

Proposed Project Coversheet

2008 New Media Fellowship

Sheldon Brown

Title: Scalable Cities

Primary Genre: New Media

Additional Genre:

Role in Production: Artist, Director, Producer, Software Architect, Designer, Graphics, Sound

Production Format: Multi-User, Virtual World

Proposed Running Time: 3 years or more

Brief Description

I am in the midst of developing a project, Scalable Cities, which in its final form, is an extensible, online, massively multi-player virtual world. To date, I have been developing the components for this work as incrementally more complex, stand alone installations under the title of Scalable City. In the singular, Scalable City, many of the functional attributes have been developed and tested in exhibitions at a variety of museums and conferences, but always as single user, non-extensible environments. This iterative process has provided for a refinement of the technical underpinnings of the larger, multiple "cities" work, along with developing an understanding of user interaction approaches, while honing the aesthetic and conceptual approaches of the work.

The Scalable Cities will be a downloadable client to a persistent multi-user virtual world. This world is created with a data visualization pipeline in which elements taken from real world origins are processed by algorithms, designed to leave overt traces of their processes on their regurgitated output. The project is positing our developing cultural and social condition as inputs and outputs of computational processes. By exaggerating this condition I hope to highlight the pitfalls and promises this condition. The early stages of this work have been involved in developing the aesthetic forms and algorithms for many of the components of this piece, however the work takes on its urgency when it becomes a persistent reflection of the world at large, in which multiple people are able to repeatedly interact and witness the transformation of the virtual world as an intensified and abstracted ecosystem of interactions between people, representations and simulations.

Proposed Project - Project Narrative

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Project Narrative

The project - Scalable Cities - is a work in progress which has been developing under the singular title - The Scalable City. The full, Scalable Cities project will be a persistent, multi-user virtual world, accessible via downloadable clients as well as through visualization portals exhibited at public venues such as museums, galleries and conferences. To understand the goals of the Scalable Cities, it is important to understand how the Scalable City has developed the conceptual, aesthetic and technical base - all of which are extended in the full "cities" version.

I've described the Scalable City as:

"an urban environment created via a data visualization pipeline. Each step builds upon the previous, amplifying exaggerations, artifacts and patterns of algorithmic process. This results in prints, installations, interactive games and virtual environments.

Throughout these artworks, a variety of computer concept buzzwords take on physical form. Wallowing in them provides equal measures of delight and foreboding, creating a vision of cultured forms that we are rapidly creating. The project neither indicts nor embraces this future, but offers an extrapolation of its algorithmic tendencies, heightening one's awareness of the aesthetics of the underlying logic as it becomes the determinant of much of our cultured existence."

Within the Scalable City are 5 major components: Landscape, Roads, Lots, Architecture and Vehicles. The landscape is created by manipulating satellite data with image processing algorithms of cut, copy and paste, to create a new landscape form which retains naturalism in its details, but with a higher level of algorithmic decorativeness in its larger scale structure.

Road systems are then "grown" into this landscape. First, an analysis to determine areas that are amenable to development (frequency of height variations fall between a minimum and maximum value). These areas are demarcated by an encircling roadway. Within this roadway, space filling curves are grown using an L-system graph. These curves are all size derivatives of an Archimedes spiral. The curves try and fill the space, within a set of rules that control how they branch and intersect, always leading to cul-de-sac ends. The pattern they make is a highly decorative spiral labyrinth (when viewed from the initial satellite image pov), evocative of nouveau iron grates, illuminated texts, and oriental space filling patterns. These curves are turned into roads with appropriate texture maps, including the demarcation of intersections and sidewalks. The roads also make transformations to the landscape as they grow into it, with embankments and canyons to keep the grade within a prescribed percentage. The roads are dynamically built into the landscape as one navigates the world in a Vehicle system.

