STEPHEN WILSON

Title: Guests, Parasites and Symbionts¿a Bio-Organism Based Art Installation

Genre **Interactive Installation (Art and Biology, Computer Mediated)**

Applicant's Role in Production **Creator, Producer, etc**

Production Format: Macintosh Computer, Macromedia Director, Digtal Microscope Feed, Video Motion Tracking

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Brief Project Description (do not exceed space given below)

Guests, Parasites and Symbionts, is an interactive art and biology installation in which visitors will engage with live organisms derived from their own bodies and from those of other participants. Using the techniques of biology and medicine, the installation proposes to make visible these organisms and to create an engaging and provocative media environment for the interaction. It is based on what I already did in *Protozoa Games*. In this new version visitors will make physical contact with some device that will acquire their organisms. It then will provide for immersive sound, video, and animation events in which the flow of events are controlled by the interactions of the visitor's movements and gestures in the space (read by motion tracking technology) and the movements of the single cell organisms that are part of their body as made visible by a digital microscope. A projection screen will project their microorganisms situated as part of interactive digital animations and video created in Director. Another version of the installation will allow multiple visitors to engage with each other and each other's organisms and another version will let web visitors engage the protozoa.

The installation will investigate a variety of themes: Human relationships with animals and other species, the implications of easy access to microcosms, the ethics of animal and human experimentation, implications of medical interventions, the nature of intelligence and consciousness, and reflections on the essence of life. Interactions with highly evolved single-celled animals allow a unique perspective on these issues.

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Title *CrimeZland*

Year *1998*

Technical Information

Original Format		**Format Submitted for Viewing**		**Preferred OS**	
_____	Software	__X___	Software (cd-rom)	_____	Windows
_____	Web	_____	Web	__x___	Mac
__X__	Installation	_____	VHS	_____	Unix
	Other		Other		Other

Web Information (answer only if sample work is in Web format)

URL _____(if more than one please list them
_____ below)
__x___ Browser requirement(s) _____ ~~navigator or~~ explorer _____
__x___ Plug-in requirement(s) _____quicktime_____
_____ This sample requires broadband connection (fast Internet connection)
__x___ A local copy of the sample work has been included with the application

Special Information for Screening: All the work samples are on the same cd-rom   There is an index called aaastarthere.html. You can use a browser to open it. It has links to play the quicktime movies documenting each of my work sample installations. If there is any problem, Quicktime Player will also be able to play the movies. CrimeZland approximate viewing time = 7 minutes.   ✖ Note : For best viewing, copy files to hard disk

Description of Work   (use an additional sheet if necessary)

CrimeZland was a robotic public art installation that explored issues in media representations of crime, information visualization, and public access to complex databases. It won the competition to be placed in San Francisco Art Commission's Exploration: City Site outdoor public art space across from San Francisco's City Hall. CrimeZland offered visitors a large outdoor map (12x 40 meters) of the city of San Francisco in which the 10 highest crime locations were indicated by tall poles. Kinetic clowns and toy police car sirens and lights would activate 24 hours a day at those precise times that the statistical database indicated a crime would be happening.   Visitors could pick the type of crime and hear live police radio of current police actions. Internet visitors could also control the event, view current physical viewers, and speak their opinions of crime into the

public outdoor space via a speech synthesizer. It won one of the honorary mention prizes at Ars Electronica's international competitions for interactive art.

The light, motion, and sound corresponded to the minute by minute statistical level of crimes committed in San Francisco districts, as indicated by the Police Department CABLE crime statistics. In what appeared to be a carnival or theme park, viewers could experience the crime "pulse" of the city firsthand. It explored several conceptual themes:

> 1.Crime as Entertainment:: Using the strategy of absurd extension, this installation asked viewers to question the media circus created around crime. Are TV crime reports or this humorous "Disneyland of Crime" appropriate events?

> 2.Deconstructing Crime: What's a crime? Who defines it? What are our prejudices about crime? Are street crimes worthy of more attention than other crimes against the community such as poisoning the Bay or creation of dangerous products that kill or maim? In addition to responding to the street crime statistics, the kinetic clowns responded to my addition of corporate, governmental, and environmental crime. The installation used voice chip technology to interpose fake police radio transmissions focused on catching environmental criminals.

> 3.Information visualization and access: The installation used the tools of public sculpture to give viewers intuitive access to this provocative information about urban life. What is an appropriate representation of the underlying information? It explored various issues in information visualization, which is an emerging area in information technology research.

> 4.Real vs. Virtual Presence The installation asked viewers to think about the difference between physical and Internet participation in public events. Some analysts note that because of crime, urban dwellers increasingly engage in "cocooning" . This installation ironically offered enhanced control options to those brave viewers who ventured out to be physically present. The public sculpture was most active and visually engaging during precisely those hours of high statistical probability of crime 10pm-2am, when it would be most dangerous to be out in that section of town.

