

Sheelagh Carpendale

B.Sc., Ph.D.

Sheelagh Carpendale

Position: Associate Professor
Canada Research Chair: Information Visualization

Affiliations: Department of Computer Science, Faculty of Science,
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(research page) <http://innovis.cpsc.ucalgary.ca>

Education: Ph.D. 1999
Computing Science, Simon Fraser University
Topic: Information Visualisation
Thesis Title: A Framework for Elastic Presentation Space
Committee: F. D. Fracchia, T. Shermer, A. Liestman,

B.Sc. 1992
Computing Science, Simon Fraser University

Art School, 1981
Emily Carr College of Art, Vancouver, BC
Sculpture

School of Design, 1975
Sheridan College, School of Design, Mississauga, ON
Glass

Research interests: Information Visualisation, Interaction Design, Human-Computer Interaction, Graphics, Non-Photorealistic Rendering, Large Displays, Computer-Supported Cooperative Work, Cross-disciplinary Arts/Science research, Multimedia, Graph Layout

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RESEARCH AWARDS

SMART/iCORE Industrial Chair in Interactive Technologies (Joint Chair with S. Greenberg)	2006
Faculty of Science, Research Excellence Award Faculty of Science, University of Calgary	2006
Canada Research Chair, Tier II: Information Visualization Faculty of Science, Department of Computer Science Faculty of Communications and Culture	2004
NSERC UFA, University Faculty Award (renewal)	2003
BAFTA (British Academy of Film & Television Arts Interactive Awards) Category: Interactive Learning Project: Antarctic Waves: developed with BRAUNARTS and the British Antarctic Survey Position: Computer Visualisation Consultant (a BAFTA is the British equivalent to Canada's GENIE Award or in USA to an Emmy (television) or an Oscar (film))	2002
NSERC UFA, University Faculty Award	2000

MOST SIGNIFICANT RESEARCH CONTRIBUTIONS

Interactions on Large Displays

A natural extension for my presentation research is the exploration of presentation on different types of displays. Size, resolution, configuration and interaction capabilities make each display unique in its ability to transfer information. I obtained CFI grants to build high resolution tabletop and modular wall displays, organized workshops on this topic, performed observational studies, and developed novel interaction techniques.

Territoriality on Tabletop Displays: Our observational studies led to a significant theoretical outcome – that human territoriality is an active component of tabletop collaboration and helps coordinate tasks and group interactions during collaboration. This theory has led to the development of an entirely new tabletop interaction environment that supports the organization and sharing of digital items during collaboration.

- Academic dissemination: CSCW'04 (CHI Letters.), CG&A, Smart Graphics, SIGGRAPH.
- Further Research: in part based on this research, I was asked to join a Canadian NSERC Research Network, NECTAR. My lead PhD student on this topic, S.D. Scott, (John Kendall Award for the best PhD thesis in the Faculty of Science) now Post Doctoral Fellow at MIT, will be starting a tenure track position at University of Waterloo in July 2007.
- Industry Interest: The best indication of the impact of this research is that a private demonstration to researchers and the CEO of SMART Technologies (a successful Calgary-based large display company) has prompted them to see tabletop displays as interesting and we have started joint work on the design of new tabletop displays. This has contributed to my SMART/iCORE Chair.

Orientation, Rotation, and Translation on Horizontal Displays: Orientation is a significant interface issue at least in part because individuals sitting around a horizontal display have different views of the workspace. Our investigation into the role of orientation in tabletop collaboration revealed that orientation plays three major roles: comprehension, coordination, and communication. To better support the roles of orientation, we designed, developed and evaluated a fluid interface mechanism, Rotate 'N Translate (RNT) that provides integrated control of rotation and translation and is usable with common input technology. Significance of this research is indicated by:

- Publication: Observational study: ACM Group'03 [30], J-CSCW [2], the interface component R'NT and its evaluation: ACM SIGCHI'05 [24].
- Further Research: Master's thesis at another university is based on the original observational study; R'NT is being incorporated into other tabletop research: industry collaboration [16], 3 graduate theses thus far and its application to software engineering agile programming is generating industry interest.
- This led to an industry collaboration with MERL [],
- Academic extensions already include a second Masters (at SFU) based on the original observational study [], R'NT is incorporated in a PhD in our lab, three Diplom Theses in Otto-von-Guericke University, Germany, and its application in a software engineering agile programming environment that is generating industry interest.

Elastic Presentation Framework (EPF)

EPF is a significant contribution to Information Visualization in that it unifies many individual presentation methods, allowing the seamless inclusion of more than one presentation method in a single interface. By interpolating between the methods it describes, EPF identifies new presentation variations.

Academic significance:

- refereed publications, including top venues such as UIST, CHI, SIGGRAPH,
- invited talks, including Stanford, Intel, Electronic Arts, Dagstuhl, IIID (UNESCO sponsored)

Industrial significance:

- Intel Inc. provided a major research grant (~\$225K plus equipment) to develop a software library from the EPF geometric framework. Several international researchers work with this library – including Strothotte at Magdeburg Germany, Nighten at V2 Rotterdam, Vertegaal at Queens, Eagan at Georgia Tech, Cohen at Oregon Graduate Institute, Long at Carnegie Mellon, and Inkpen at Dalhousie.
- Idelix Software Inc. has focused on software based on EPF (see technology transfer).

Occlusion Reduction Techniques: The concepts developed in EPF have proven to be extensible to development of occlusion-reduction techniques that can be applied to 2D and 3D representations (collaboration with Dr. Cowperthwaite, now at Intel Labs). This stream of research has been published in top venues (CHI, IEEE InfoVis) and is a chapter in Readings in Information Visualization, which is considered one of the foremost books on Information Visualization. Recent work in this direction has included developing techniques that can be used as an explosion probe for 3D data exploration and an occlusion reduction technique for interactively dealing with edge congestion in graphs. This research is included in graduate level Information Visualization syllabi and frequently prompts image and video requests. Recent extensions include use as an explosion probe for interactively exploring the interior of 3D visualizations.