The Vehicle System also begins from real world data - in this case they are constructed from photo modeling processes that derive geometry from image data. This creates a perturbed derivative of an original form, strictly taken from the superficial skin of the image. Image artifacts tend to distort the form in unusual ways i.e., high degrees of specularities, broad contrast ranges etc., create difficult surfaces for the computer vision system to accurately discern object geometry from. What we end up with is form as perceived by the

computer. Part of the statement of the Scalable City is that as the lived environment becomes increasingly a condition of being inputs and outputs of algorithmic processes, our real world not only becomes an expression of algorithmic desire, but it conforms itself for optimized algorithmic consumption. When computer vision becomes the mechanism of the desiring gaze, we will engage in a seductive tease by transforming to excite its pixelated sensors to maximum capacity. The Vehicle systems become our embodied selves within this transformed environment. It consists not of a single vehicle but a particle system of vehicles that fill the environment with variant copies, endlessly spewing out in vortices (which resonate with the spiraling labyrinth of the road forms).

The roads provide the basis by which lots are defined in the world, built on the basis of a computational geometry form called voronoi. Voronoi forms are a type of minimal area that creates equidistant edges from data points, giving each lot some degree of equivalency based on the density of points, but with variance in lot shape. Voronoi forms are of general use in several computer graphic techniques such as computer vision calculations and constructing 3D surface meshes from point cloud data.

Architectural fragments are scattered about the landscape. As with the vehicles, this starts with artifacts gathered by computer vision techniques. The vehicle vortex system sends these fragments flying into the air under control of its simulated physics. When pieces land in the computed lots, they self assemble, trying to form houses based on embedded rules in each house piece.

You can see the first results of this work at the website:
<http://www.sheldon-brown.net/scalable/index.html>

Creating this work began with manipulations of satellite imagery leading to a set of digital prints and procedural animations. Both of these engaged a perceptual interactivity with the viewer by using wide ranges of visual scale, encouraging standard viewing distances and very close examination to create an immersive, interactive perception of the works. This slight activation of the viewer with the work, the movement of the body nearer and farther from a piece, reflects my primary concern with interaction in my artworks - interaction is an extension of the gaze, both with a social contextualization and its spatial/temporal extents. In the procedural animations of these works, time is also engaged in ways that requires an active interaction, when a nearly static composition that moves from very, very slow, subtle changes, to very rapid drastic transformation, all working with the same point of view of a single satellite image. In both the print and animations I'm pointing directly back at how these new perspectives require a transformation of our own acts of perception (as both perceiver and perceived). Interactive games and virtual realities provide this transformation, but it is often buried under their acts of operation. In all of these works I am trying to bring attention back to seeing and how our new forms of media further extend the temporal and cinematic with the spatial image. The image is of crucial importance to the consideration of how meaning operates in the work as a site of dense semantics; a system of operations between symbols and representations with the new computational twists of simulation and emulation.

The single Scalable City, has been working with a single landscape and set of cultural artifacts - both from southern California. This has worked well perating as a materialistic ideal, underscoring the rationally insane systems of roads growing into a landscape, prompted by whirlwind of spewing automobiles. In this mode, the single city has been refined such that a few minutes of interacting with it in a museum can provide a rich engagement with the visual elements.

In the Cities version, users will add new tiles of landscape, creating an expanding globelet of interconnected

Scalable Cities. Landscape tiles will be drawn from distinct existing areas, but not always of straight height data. Statistical data forms will also be used to highlight such things as building height codes (Manhattan), infant mortality rates (Rio Grande region), neo-urbanization rates (Beijing), and other types of data, which are manifested as landscape grids. Each tile in the Scalable Cities will have an initial architectural style, but these architectural fragments will distribute themselves around the world as more navigation occurs. The tiles will create an expanding globe which will have larger ecosystem components. Navigation will have not only an impact on the development of the local landscape, it will also add vehicles to the atmosphere, which will change the overall global conditions for sustaining stable cities. This atmosphere will also have patterns that assist in the cultural diffusion of architectural styles to far away cities. Users will have varying degrees of engagement on different tiles, from more constructive to more destructive, with an economy of limited resources providing a basis for interaction and cooperation among different users. Cooperative modes will develop between users, primarily to allow them to distribute cultural artifacts from one area to another.