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Title *Is Anyone There?*

Year *1993*

Technical Information

Original Format	Format Submitted for Viewing	Preferred OS
_____ Software	__X___ Software (cd-rom)	_____ Windows
_____ Web	_____ Web	__x___ Mac
__X___ Installation	_____ VHS	_____ Unix
Other	Other	Other

Web Information (answer only if sample work is in Web format)

	URL _____(if more than one please list them
_____	below)
x	Browser requirement(s) _____navigator or explorer_____
x	Plug-in requirement(s) ____quicktime_____
_____	This sample requires broadband connection (fast Internet connection)
x	A local copy of the sample work has been included with the application

Special Information for Screening: All the work samples are on the same cd-rom   There is an index called aaastarthere.html. You can use a browser to open it. It has links to play the quicktime movies documenting each of my work sample installations. If there is any problem, quicktime Player will be able to play the movies. CrimeZland approximate viewing time = 3' 40"
For BEST VIEWING, COPY FILES TO HARD DISK

Description of Work   (use an additional sheet if necessary)

Overview For one week a computer telemarketing device makes hourly calls to selected pay telephones, engages whoever answers in conversations about life in the city, and digitally stores the conversations. The installation later allows viewers to interactively explore the city via a database of these recorded calls and digital video of life near the phones. It appropriates the often intrusive computer-based telemarketing technology and uses it in a new way, involving people who don't traditionally participate in the art world in an event that probes the diversity of life in the city and the relation of truth to fiction.

A Database of Calls to Pay Phones: Several locations in San Francisco were chosen on the basis of socioeconomic diversity and their significance to the life of the city. For a week a computer-based system with digitized voice capabilities systematically called pay phones in

these spots, at a particular time every hour, 24 hours a day. It used intelligent response programming to engage passersby curious enough to answer a ringing pay phone in a short discussion and digitally recorded the conversations. The topics focused on the lives of those who answered and whatever they consider noteworthy at that particular location. At other times video was used to capture representative images of the locales of the phones and the people who typically spent time near them.

The Installation: An interactive video installation set up months later allows viewers to explore life near these phones by using this bank of stored sound and digital Quicktime video to selectively call up recorded responses and images. An interactive hypermedia program encourages viewers to devise strategies for exploring this information-- for example, using a spatial/temporal framework to choose to hear the record of the people who answered a financial district pay phone location during the midnight to 3AM period. Typical digital video of the phone locales accompany the recordings and digitally manipulated images become metaphors for information about the recorded calls - for example, dynamic colorizing used to indicate the depth to which a particular answerer went in a conversation.

Live Calls During the Installation: The installation challenges the safety of passive art viewership by shifting occasionally into real time mode and automatically placing live calls to the pay phones, linking the viewer with a real person on the street at the location on the screen.

Conceptual Issues Explored:

Telecommunications & Telematic Culture
Interactivity, Art Audiences, and the Safety of Art Spectatorship
Hypermedia and the Structure of Information
Artificial Characterization & Intelligence

Installation History: This installation shown at Art Show- SIGGRAPH, Chicago, 1993 and Ars Electronic , Linz,Austria 1993. It won Ars Electronica's Prize of Distinction in the international competitions for Interactive Art.

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Title *Protozoa Games*

Year *2003*

Technical Information

Original Format	**Format Submitted for Viewing**	**Preferred OS**
_____ Software	__X___ Software (cd-rom)	_____ Windows
_____ Web	_____ Web	__x___ Mac
__X___ Installation	_____ VHS	_____ Unix
_____ Other	_____ Other	_____ Other

Web Information (answer only if sample work is in Web format)

	URL ___ http://userwww.sfsu.edu/~swilson/art/protozoagames/protogames10.html _(if more than one please list them below)
x	Browser requirement(s) ____~~navigator or~~ explorer _____
x	Plug-in requirement(s) ____
_____	This sample requires broadband connection (fast Internet connection)
x	A local copy of the sample work has been included with the application

Special Information for Screening: All the work samples are on the same cd-rom There is an index called aaastarthere.html. You can use a browser to open it. There is a link to Protozoa Games which is a static web site (as opposed to Quicktime movies like the others)

***Special toe - Additional Documentation video iin progress: :Since the Protozoa Games exhibition just concluded, the video documentation was not ready to include with this packet. I have enclosed a url to the web site for the project. Reviewers will be able to view that documentation over the Internet if I get it ready by the date of your review.

Description of Work   (use an additional sheet if necessary)

Overview:

A series of events allow humans and protozoa to work together. A digital microscope tracks the activities of a variety of live single celled animals such as stentor, paramecia, amoebae, vorticella, volvox, and rotifers and projects the images on a large screen. At the same time humans are invited to engage in various movement 'games' in the space in front of the screen.

Motion detection technology tracks the movements of the protozoa and the humans The computer orchestrates a series of events in which protozoa actions influence the humans and others where humans try to influence the protozoa. With success at synchronization, lights flash, electroniic sound, and computer animations are composed and web surfing is activated.

