrical Engineering, 1978 B.S. Mathematics, 1978

Solo Exhibitions:

2005 Quantizing Effects, Site Sante Fe, New Mexico (catalogue and traveling) Museum of Fine Arts, Montreal, Quebec Museum of Glass, Tacoma, Washington Jim Campbell, Palo Alto Art Center, Palo Alto, CA (catalogue) 2004 Untitled, Maryland Institute of Contemporary Art untitled, American Museum of the Moving Image, Astoria, NY 2003 Memory Array, Berkeley Art Museum, CA Jim Campbell, USF Contemporary art Museum, Tampa, FL Seeing, Exploratorium, San Francisco, CA 2002 Data and Time, Nagoya City Art Museum, Japan Motion and Rest, Arizona State University Tempe, AZ untitled, Hosfelt Gallery, SF, CA untitled, Gallery 2211, Los Angeles, CA Time and Data, Wood Street Gallery, Pittsburgh, PA (catalogue) 2001 Contemporary Configurations, Santa Cruz, CA Time, Memory and Meditation, Anderson Gallery, VCU, Richmond, VA 2000 untitled, Hosfelt Gallery, SF, CA untitled, Yerba Buena Center for the Arts, SF, CA untitled, Cohen Berkowitz Gallery, Kansas City, MO 1999 Transforming Time, Nelson Art Museum, ASU, Tempe, AZ (catalogue) 1998 Reactive Works, San Jose Museum of Art San Jose, CA 1997 Digital Watch, Kemper Museum, Kansas City, MO Reactive Works, Art Center College of Design, Pasadena, CA 1996 Electronic Art, Cohen Berkowitz Gallery, Kansas City, MO 1995 Dialogue, Rena Bransten Gallery, San Francisco, CA

Selected Group Exhibitions:

1994

1992

1991

2002

2004 Algorithmic Revolution, ZKM, Karlsruhe, Germany

Einstein, Skirball Cultural Center, LA, CA Memory, Salina Art Center, Salina, KS Image and Idea, GalleryC, LA, CA

Lineaments of Gratified Desire, Catherine ClarkGallery, San Francisco

Hallucination, Southeastern Center for Contemporary Art, Salem, NC

Electronic Art, Rena Bransten Gallery, San Francisco, CA

Hallucination, Fresno Art Museum, Fresno, CA

The Passage of Mirage, Chelsea Art Museum, NY, NY

Microwave03 Festival, Kowloon, Hong Kong 2003

> Art Apparatus, Bryce Wolkowitz Gallery, New York, NY Surface Tension, The Fabric Museum, Philadelphia, PA

After Image, Wood Street Gallery, Pittsburgh, PA

House of the Tomorrow, Experimenta, Melbourne, Australia (traveling)

ID/ENTITY: Portraiture in the 21st Century, Camerawork, San Francisco, CA

The Disembodied Spirit, Bowdoin College Museum of Art, Brunswick, ME; travels to The Kemper Museum of Contemporary Art, Kansas City, MO. Bytes and Pieces, ICA, San Jose, CA

Future Cinema, ZKM, Karlsruhe, Germany

travels to the Kiasma Museum, Helsinki and the ICC, Tokyo

Taipei Biennial, Taipei Fine Arts, Museum, Taiwan

Busan Biennial, Busan Metropolitan Art Museum, South Korea

Whitney Biennial, Whitney Museum of American Art NY, NY (Catalogue)

Artficial Emotion, Sao Paolo, Brazil

Walkways, (ICI traveling to 4 venues) 1st is Portland Inst of Cont Art Media Art, Daejeon Municipal Museum of Art, South Korea (catalogue)

Situated Realities, Maryland Institute College of Art (traveling) High Tech / Low Tech Hybrids, Bedford Gallery, Walnut Creek, CA