The technological basis for this work is developed in my research lab at UCSD - The Experimental Game Lab. Here I have built the core of the software tools to create this, and work with emerging technologies from the gaming and computing industry to further the work. While there are still many challenges to create the persistent online world - the primary technical infrastructure is in place.

Artist Statement

2008 New Media Fellowship

Sheldon Brown

Artist Statement

The ongoing computerization of urbanity is the current focus of my work. This transformation is far richer than the establishment of alternative sites of socialization, as it engages the messiness of the body and the real, creating an inevitable dissonance with the hierarchical structures of the algorithm. The results of this aren't always alienating, sometimes they are sublime. Is it possible to have one without the other? I doubt it.

For some time, my work has looked at the relationships between mediated and physical experiences. This work often exists across a range of public realms, from public artwork, to exhibitions in museums and venues with adjacency to the artworld such as science museums, children's museums and technological forums - each of these acting as a situating site to enable a different discourse.

I am interested in the overlap and reconfiguration of private and public spaces; how new forms of mediation are proliferating co-existing public realms whose geographies and social organizations become ever more diverse. My art explores the schismatic junctions of these zones - the edges of their coherency - allowing glimpses into their formative structures to provide a view that suggests transformative modes of being, extending constrained boundaries.

Examples of this include projects such as "In the Event" at the Key arena in Seattle where 9 computers choreograph multiple video streams across 28 monitors in a real time constructive engagement with the spectator's act of envisioning the events of the arena. In "The Video Wind Chimes" - an outdoor video installation/street lighting project - the culturally encoded part of the electromagnetic spectrum is transformed into the passive illumination of a nocturnal lighting system, articulated by the wind. Projects such as "Smoke and Mirrors" and "Mi Casa es tu Casa", use the contextual apparatus of museums with adjacent mission scopes to the artworld, for bringing avant-garde strategies to engage ranges of social issues to venues that often use more pedantic forms of discourse.

The strategies of my work involve a deliberate mixture of computer science research and avant-garde culture. It is the integration of these two realms of innovation that I pursue to catalyze an insightful cultural practice. As each moment has its significant cultural stakes, ours are bound up in developing new means of understanding and expression in a time of cultural transformation. The necessary means to understand the rapid shifts of social and cultural operation are via the rubric of visualization. This idea best captures the manner in which contemporary cultural forms are created, operate, describe meanings and function as a social realm.

My artwork moves across a range of forms, including: virtual reality, computer games, interactive installations, public art, digitally formed sculptures, digital cinema and prints. Through this work, I explore the interrelationship between data, algorithms and users, the crux of a visualization culture. Pursuing a range of forms is sometimes a provocative act, and at other times, simply the manner in which the types of questions posed by the work articulate themselves in various media. The formal promiscuousness of my artistic practice testifies to at least one salient feature of a visualization culture: the migration of tropes across

previous disciplinary boundaries. I argue that the way in which structures of meaning develop in a culture of visualization is not within formal mediums (ala modernism) but across mediums. It is the applicability of similar algorithmic and data structures across domains, which create the means of expression and discourse of forms. Therefore, an active investigation of visualization necessarily becomes an interdisciplinary practice - working across art, design, computer science, cognitive science and cultural theory.

Sheldon Brown

Title: Scalable City - New Trailer

| | | |
|---|---|--|
| Role in Production: Director, Software Architect, Designer, Graphics, Sound Design | Panel Viewing Length: 04:04 | OS Requirement: Any OS |
| Year of Completion: 2007 | Media Format Submitted for Viewing: DVD (data) | Browser Requirement: Windows Media Player, Quicktime Pro or VLC |
| Primary Genre: New Media | This is a work-in-progress: X | Require broadband: X |
| Additional Genre: Derivate game movie | | |
| Production Format: 4069x2048 24fps | | |