Description of the events:

Follow Me: The human in front of the Protozoa is invited to try to duplicate the motions of the protozoa. A virtual rectangle on the floor of the installation mimics the relative positions on the screen rectangle of the microscope. Using a split screen the installation offers live video of human and protozoa and rewards the human's tracking the movements with a pinball-like environment of bells ringing, lights flashing, electronic sounds, and score increments.

Control Me: Targets are superimposed on the microscope video of the protozoa. The humans are invited to try to influence the protozoa to move toward one of the targets. Humans are challenged to try a variety of strategies ranging from domination to friendly appeal. If more than one human is present, there can be a competition to control the protozoa. Humans can exert influence by singing/ yelling/ speaking into microphones on oppositie sides of the protozoa culture petri dish under the microscope or by controlling lights placed on opposite sides of the petri dish.

Themes:

The installations investigate a variety of themes: Human relationships with animals, the ethics of animal and human experimentation, the nature of intelligence and consciousness, and reflections on the essence of life.   Protozoa, as highly evolved single-celled animals allow a unique perspective on these issues. The game setup structurally emulates typical animal experimentation forms.

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Title *TransitTime*

Year *2001*

Technical Information

Original Format	Format Submitted for Viewing	Preferred OS
_____ Software	_X_ Software (cd-rom)	_____ Windows
_____ Web	_____ Web	_x_ Mac
_X_ Installation	_____ VHS	_____ Unix
Other	Other	Other

Web Information (answer only if sample work is in Web format)

	URL _____(if more than one please list them below)
_x_	Browser requirement(s) ____~~navigator or~~ explorer _____
_x_	Plug-in requirement(s) ____quicktime_____
_____	This sample requires broadband connection (fast Internet connection)
_x_	A local copy of the sample work has been included with the application

Special Information for Screening: All the work samples are on the same cd-rom   There is an index called aaastarthere.html. You can use a browser to open it. It has links to play the quicktime movies documenting each of my work sample installations. If there is any problem, Quicktime Player will also be able to play the movies.
TransitTime approximate viewing time = 3.5 minutes.

Description of Work   (use an additional sheet if necessary)

Overview

TransitTime presents an "infomatic" digital media event based on the real time movement of buses and trains at the moment of viewing. Using the Web to extract data from the NextBus system it tracks the movements of all MUNI light rail trains via GPS and advanced signaling. (MUNI is San Francisco's public transit system.)

The installation projects digital video and sound which change in real time based on the precise current position of Muni trains and busses. Each train and station has its own sound/video "signature" which develops with real movements in the city. The sounds include processed

versions of sounds from the city, a range of spoken perspectives on the way transit affects life, and tonal compositions related to transit. The voices form a kind of oratorio. The video includes maps, city scenes, satellite maps, historical images, and other poetical reflections on transit. Viewers can pick which Muni line to focus on the strategy for mapping position to media. The goal is to give visitors a feel for transit as the life pulse of the city.

Another part of the event allows visitors to ride in a driver's and passenger seat which had been discarded from an old train. The resurrected seats vibrate in accordance with the real movements. When the real train stops so does the vibrating seats in the gallery. The projected video matches what real riders on the train being tracked are seeing at that precise moment. (The views from every meter of track in the system had been previously documented.)

Artist Statement - Stephen Wilson

Art has many functions. I believe that one of the most important is its role as a cultural sentinel. I am drawn to those aspects of art that try to sense nascent trends, forecast future developments and expose unrecognized aspects of dominant paradigms. I am drawn to iconoclasm and heterodoxy. A non-stagnant culture desperately needs volunteers to patrol its frontiers, move against convention, and share what they discover in compelling ways.

I am a refugee to the arts. Although I worked with experimental underground film as an undergraduate I went on to get a Ph.D. in interdisciplinary social sciences from the University of Chicago. I worked for 10 years as a professor, researcher and action anthropologist trying to improve public schools. At the end of that time I came to feel that ironically the most profound cultural change may come not from frontal political or academic assault but rather more subtly from changes in consciousness wrought by the arts and media. I went back to my first love and got an MFA from the School of the Art Institute. I gravitated to areas of the arts that searched out zones of cultural foment and that were willing to invent new forms and art contexts.

Science and technology seemed like critical areas of cultural upheaval. I have always been fascinated by technological and scientific accomplishments, but I am uneasy with the way research is often mystified, denuded of the poetry of its quest, and presented as an answer rather than an invitation to more questions. One major goal of my art, teaching and writing attempts to shape new forms of media art that explore emerging technologies and fields of scientific inquiry in order to explore their neglected possibilities. My art events attempt to engage viewers on several levels: exploring classic art themes such as personal expression or cultural commentary and making accessible emerging research areas, and empowering viewers to think about them in new ways.