	oup Exhibitions (cont.):
2001	Interaction 01, Gifu, Japan (Catalogue)
	<u>Untitled, Gallery 2211, LA, CA</u> <u>Bitstreams</u> , Whitney Museum of American Art
	Conceptual Colors in Albers' After Image, San FranciscoState Univ, CA
	Figuration, Hosfelt Gallery, SF, CA
	Highlights Festival, Montreal, Quebec, Canada
	Eureka Fellowship Show, San Diego Museum of Contemporary Art, CA
2000	Ars Electronica, Linz, Austria
	Vision Ruhr, Dortmund, Germany
	Eureka Fellowship Show, San Jose Museum of Art SJ, CA
	Scanners, Califorina College of Arts and Crafts Oakland, CA Direct Current, Byron Cohen Gallery, Kansas City, MO
	Plugged In, Todd Madigan Gallery, Cal State Univ. Bakersfield, CA
	Illuminations, Ackland Art Museum, Chapel Hill, NC
	Timekeepers, SF Camerawork, San Francisco, CA
1999	New Voices New Visions, Univ. Art Gallery UCSD San Diego
	<u>Digital Hybrids</u> , McDonough Museum, Youngstown, OH
1999	The Photographic Image, National Museum, Kwachon, Korea
	Facing Fear, San Francisco Arts Commission Gallery
	The Body, Salina Art Center, Salina, Kansas
1998	Electronic Art, Weston Art Gallery Cincinnati, OH Body Mecanique, Wexner Art Center, Columbus, OH (Catalogue)
1330	Digital Poetics, Sherry Frumkin Gallery Los Angeles, CA
	Bay Area Technology Art, Haines Gallery, San Francisco
	Art & Technology, Duke University Museum, Durham, NC (Catalogue)
1997	Bienalle, ICC Center, Tokyo (Catalogue)
	Serious Games, Barbican Gallery, London England (Catalogue)
	Interaction 97, Gifu, Japan (Catalogue)
	Meditations in Time San Francisco Museum of Modern Art
	Digital Decisions, Art Acadamy of Cincinnati, Ohio
1996	451 Degrees, San Francisco Arts Commission Gallery Creative TimeArt in the Anchorage, Brooklyn, NY
1330	Seca Awards Show, San Francisco Museum of Modern Art
	<u>Transformers</u> , Auckland City Art Gallery, New Zealand (Catalogue)
	Interactivity, Salina Art Center, Salina, Kansas
	Techne, San Francisco Arts Commission Gallery
	Mortal Coil, Sesnon Art Gallery UC Santa Cruz, CA
1995	New York Digital Salon, N.Y., N.Y.
	Art as Signal, Krannert Art Museum, U of I Champaign, IL
	Hotel Interactional, Gallery Otso, Helsinki, Finland
	ISEA 95, Montreal, Quebec Canada Collaboration with Eliott Anderson,
	Digital Mediations, Art Center College of Design, Pasadena, CA
	Interaction 95, Gifu, Japan (Catalogue)
	Unpredictable Memories, Capp Street Project, San Francisco
	Collaboration with Marie Navarre,
	Press/Enter, Power Plant, Toronto, ON (Catalogue)
	Techne, Los Angeles Center for Photographic Studies, LA, CA
4004	Biblio Vertigo, Northern Illinois University, DeKalb, Illinois (Catalogue)
1994	ThreeVisions, Carpenter Center, Harvard University Cambridge, MA
	<u>Color in the Shadows</u> , California College of Arts & Crafts Oakland, CA <u>InterActive</u> , Works Gallery, San Jose, CA
1993	Iterations, International Center of Photography, NY, NY (Catalogue)
1333	Montage- International Festival of the Image, Rochester, NY
	A New Sensation, Seybold Conference, San Francisco, CA
1992	Facing the Finish, San Francisco Museum of Modern Art (Catalogue)
1991	<u>Le Printemps de PRIM</u> , PRIM
	(Productions Realisations Independantes de Montreal), Montreal
1990	Bay Area Media, San Francisco Museum of Modern Art, CA
	Fifteenth Anniversary Show, New Langton Arts, San Francisco
	Inner Tensions, Pro Arts Open Studio, Emeryville, CA

Public	Commissions and Temporary Public Art Projects :
2004	untitled, (work in progress) Byron Rogers Federal Courthouse, Denver, CO
2004	untitled, (work in progress) Art Work, Univs. of South Florida, Tampa
2002	Primal Graphics, Creative Time, Battery Park Site, NY, NY
2001	168 Light Bulbs, Two year Public Art Project, Wood St Gallery, Pitts. PA
	Video Set Design for ODC Dance Troupe, SF, CA
	Building Memory, Westside Center, Tempe, AZ
2001	Tempe Arts Commission 1% for Arts Program
	White Circle, Highlights Festival, Montreal, Quebec
1998	Untitled, (with Eliott Anderson) San Francisco State Muni Station
	San Francisco Arts Commission 1% for Art Program
1995	LAC Project, Montreaux, Switzerland, Collaboration with Su-Chen Hung
1992	Ruins of Light, America West Sports Arena, Phoenix, AZ
	Phoenix Arts Commission 1% for Art Program

Selected Public Collections:

Metropolitan Museum of Art, NY, NY Whitney Museum of American Art, NY, NY San Francisco Museum of Modern Art, CA Austin Museum of Art, TX Museum of Contemporary Art, San Diego, CA Cincinnati Art Museum, OH San Jose Museum of Art, CA University Art Museum, Berkeley, CA

Selected Film/Video Screenings:

Selected	i iiii/ video ocieeiiiigs.
1990	San Francisco Cinematheque, San Francisco
1988	Grey Art Gallery and Study Center, NYU, NY
1986	Athens Film Festival, Athens, OH
	Red Victorian Theater, San Francisco
1985	American Independent Feature Film Market, New York
1984	International Festival of New Cinema, Montreal
	Coastal Extremes, San Francisco and Boston
1983	International Avant-Garde Festival, Paris
	Big Video Show, DeCordova Museum, Lincoln, MA
1981	International Electronic Music Festival, Brussels
	Big Video Show, DeCordova Museum, Lincoln, MA
1980	San Francisco International Video Festival, San Francisco, CA

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	Related Professional Activities & Awards (Selected):		
2003-2004	Guggenheim Fellowship Award		
2002-2003	Langlois Foundation Grant, Montreal, Quebec		
2000	NEA Selection Panelist for Museum Grants		
2000	Langlois Foundation Grant, Montreal, Quebec		
2000	Ars Electronica, Linz, Austria Honorable Mention: Interactive Art		
1999-2000	Rockefeller Foundation Fellowship Award in Multimedia		
1999-2001	Eureka Fellowship Award, Fleishhaker Foundation		
1998	Ars Electronica, Linz, Austria Honorable Mention: Interactive Art		
1996	Lecture Museum of Modern Art N.Y.		
	SECA Award, San Francisco		
1993-1997	Artists Advisory Panel		
	Yerba Buena Center for the Arts, San Francisco		
1994	Phoenix Arts Commision Selection Jurist for the new		
	Arizona Science Center Public Art Project		
	"Artists in Color in the Shadows Show" panel member at		
	California College of Arts & Crafts.		

"Artists Using Multimedia" panel member. Cosponsored by Bay Area Video Coalition, SF Cinematheque and Film Arts 1993

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