Description

The Scalable City - New Trailer is one of the derivative works that is created in the process of developing the Scalable Cities. As one of the ongoing goals that I have as an artist, is exploring the extensions of the cinematic, I created this trailer in response to several concerns in this regard, 1) gaming as an extension of cinematic vision and 2) how gaming feeds back into the cinematic. This movie is created in a new, experimental movie format called "4K" referring to an ultra-high resolution of 4096x2048 pixels, four times the resolution of High Definition. Here, the extreme fidelity of the cinematic form grants the graphic artifacts of the game assets a clarity of intentionality that reinforces my conceptual concerns of the work- how the artifacts of tools and processes describe their limitations. The linear progression of the movie form also provides an opportunity to build complexity in the work, and take it to a point of conclusion that is experienced and understood differently then when playing the work. In my own process, working through this in a short movie version helps me to understand how elements in the interactive version can achieve a better narrative balance.

Special Instructions

The movie is available to be downloaded from this website:

<http://www.sheldon-brown.net/scalable/trailer.html>

The largest resolution here is 1280x720p which should play on most contemporary computers. HD and higher resolutions are available but require more specialized computers. Audio is important so please play with a good audio/visual set up.

URLs

<http://www.sheldon-brown.net/scalable/trailer.html>

Sheldon Brown

Title: Scalable City - Original Trailer

| | | |
|---|---|--|
| Role in Production: Director, Software Architect, Designer, Graphics, Sound Design | Panel Viewing Length: 03:45 | OS Requirement: Any OS |
| Year of Completion: 2005 | Media Format Submitted for Viewing: DVD (data) | Browser Requirement: Windows Media Player, Quicktime Pro or VLC |
| Primary Genre: New Media | | Require broadband: X |
| Additional Genre: Video | | |
| Production Format: 1280x720p 24fps | | |

Description

The Scalable City - Original Trailer is one of the first works created in the development of the Scalable Cities project. Here, I was developing the algorithmic and aesthetic forms of the landscape and road system interaction, ending with first tests of the automobile particle system and a nod towards the global Scalable Cities. This was also an opportunity to explore the soundscape of the Scalable Cities, which is further developed in the second movie and the interactive Scalable City game.

Special Instructions

You can download the movie from the URL:
<http://www.sheldon-brown.net/scalable/trailer.html>
and select a format from the "Old Version" side.

URLs

<http://www.sheldon-brown.net/scalable/trailer.html>

Sheldon Brown

Title: Scalable City - Shanghai Moca Documentation

| | | |
|---|------------------------------------|--|
| Role in Production: Director, Software Architect, Designer, Graphics, Sound Design | Panel Viewing Length: 02:10 | OS Requirement: Any OS |
| Year of Completion: 2007 | Media Format Submitted for | Browser Requirement: Windows Media Player, Quicktime Pro or VLC |
| Primary Genre: Installation | Viewing: DVD (data) | Require broadband: X |
| Additional Genre: New Media | This is a work-in-progress: | |
| Production Format: interactive 3D virtual reality game | X | |

Description

Documentation of an installation of the single user Scalable City, at the Shanghai Museum of Contemporary Art. For this exhibit, an interactive 3D graphic environment of the Scalable City is shown on one wall of the room using 2 projectors tiled side by side to create a very wide, landscape projection. The opposite wall of the room is showing a procedural, flash animation which very, very slowly shows the process of abstraction and transformation of satellite imagery into the reconfigured data which is used to create the landscapes of the Scalable City. Users operate the interactive environment with a custom trackball/button interface. This interface allows them to control an automobile vortex which provokes roads to grow in the landscape.

Special Instructions

Download video from:

<http://www.sheldon-brown.net/scalable/moca.html>

URLs

http://www.experimentalgamelab.net/movies/moca_documentation_large.wmv

Sheldon Brown

Title: Smoke and Mirrors - Overview Video

Role in Production: Director, Software Architect, Architectural Designer, Projection Design, Interface Design, Computer Graphics, Sound Design

Year of Completion: 2002

Primary Genre: Installation

Additional Genre: 3D virtual reality game

Production Format: 3D virtual reality game

Panel Viewing Length: 01:15

Media Format Submitted for

Viewing: DVD (Movie)

Description

A Multi-User, Virtual Reality/Game Environment with custom designed 6 rear screen architectural environment.