For example, in *Computerized Street Events* (1981) I used then revolutionary interactive technologies to create a computerized store window event that orchestrated physical interactions between viewers. In *Flashlight Theater* (1984), a theater audience was able to explore concepts of artificial intelligence by controlling dialogue of artificial characters by shining flashlights at virtual characters. In *Ocean Merge* (1987) I invented a way to sense motion of ocean waves to create an event that synchronized 3-D sound movement with the real time movement of ocean waves. Exploring our tendencies to project our fears into things we don't understand, I created *Demon Seed* (1987), which featured an interactive Robot dance troupe.

In *Is Anyone There* (1993) I used new computer-telephone devices to have my computer call pay telephones and talk to people in an exploration of urban alienation. As part of my artist-in-residency at Xerox PARC research center, I invented a new kind of a browser for the then esoteric Web. *Shadow Server* (1996) reflected on choice making in life by constantly showing what was missed in the background as people surfed. In *Crime-Z-Land*

(1998) I created an outdoor, computerized public art "Disneyland of Crime" which simultaneously explored information visualization technology and media representations of crime. Over 10,000 people on the street interacted with the event during its three-month run opposite San Francisco's City Hall. *BodySurfing* (2000) explored the relevance of the body in the electronic era by ironically requiring visitors to navigate cyberspace by drumming, stretching, gesturing, running, and touching. *TransitTime* (2001) tied into a GPS based system MUNI train location system to create a digital video/sound event that changed based on the real time position of all the San Francisco MUNI trains. *Protozoa Games* (2003) used digital microscope and motion tracking technology to allow visitors to play motion-based pinball games with live protozoa.

I believe artists have important roles beyond their art - for example, in writing, teaching, and work in non-art settings. Over the last years I have developed the Conceptual/Information Arts program in the Art Department at SFSU as a place to support artists as researchers who can ask questions about emerging technologies before they are defined as media. I have written numerous articles and books to demystify technologies and point artists toward areas calling for attention. My latest book **Information Arts: Intersections of Science, Technology, and Art** (MIT Press, 2002), which is used in art programs around the world, is the first comprehensive survey of media artists working in frontier areas of science and technology such as Biology Physical Sciences, Robotics, Mathematics and Algorithms, Telecommunications, and experimental Digital Systems such as haptics, motion sensing, and artificial intelligence. Trying to expand the function of artists in science settings, I have worked as artist-in-residence at the Xerox PARC and Nortel think tanks, been a core investigator in NSF grants, and consulted with the Interactive Institute (Stockholm) and Wellcome Trust (London) on their efforts to encourage art/science convergence.

I am simultaneously awed and troubled about the course of scientific and technological research. Historically the arts kept watch on the cultural frontier. I fear that in the contemporary technology-dominated world they are failing that responsibility. Rather than just assimilating the new gizmos, the arts and media can become an independent zone of research - pursuing agendas ignored by commercial interests and scientific disciplines and integrating critical commentary with the search for new knowledge and the elaboration of new technical possibilities. Those who believe that the arts are now up to date because they pay attention to digital technology have misunderstood the course of history because the research goes on - investigating many other fields in which the arts should be proactive pioneers rather than merely consumers of the results. Learning new technologies, taking them apart (technically and culturally), and doing the provocative and unexpected with them is at the core of my art and gives me great satisfaction.

Project Narrative - Guests, Parasites and Symbionts Bio-organism Based Art Installation

Description: Our culture is in the midst of a transformation from the digital to the biological era. In this view scientific research in fields such as genetic engineering, biosensors, medical imaging, brain physiology, and targeted pharmacology will have such a profound impact on the culture that it will dwarf the changes wrought in the last decades by developments in digital technology.

I believe it is critical for artists to create art works that reflect on these developments in biology by actually working with the concepts, tools, research agendas, laboratory procedures, and cultural contexts of biological and medical research. I created an installation called *Protozoa Games* that combined biology and information technology. The event allowed humans and protozoa to work together. A digital microscope tracked the activities of live single celled animals and projected the images on a large screen. At the same time humans were invited to engage in various movement 'games' in the installation.

Motion detection technology tracked the movements of the protozoa and the humans. The computer orchestrated a series of events in which protozoa actions influenced the humans and others where humans tried to influence the protozoa. A pinball-like ambience of animated images, increasing scores, and indicator bells and buzzers created an unorthodox environment of friendly competition. The *Follow-Me* game inverted the usual scientific experimental protocol by symbolically putting the protozoa in charge as the human was invited to try to mimic the protozoa motions. *Control-Me* offered an absurd commentary on experimental protocols. The humans were invited to try to influence the protozoa to move toward targets using a variety of strategies ranging from domination to friendly appeal by talking/singing to the protozoa and controlling lights.

The installation investigated a variety of themes: Human relationships with animals and other species, the implications of easy access to microcosms, the ethics of animal and human experimentation, the nature of intelligence and consciousness, and reflections on the essence of life. Interactions with complex single-celled animals allowed a unique perspective on these issues.