Smoke and Mirrors is an artwork created by Sheldon Brown, originally commissioned by the Reuben H. Fleet Science Center in San Diego. Smoke and Mirrors allows two to six visitors at a time to enter into a shared virtual environment through their own projected computer graphic portal. The environment engages viewers in a series of activities drawn from the cultural and social history of tobacco usage. The original version of Smoke and Mirrors was built into a specific architectural environment and a traveling version has also been exhibited at various venues.

Special Instructions

Download Overview video from:

http://www.sheldon-brown.net/sm/sm_gallery.html

URLs

http://www.sheldon-brown.net/sm/sm_gallery.html

Sheldon Brown

Title: Excerpts

Role in Production: Artist, Director,
Producer, Software Architect, Designer,
Graphics, Sound

Year of Completion: 1995-2002

Primary Genre: Installation

Additional Genre: New Media

Production Format: Installations of various
forms

Panel Viewing Length:
03:25

**Media Format Submitted
for Viewing:** DVD (Movie)

OS Requirement: Any OS

Browser Requirement: Windows
Media Player, Quicktime Pro or VLC

Description

This shows excerpts from video documentation of four installations:

Mi Casa es Tu Casa - A bi-national virtual reality playhouse where 8 people simultaneously interact in real local and shared virtual space, connecting Mexico City and San Diego. They explore cultural and geographic identity through play gestures and symbolic exchange.

Smoke and Mirrors - A six user virtual reality environment engages viewers in a deconstruction of the cultural and social history of tobacco usage.

In The Event - A public art work at the Key Arena in Seattle where a number of video feeds are processed across a video display of 28 monitors set into a cast aluminum relief sculpture, to explore the notion of spectatorship and its relationship to geography and event.

Video Wind Chimes - A public artwork that connects the atmospheres of nature and culture.

Special Instructions

You can download the video from:

<http://www.sheldon-brown.net/excerpts/gallery.html>

URLs

<http://www.sheldon-brown.net/excerpts/gallery.html>

Sheldon Brown

8 Slides

Description

Slides 1 - 4 show installation views of the single user Scalable City
Slides 5 -7 are screen grabs from in development Scalable Cities environment.
Slide 8 show a prototype of Scalable Cities Globe

Proposed Budget
2008 New Media Fellowship

Sheldon Brown

Proposed Budget

Artist fee - allows for time away from academic and administrative work to finish project development - \$15K

Taxes on fee - Federal, State and FICA - \$6K

Server Hosting for 3 years of high bandwidth traffic - \$6K

Data Gathering services, from various sites around the globe, including purchase of databases information, digital elevation models and hiring of local architecture photographers - \$8K

Additional Uploaded Document(s)

2008 New Media Fellowship

Sheldon Brown

The following files were uploaded, but were not included in this document:

Resume

Sheldon Brown

Consult <http://erca.ucsd.edu/sheldon> for updates. CV information below are selected to fit page limits.

Appointments

University of California at San Diego, 1992-present.

Professor III, Department of Visual Arts. 2002-present **Director**, Center for Research in Computing and the Arts, 7/99 – present, **CO-PI, Layer Leader for New Media Arts** Calit2. 1/2001 – 2006 **Artist-in-Residence** Calit2. 2006-present. **Senior Research Fellow**, San Diego Super Computer Center, 7/1/2000 – 2004. **PI**, Experimental Game Lab, UCSD. 2002 – present **Representative** – UC System, China Research Initiative, 2007 – ongoing. **Co-PI** - UC DARNet, 1/2000 – 2002 **Associate Professor**, 1997 – 2002, **Assistant Professor**, 1992 - 1997

School of the Art Institute of Chicago, 1991- 92. **Visiting Faculty**, Dept. of Art and Technology.

Kansas City Art Institute, 1990-91. **Faculty Fellow**, Photo-Video Dept.

San Francisco Art Institute, 3/87, 10/87, 11/88. **Guest Artist**, Film Department, Video Department.

Projects & Exhibitions (selected)

11/07 **Scalable City Interactive Display 2.0** at Supercomputing 2007. New extensible version.

9/07 – 1/08 **Scalable City Interactive Installation 1.7.5** The Exploratorium, San Francisco

9/07 **Scalable City Interactive Installation 1.7**, SPLIT international film festival, Split CROATIA

8/07 **Scalable City Interactive Installation 1.7** SIGGRAPH, San Diego

7/2007 **Scalable City 1.6.8, Prints and Interactive Display in Speculative Data and the Creative Imaginary**

National Academy of Sciences, Washington DC

3/2007 – 5/2007 **Scalable City 1.6.5** Shanghai Museum of Contemporary Art

Dual screen interactive game environment and projected procedural animation.

2/2007 **Scalable City 1.5** International Center, New Delhi India

08/2006 – 08/2007 **Scalable City 1.0 3x3D** Ars Electronica Museum

Interactive installation of three stereo projections, two machimatic animations, one interactive.

10/2005 **Scalable City 0.7b Video and Animation Installation**, Zacheta Gallery, Warsaw Poland.

Video and procedural animated projection installation.

5/2005 **Scalable City Video Pre-visualization** – E3 at Ascencion Three screen installation of algorithmic visualization

6/2004 **Public Space/Private Acts/Private Space/Public Acts** Workshop/Performance/Installation at the Kitchen, NYC.

10/2003 **StudioLAB** Installation at Image/Architecture 2003. A survey of works from the Studio of Sheldon Brown.

3/2002 – 3/2004 **Smoke and Mirrors**, Fleet Science Center, San Diego

Multi-user, networked virtual reality. 3D scanned users explore the construction of the culture of tobacco consumption.

7/1999 – Ongoing **Istoria**. Development of sculpture, software tools and hardware devices for computer assisted sculpting.

10/97 – 9/2000 **Mi Casa es Tu Casa/My House is Your House** Networked virtual reality environment at the Centro

Nacional de las Artes in Mexico City and the Children's Museum of San Diego.

12/95 - Permanent **In the Event** Commissioned public art installation at the Seattle Key Arena. 60ft. x 8 ft. wall, 70 aluminum panels and 28 monitors, with 4 channels of video remixed by controlled by a network of computers.

11/94 - 3/95 **The Video Wind Chimes** Public Art Video Installation Yerba Buena Center For the Arts, San Francisco.

9/94 **Apparitions** InSite '94, University Art Gallery, San Diego, CA. Virtual Reality Installation.

9/94 **The Video Wind Chimes** Public Art Video Installation, for InSite '94. San Diego, CA.

5/93 **The Vorkapitchulator** Machine Culture, Anaheim. Computer Controlled, Installation.

4/90 **MetaStasis/MediaStatic** Video Installation. The Lab Gallery. San Francisco, CA.

Selected group shows and screenings

Scalable City Movie Screenings

11/2007 Animated Paintings – Animation Screening San Diego Museum of Art/Calit2 9/2007 GLIF 2007, the Seventh Annual Global LambdaGrid Workshop, Prague. PICNIC 2007 Amsterdam. 8/2007 SIGGRAPH 2007 Scalable City new 4K movie Premier 04/2007 CES 2007, CEATEC Japan 2007, Inter BEE2007, FPD International 2007 Japan 03/2007 SID International Symposium,

02/2007 Da WAAG Amsterdam/Calit2, Streamed, multi-monitor Scalable City environment

03/2007 Experimental GameLab at the Game Developers Conference, San Francisco

10/2004 DIGITAL BOUNDARIES: Multiculturalism, Identity, and Awareness, Macy Gallery, Columbia University, NYC
5/2004 Video as Urban Condition, Austrian Cultural Forum, London.
7/2003 Istoria sculptures, SIGGRAPH Art Gallery, San Diego, CA
5/2003 +playengines+, Experimedia Gallery, State Library of Victoria,
4/2003 ACM SIGGRAPH 2003 Symposium on Interactive 3D Graphics
11/99 CYBERART: Interaction Zones in the II Bienal do Mercosul Caxias do Sul, Brazil
10/99 Telesculpture Exhibition Institute for Studies in the Arts, Arizona State University 10/98
12/98, imagearchitettura in movimento University of Florence, Italy.