In the next version, with a working title of *Guests, Parasites and Symbionts*, I plan to incorporate live organisms taken directly from the visitors' bodies - for example by skin rubbing or non-invasive processing of body fluids such as sweat or spit. It will add the theme of implications

of medical interventions. Human bodies are alive with colonies of other organisms such as bacteria and protozoa. Most of us are unaware of this teeming life that accompanies and enables our life. I believe that this unawareness is a symptom of human relationships to other life forms and of a set of attitudes and perspectives that call out for reflection as we enter the era of biology.

I propose to create an art installation in which people will engage with live organisms derived from their own bodies and from those of other participants. Using the techniques of biology and medicine, my installation proposes to make visible these organisms and to create an engaging and provocative media environment for the interaction. Building on what I already did in *Protozoa Games*, visitors will make physical contact with some device that will acquire their organisms. It then will provide for immersive sound, video, and animation events in which the flow of events are controlled by the interactions of the visitor's movements and gestures in the space and the movements of the single cell organisms that are part of their body as made visible by a digital microscope. A projection screen will project their microorganisms situated as part of interactive digital animations and video created in Director. Another version of the installation will allow multiple visitors to engage with each other and each other's organisms and another version will let web visitors engage the protozoa.

My hope is that these experiences will induce visitors to reflect on the place of humanity within the larger biosphere. The installation's status as hybrid scientific/medical enterprise and media/game asks questions about scientific and medical protocols and new worlds made accessible by science. The contradiction of interacting with these alien, unfamiliar life forms (which are nonetheless intimately connected with our bodies) focuses on the boundaries between self and non-self. The request of visitors to surrender cells or bodily fluids confronts the ways fears of socially transmitted disease limit social interchange. This work will contribute to the growing discourse in Art & Biology and continues my continuing focus on artistic investigations of scientific research.

Feasibility: My creation and exhibition of *Protozoa Games* has already demonstrated my ability to create complex interactive installations based on biological concepts and tools. Much of the research and practical accomplishments of this installation will be relevant to the new work. I have

gained considerable expertise already in working with digital microscopes, motion tracking cameras, and cultures of protozoa. I wrote custom software to bring the digital images from the microscope into the media event environment and to create engaging pinball-like games for visitors based on their relationships with protozoa actions. In addition I have a long track record that demonstrates my ability to work with emerging technologies and new areas of scientific inquiry to produce engaging art works based on them and to contribute to the literature in the arts.

The new proposed installation does offers interesting challenges: I will have to conduct considerable research (reading, observation, and consulting with experts in biology, medicine, and robotics) to solve a series of issues in creating this event: 1. The protozoa I worked with before came from a biology supply house. I will have to identify appropriate biota of the body to work with. For example, which organisms exist on and in bodies that will be appropriate candidates for easy access and viability in a public art situation? 2. I will have to develop methods of getting the organisms from the visitor's bodies that are efficient, sanitary, safe, and non-invasive. 3. I will need to attempt to construct a robotic contrivance to transport the organisms form where they are acquired from visitors, prepare them with non-lethal stains, position them for the digital microscope, and then provide life support (e.g. oxygenation and nutrients). Preliminary consultations with medical friends suggest the challenges are not trivial but possible.

Use of Work: As with most of my work I will seek exhibition possibilities in major technology art shows such as Ars Electronica, Siggraph, BEAP, or DEAF. In addition, since Museums seem to be increasing their interest in Art and Biology works, I anticipate future possibilities in these shows. I will share technical information about techniques developed with other Art/Biology artists via the journal Leonardo.

Budget Narrative: Development will require significant time and purchase/construction of specialized equipment. Since I have a full time teaching load, I will use part of the fellowship to buy released time from teaching. I will also use it to buy/adapt/construct equipment to enable the access and display of visitor microorganisms.

Purchase of Computer, Projector, Motion Tracking Video Camera, Inteface	5,000
Purchase of Digital Microscope	2,000
Purchase or Construction of specialized equipment for acquiring visitor organisms	14,500
Travel to art shows and technology centers	1,500
Released time - 1 course a semester for 2 semesters @ 6000	12,000
Total	35,000

Stephen Wilson

Contact

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Current Research

Telecommunications and Alienation	Artificial Intelligence
Art and Research	Agents and Human-Computer Interface
Environmental and Biological Sensing	GPS Satellite Location Technology
Ubiquitous computing	Art and Biology
Mapping of Conceptual and Emotional Space to Physical Space	

Education

School of the Art Institute of Chicago
        M.F.A., Art and Technology/ Performance, 1981

University of Chicago
        Ph.D., Educational Psychology and Interdisciplinary Social Sciences, 1972

Boston College
        M.Ed., Research Methods and Computer Applications, 1968

Antioch College
        B.A.,Literature/ Education, 1967

Princeton University
        Architecture, 1962-64

Teaching

Art Department, San Francisco State University, San Francisco, California
        Professor, Computer-Related Art / Conceptual Design, Information Arts. 1982 - Present.

School of the Art Institute of Chicago, Chicago, Illinois
        Lecturer, Computers and Art, 1979-81

Forest Institute of Professional Psychology, DesPlaines, Illinois
        Assistant Professor, Evaluation & Social Science, Supervise Doctoral Fieldwork 1975-78

University of Illinois, Chicago Circle.
        Assistant Professor. Educational Psychology & Evaluation. 1969-73

Experimental Teaching
        First Grade in Project Male, Boston, 1967-68.
        Second Grade inWoodlawn Mental Health Project, Chicago, 1969-70

PROTOZOA GAMES. 2003.
A series of computer mediated events confront humans and protozoa with a variety of challenges. Protozoa actions influence the humans and humans try to influence the protozoa .The event probes human relationships with animals, animal and human experimentation, the nature of intelligence and consciousness, and reflections on the essence of life.

TRANSITTIME -YLEM Show - Somarts Gallery, 2001; Exploratorium - Teleopolis Show, 2002
The installation presents a sound/video/kinetic "infomatic" event which changes in real time based on the live position of San Francisco Muni trains moving about the city at the moment of viewing; Includes video that matches what passengers are seeing and the "Magic Muni Chair' that vibrates in resonance with real train movements.

BODY SURFING. SFSU Galleries, 2000
Exploration of the role of the body in an electronic age. Visitors navigate cyberspace by drumming, stretching, gesturing, running, and touching. Web visitors can control the drum and send body sounds to repace drum beats.

50 POINTS OF LIGHT.. Siggraph98 Pioneers Show. Siggraph, Orlando, 1998
Simultaneous live views of 50 spots in the world collaged with time lapse amd other cultural materials.

CRIME-Z-LAND. San Francisco Arts Commission. San Francisco, CA 1998
Commission to create outdoor "active " interactive map of SF visualizing in real time where and when crimes happen. Simultaneously controllable by physical and World Wide Web visitors. Deconstruction of the concept of crime.WINNER Honorary Mention, Ars Electronica International Competition for Interactive Art.

TELEPRESENT. San Francisco, 1997.
Participants carried around a wireless box that automatically uploaded images from whereever they were to the Web.

La FINCA The Homestead project, Museum of Art, Valencia,Spain, 1996
Part of International team of artists using the Web to explore concepts of colonialization.

ARTIST IN RESIDENCIES Xerox PARC Research Center and NTT Research Center, Palo Alto, CA. 1994-6
(At PARC) Competitively selected to participate in experimental PAIR artist in residence program. Work collaboratively with researchers in invention of newmultimedia information spaces. (At NTT) Assisted policy planners in conceptualizing the future of telecommunications.

MEMORY MAP.   Multimedia,95. SIGCHI (Boston,MA), and DATA/DADA Show, Maryland Art Place, Baltimore, MD
An interactive sound installation that maps memories and anticipations to physical space. Voices of older viewers come from in front of current viewer and voices of younger come from behind. Digital Video servies as the main interface and 2 computers communicate via a network to execute the event.

IS ANYONE THERE? . SIGCHI, 1993 (Monterrey,CA) and SIGGRAPH, 1993 (Chicago), Ars Electronica, 1993 (Austria)
Computer automatically calls selected pay phones in the city 24 hours a day and uses intelligent programming and digitized speech to engage those who answer in conversations about their lives and their surroundings. Viewers using voice recognition interactively devise multiple strategies to navigate record of conversations and related digital video. WINNER Golden Nica Ars Electronica International Competition for Interactive Art.

ORATORIO FOR RELIGIOUS OPINION. V2 Organization. 'S-Hertogenbosch, Netherlands. 1990
An interactive sound installation creates an "opera" of voice by digitizing the opinions of citizens and moving processed versions of their stored voices among several loudspeakers on a public square. Points of view get identified with particular physical locations. International Manifestation for Unstable Media

FATHER WHY. ARS ELECTRONICA, Linz, Austria and Richmond Art Center. 1989
A physical space serves as a metaphor for the emotional space surrounding the imminent death of a loved one. Computer responds with digital speech and music to viewers walking through the places of anger, longing, sadness, and forgetfulness.

EXCURSIONS IN EMOTIONAL HYPERSPACE. NCGA CADRE Show San Jose, CA. 1988
Four computer controlled mannequins each recounted a fictional life event from a unique emotional perspective. Mannequins were activated by a viewer's presence nearby. Movement to another mannequin caused the new one to reflect on the utterances of the previous dummy from its own perspective. The mannequins seemed to be actively listening to each other.