Film/Video/Webography

The Scalable City – New Trailer, 2007 4 minute video in 4K (4 times HD resolution)
The Scalable City, 2005, 3 minute HD-Video. *Seattle Center Coliseum: Project Proposal* 1994 3 min. video
APPARITIONS 1994 3 min. videotape *MetaStasis/MediaStatic: Promotional Video* 1990, 60 min. *Video WindChimes: Proposal* 1990, *My Life* 1982, 5 min., S8mm, sound. *Dawn of Course* 1983, 6 min., S8mm. *Extrospect* 1982, 8 min., 16mm, sound. *Delusions of Grandeur* 1981, 5 min., S8mm.

Writings

“Trojage Aesthetics”, in *The Structure of Style: Algorithmic Approaches to Manner and Meaning*, Springer-Verlag, forthcoming 2008
“The Future was Then” blurb for “Soft Cinema DVD” by Lev Manovich, MIT Press 2005.
“Trojage Aesthetics”, American Association of Artificial Intelligence Proceedings, Washington DC, 2004
“Scalable City 0.7a”, Proceedings of ACM Multi-Media 2004
“Ersatz- A Software Platform for Making Art”, International Society on Virtual Systems and MultiMedia Japan, 10/04.
“Smoke and Mirrors” Proceedings of the ACM SIGGRAPH 2003 Symposium on Interactive 3D Graphics, summer 2003
“*Shock of the View: Space*” by Sheldon Brown, Catalog Essay, Walker Art Center, November 1998.
“*Real Art/Virtual Reality*” by Sheldon Brown. First International Conference on Ciber Art, Valencia Spain.
“*Real Art and Virtual Reality*” by Sheldon Brown, ACM SIGGRAPH Computer Graphics, November 1997.
“*Mi Casa es tu Casa/My House is Your House: A Bi-National Networked Virtual Reality/Una Casa de Juguete Bi-Nacional, en red y Realidad Virtual*” by Sheldon Brown, in *Future Fusion: Application realities for the virtual age*, Volume 1, 1998, pgs. 232-237. International Society of Virtual Systems and Multimedia, Gifu Japan.
The Video Wind Chimes, The 4th International Conference on Artificial Reality and Tele-Existence. Tokyo, 1994
The Vorkapitchulator, Computer Graphics Visual Proceedings, pg. 116 New York: ACM 1993.

Commissions, Grants & Awards

Multi-User Networking in virtual environments, PI, Sun Microsystems, \$50,000 5/07
Terascale computing in The Scalable City, PI, Intel Corp. \$84,000, 12/2006
IBM SUR Equipment Grant PI, IBM Inc. \$140,000, 10/2006.
Acquiring and Modeling 3D Dynamic Objects PI, Vicon Inc. \$500,000 12/2006 – 12/2007
Cell Processing Methods for Resolving Computational Constraints in Real-time Graphic Environments PI, IBM. \$225K 9/2006 – 8/2007
Experimental Game Lab PI, High Moon Studios/Vivendi \$300,000 9/2004 – 9/2006
Metamap of the Californias- Co-PI, UC Mexus \$16,000 1/2005 – 1/2006
Optiputer – Consulting PI, National Science Foundation, \$13,400,000 9/2002 – 9/2004
Fleet Science Center Commission for installation, \$430,000, 3/2001.
Digital Media Innovation Award – UC Dimi - \$13,000, 2001
UCOP Multi-Campus Research Group Award, Co-PI for UC DARNet MRG – 7/2000 – 6/2005, \$350,000 including campus match over 5 years.
Intel Corporation 1998 - 2000, \$300,000 for CRCAnet and ICAM curriculum development
Institute for Studies in the Arts Arizona State University, 7/99 - 6/00. \$17,391 Research Residency
3COM Corporation 10/1999 - \$15,000 for CRCAnet
Visiting Artist University of Colorado, Boulder. 11/99. \$2500
3COM Corporation 1998 - \$99,680 for CRCAnet
Mi Casa es Tu Casa: AT&T Foundation 1998 - \$70,000. Mandell Weiss Foundation 1997 - \$10,000. Mexican Cultural Institute 1997 - \$8000. Sensormatic Video 1997 - \$1000 in Cox Communications 1997 - \$18,000m InSITE97 1997 -