Shows 1983-87 • OCEAN MERGE. CSU Summer Arts program, San Luis Obispo, CA. 1987. By reading the changing resistance of sea water, the computer uses wave action to create an event of changing spatially located sound moving in sychronism with ocean waves. •DEMON SEED, SIGGRPAH Art Show, Anaheim, CA. 1987. Four squeeze-rod controlable computer choreographed moving and talking robot arms simulated demons in various world cultures •HI STRANGER, WELCOME TO CITY HALL, SF Arts Festival. 1986 - Interactive robots used synthesized speech and computer controlled video switching to simulate bureaucrats. Commissioned for City Hall lobby for festival. SYNTHETIC •SPEECH THEATRE, CADRE Festival, San Jose, 1986. 4 programmed computer personalities conversed with viewers via synthesized speech and voice recognition. Computer enabled each voice to come from its own space. •PARADE OF SHAME, SF Cable TV & SIGGRAPH Art Show, 1985. Home viewers and visitors to the art show affected computer graphics via calls to station automatically processed by my computer program. Participants' choices about the pace, process and direction of evolution affected the unfolding action. •TIME ENTITY, SJSU and SFSU Galleries, 1983-84. A computer graphic and sound representation of an artificial, time-sensitive lifeform interacted with viewers in a forest installation allowing them to send messages forward in time and to inspect specific moments in its life history.

PATENT: INTERACTIVE PRINT MEDIA, 1982.
I invented a technique applicable to various types of print media whereby electronic circuitry produces sound, light and other effects in response to various inputs such as touch, position, sound, etc. (Featured in Venture magazine)

Panels, Workshops, Symposiums, Editorial and Organizational Work

Keynotes and Invited Speeches 1997-2003: Art and Metallurgy (Nancy, France, 2003); Art and Electromagnetism (Hexagram, Montreal, 2003); Art and Research (ARCO, Madrid, Spain, 2002); Art-Science Collaboration (Wellcome-Trust ArtSci Program, Liverpool, UK, 2002); Ubiquitous Computing (ISEA2002, Nagoya, Japan, 2002); Experimental Media (Toronto Film Center, 2002); Art and Genetics (UCLA, 2002); Liberating the Labs (UCBerkeley ATC Lecture Series, 2002); Art and Emerging Technologies (SF Museum of Modern Art, 2001); Digital Frontier (U New York, Buffalo, 2001); Wilson Art (Wexler Museum Distinguished Artists Series, Columbus, Ohio, 2001); Art Frontiers (ZeroOne, SRI, Palo Alto, CA, 2000); Beyond Digital Media (CAA Meetings, NYC, 2000); Beyond Media (Center for Twentieth Century Stuides, UWM, 1999); New Media Opportunities on the Web (Hong Kong International Web Symposium, 1997)

Advisor, Interactive Institute, KTH, Stockholm, Sweden. Directed workshops, and advised the director on design of national network of Institutes to orchestrate collaboration between artists and researchers.

International Editorial Board, LEONARDO Journal. Advisory Board YLEM Art & Technology group 1982- present

Workshops 1993-97: Master-Class Emerging Technologies, (Copenhagen96 Cultural Capital of Europe. Invited as one of three world artists to create a masterclass for Scandinavian artists); World Wide Web Design for Artists. (ISEA International Symposia for Electronic Arts - Chicago97, Rotterdam96, Montreal95); New Technology and Education (Hawaii Educational Change Project. Honolulu, 1995)

Papers Presented 1984-93: Artist as Researcher (ISEA Minneapolis, 1993) Interactive Multimedia Art (MacWorld Expo, San Francisco, 1992,1991); Chair, Panel Artificial Realities, Intelligent Systems, and Interactive Art (NCGA CADRE meetings, San Jose, CA, 1989); Producer, Computer Mediated Events,Distinguished Artist Forum (SFSU, 1988); Chair, Panel on "AI and the Arts" (New Technologies Symposium, Chicago Art Institute, 1987); Chair, Panel on "Creation of Computer Mediated Interactive Installations in Educational, Museum, and Art Settings" (SIGGRAPH , San Francisco, 1985)

Art & New Technology Research

Director, INTERACTIVE ARTS, 1982-Present.   Consultant to industries investigating the interactive potential of new technology including projects such as interactive directories for office buildings , interactive signage.and hardware & software for physical rehabilitation. Apple Certified Developer. Voice Navigator Developer. Beta Test Site.

Consultant, Cable Channel 35, San Francisco, 1983-1990.   I developed hardware & software system to expand videotext capabilities to include voice response & enhanced graphics. As result of proposal I wrote, Apple Computer awarded the station an equipment grant.

Principal Investigator, Advanced Imaging Center, SFSU, 1988.   I conceptualized and wrote successful grant to establish an Advanced Imaging Center, which would help creative artists explore new imaging technologies and new kinds of linkages between industry and universities in the research and development and training.

Principal Investigator, CSU Academic Improvement Project, 1984-86.   I directed committee planning interdisciplinary computers & arts curriculum and wrote successful proposal for R &D project to develop model curriculum and drafted systemwide policy recommendations.

Exhibit Design & Evaluation, Museum of Science & Industry, Chicago, 1981-82 I assisted in the design and evaluation of exhibits including NSF funded project to teach scientific literacy and NEH project to teach architecture using interactive microcomputers.

Consultant, Development Office, School of Art Institute, Chicago, 1980-82 I investigated art/technology funding opportunities from foundations and government, helped author successful grant for time arts program, and helped plan organization development activities to teach faculty grant development skills.