\$10,000 UC-Mexus 1997 - \$1000 Kingston Technologies 1997 - \$3000 in kind Multigen Inc. 1997 - \$50,000 in kind.
UCSD Humanities Center Grant 1997 - \$12,000. Thomas Ackerman Foundation 1997 - \$2000. Schoepflin Foundation
1997 - \$25,000 Silicon Graphics Inc. 1997 - \$5000 cash and \$80,000 in kind. Sony Corp. 1997 - \$5000.
Seattle Center Coliseum Public Art Commission. Seattle Arts Commission 1994-95 - \$175,000.
Hellman Fellowship 1996 - \$5250
Asian Cultural Council Fellowship 1996 - \$15,800
National Endowment for the Arts Public Art Project Grant 1994-95, \$5000
Interdisciplinary Artist Grant. New Langton Arts, San Francisco 1990, \$5000.

Panels/Lectures

11/07 **Acceleration of Computer Game Asset Generation using Cell Blade Server**, Supercomputing 2007
11/07 **Digital Media and the Arts** UC Office of the President, UC-China Collaborative Research
11/07 **Next Generation Culture** UC Santa Barbara, Dept. of Media Arts and Technology
8/07 **Local Concerns/Global Art** – Panel Chair - SIGGRAPH 07
6/07 **Sheldon Brown Artworks** -Lecture at Fudan University, Shanghai, Shanghai Jiao Tong University, Zhejiang University, Hangzhou, China Art Academy, Hangzhou China, Tsinghua University, Beijing, Peking University,
5/07 **Sheldon Brown Artworks** Lecture at Texas A&M School of Architecture 3/07 **Sheldon Brown Artworks**
Lecture at Sarai, New Delhi 2/07 **The Scalable City** Lecture at Shanghai MOCA 11/2006 **Sheldon Brown,**
Artworks and Ideas. Shanghai University,
Third Millenium Problem Solving – Joint lecture with David Brin 10/2006 Caltech and 11/2006 Google Inc.
Keynote address: Institute for Software Research, UC Irvine, 05/2006
Sculptures, Art, and Shaking Your World Panel Moderator, SIGGRAPH 2005 LA, 7/2005
A Prescription for Cultural Practice The Salk Institute for Biological Studies, La Jolla CA 6/2005
Demanding Heterogeneity in the Forms of Culture, SURA/VIDE Conference, Georgia Institute of Tech, 3/2005
ArtGameCulture UCLA, Design|Media Arts Department, 2/14/2005
Art and Games Via Computing Computational Science Research Center, SDSU 2/2005
ersatz for Art, International Society on Virtual Systems and MultiMedia, Softopia, Gifu Japan 10/04,
Works of Sheldon Brown, Institute of Advanced Media Arts and Sciences, Gifu, Japan, 10/04
Immersion, Innovation and Anxiety, Interactive Institute, Umea Sweden, 8/2004 **Sheldon Brown** Columbia University,
NYC, 4/2004 **Art and Technology in Site and Performance** The Kitchen, NYC, 4/2004
The Exorarium – A Virtual Reality Extraterrestrial Terrarium by Sheldon Brown and David Brin 3/2004 NASA Ames
Research Center Moffett Field, California
Immersion as Condition University of Washinton, 11/2003 **Smoke and Mirrors: A Virtual Reality Debunking**
Environment CyberTherapy2003 **New Media Forms in Latin America** Institute of the Americas, 10/2002
The National Art and Technology Research Network, 6/2002, The Kitchen, New York City
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