Education & New Technology / Urban School Change

Core Investigator, Project Catalyst, 1990-1993.   National Science Foundation funded project to introduce new technologies to secondary school teachers. Exploring System Earth Consortium, 1986-88. I consulted on the design of the human interface for a university consortium trying to develop artificial intelligence modules for teaching physical science

Research and Evaluation Director, Center for New Schools, Chicago, 1970-78. My position included authoring proposals, negotiating with clients and funders, hiring, training and supervising researchers, coordinating technical assistance activities, analyzing data, and writing reports and articles. The Center was a not for profit organization working to improve urban schools through a combination of research and technical assistance.

Central issues in research included: Use of ethnographic methods, in evaluation, increasing the usefulness of research, and working with practitioners in research. The last major project was a nationwide, five year, five million dollar effort to improve urban schools.

Art, Technology & Culture Publications
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Information Arts: Intersections of Art, Science and Technology. (MIT Press,2002)

Editorial, "Research as a Cultural Act" (Lonton Times Higher Education Supplement, 2002); "Welcome to the Posthuman Era" (Le Devoir, Montreal, 2002); New Art Forms L'Officiel Paris); Art & Science Roudtable (Closer to the Truth, National Public TV, 2002)

"New Links Between Art and Research" paper presented at College Art Association, NYC, 2000 "Art and Research Agendas" paper presented at ISEA Invencao meetings in Sao Paulo, Brazil, 1999

Websites: Emerging Technologies Website; Art Resources in Art & Technology (artists links, organizations, essays, think tanks); *How-to-Guides for Web Authors* (all avaukabke at http://userwww.sfsu.edu/~swilson/)

"Refelections on PARC Artist in Residence Program" in Craig Harris (ed) Art and Innovation. (MIT Press, 1999)

"Art as Research" 1996 (paper commissioned by A*R*T project, Stockholm Sweeden - available online on swilson site),

World Wide Web Design Guide. Hayden Books, 1995

"Aesthetics and Practice of Designing Interactive Computer Events". *SIGGRAPH94 Visual Proceedings.* ACM, Chicago,1994 (Published as Interactive Hypermedia Work on CD ROM)

"Artificial Intelligence Research as Art Research". *Stanford Humanities Journal.* (Fall, 94)

"Educating Artists to Work with Telecommunications". *THE Journal.* Vol. 21: No. 5 (December, 93)

"Light and Dark Visions: The Relationship of Cultural Theory to Art that Uses Emerging Technologies". *SIGGRAPH93 Art Show Catalog.* ACM, Chicago, 1993

Multimedia Design with HyperCard. Prentice Hall. Englewood Cliffs, N.J., 1991

"Research & Development as a Source of Ideas for Artists". *Leonardo,* Vol 24: No. 3 (1991)

"Noise on the Line - Issues in Telecommunications Based Art" . *Leonardo,* Vol 24: No. 2 (1991)

"Interactive Art & Cultural Change". *Leonardo,* Vol 23: No. 2&3 (1990)

"Tutoring Metaphor: Exploring Pedagogical Possibilities of Interactive AI Workstations" *ESE Newsletter* Issue 17 (September-October, 1987)

"Artists As Explorers on the Technological Frontier". *Academic Computing,* Vol 1, No. 2 (1987)

Using Computers to Create Art. Prentice Hall. Englewood Cliffs, N.J., 1986

Various papers on interactive art events and the relationship of art and artificial intelligence. USF Invitational Forum, Invited Speaker NCGA, 1984,85

"An Introduction to Artificial Intelligence for Artists". in Marcia Chamberlain. *CADRE: Computers in Art, Design, Research, and Education,* San Jose State University, 1984

"Environment-Sensing Artworks and Interactive Events: Exploring Implications of Microcomputer Developments". *Leonardo,* Vol 16: No. 4 (Autumn, 1983)

"Interactive Art". *InCider* (September, 1983)

"Computer Art: Artificial Intelligence and the Arts". *Leonardo,* Vol 16:No. 1 (Winter, 1983)

Research Methodlogy & Educational Change Publications
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"Strengthening Connections Between Schools and Communities as a Way of Improving Urban Schools". *Urban Education,* Vol. 18: No. 2 (July,1983)

"What Practitioners Can Teach Researchers About Research". Teachers Center Exchange, Far West Labs, San Francisco, 1981

• "Influences on the Usefulness of Case Studies". *Evaluation Quarterly,* Vol 3: No. 3 (1979) • "The Use of Ethnographic Methods in Educational Research". *Review of Educational Research,* Vol 47: No. 1 (Summer, 1977) • "The Use of Ethnographic Methods in Educational Evaluation". *Human Organization,* Vol 36: No. 2 (Summer, 1977) • "You Can Talk to the Teachers". *Teachers College Record,* Vol 78: No. 1 (September, 1976) • "Strengthening Alternative Schools". *Harvard Education Review,* Vol 42: No. 3 (August, 1972) • "Educational Change in the Kibbutz". *Comparative Education,* Vol 5: No. 1 (Fall, 1969)