Visualizing Eco-system Dynamics and Genetic Regulation: Visualizing eco-system dynamics is collaborative research with Canadian Forest Services, BC Ministry of Forests and Gowland Technologies. Current research focus is decision support visualization for landscape managers coping with mountain pine beetle outbreaks. The FRBC (Forest Renewal British Columbia) SEED project (Simulating and Exploring Eco-system Dynamics) had a dual focus: simulation, SELES (Spatially Explicit Landscape Event Simulator), and visualization. Visualizing genetic dynamics extends visualization ideas developed during my work with the SEED project. This collaboration with C. Baker (Southern Alberta Mass Spectrometry Centre), Dr. Surette (CRC: Microbial Gene Expression) and Dr. Prusinkiewicz (Computing Science) focused on developing dynamic visualizations of the regulatory genetic processes. This research (IEEE Visualization, Journal of Information Visualization) and has prompted much discussion about the integration of abstract representations in biological visualization and resulted in a panel discussions at IEEE VIS'03 and CG&A article by T.M. Rhyne.

WORK EXPERIENCE

Academic Appointments

Canada Research Chair: Information Visualization Department of Computer Science, Faculty of Science, and Faculty of Communication and Culture, University of Calgary	July 2004 – present
Associate Professor: Department of Computer Science, University of Calgary	July 2004 – present
Senior Artist Banff New Media Institute, Banff Centre	July 2000 – present
Assistant Professor: Department of Computer Science, University of Calgary	Oct. 1999 – June 2004

Computer Science Experience

Research Associate: School of Computing Science, Simon Fraser University, BC FRBC (Forest Renewal British Columbia) SEED (Simulating and Exploring Ecosystem Dynamics) Project Developing visual access for landscape dynamics data.	1996 – 1999
Research Associate: School of Computing Science, Simon Fraser University Visualising Network Theory, Algorithms Laboratory	1992 – 1996 (part time)
Computer Consultant: Interactive Video Disc Project KYAC (Knowledge for Youths About Careers), Surrey, BC developed an interactive career choice program for teenagers.	May 1991 – Dec. 1991

Software Designer: MPR Teltech Ltd., Burnaby, BC Created cohesive user interface, 'Customer Response Kit', that united three expert systems	Sept. 1990 – Dec. 1990
Programmer: ALI: Advanced Light Imaging Technologies, Burnaby, B.C. Created visual diagnostic program used to test hardware	Sept. 1989 – Dec. 1989
Research Assistant: Dr. M. Benston. Simon Fraser University, BC Studied gender issues in math and computing education	Sept. 1987 - Apr. 1988

Arts Experience

Computer Visualisation Consultant BRAUNARTS Project: Antarctic Waves: developed with BRAUNARTS and the British Antarctic Survey	2002
Artist in Residence GreenHouse Arts Retreat, Christina Lake, BC	1997
Instructor: Harbourfront Arts Center, Toronto, Ont. Glass Blowing	1974-79
Artist in Residence Harbourfront Arts Centre, Toronto, Ont. Glass Blowing	1975-79
Artist in the Schools Ontario Arts Council, Don Mills Junior High and Subway Academy	1977-78
Teacher: Toronto Board of Education, Toronto, Ont. Grade 13, Studio Art	
Instructor: Potters Studio: Toronto, Ont. Kiln Design and Glaze Chemistry	1977
Teacher: North York Board of Education, Toronto, Ont. Fine Arts: Grades 7, 8 and 9	1975-76
Artist in Residence Lippincot Couch House Studio, Toronto, Ont.	1974-79
Artist in Residence World Crafts Conference, Ontario Science Centre, Toronto, ON	1974

TEACHING

Course Design

Computer Science and Creative Practice, a techno-innovation program. Based on the success of the Visual Representation Arts/Science collaboration course (see below), I have been leading the development of plans to create a new computer science and creative practice interdisciplinary program that bridges computer science and arts, fosters innovation and will attract top quality students. The concept is to create a semi-residential program in collaboration with the Banff Centre for the Arts; Banff New Media Institute (BNMI), Alberta College of Art and Design; Media Arts, Design and Technology (MAD-T) and the University of Calgary Arts programs such as Music, Drama, Fine Arts, Creative Writing, Visual culture, etc. The structure would take advantage of University of Calgary's unique 'block week' format. Each term would start with a residential block week seminar held at BMNI and would then proceed with classes chosen to balance a computer science core with courses in creative arts and humanities. We are currently running a very successful full year pilot class.

Visual Representation; an Arts and Science Collaboration. The graphics, gaming and entertainment industries have been saying that their products involve collaborative work and they need computer scientists who can work with artists and artists who can work with computer scientists. I designed and taught a cross-disciplinary course with A. Dunning, Head of Alberta College of Art and Design's Media Arts and Digital Technologies Programme. This course explores the potential for collaborative research between artists and scientists in an interdisciplinary environment. Students share the facilities of both institutions and develop initial project goals and understandings in an intense workshop held at the Banff Centre. This is the first time that such a course has taken place and marks an ongoing commitment to exploring the research potential of interdisciplinary collaborative space through innovative programming and partnership.

Information Visualization. This course was an entirely new course on an entirely new subject for the University of Calgary. In fact, not many Computing Science departments were offering courses in Information Visualization, notable exceptions being MIT, CMU and Stanford. The results have been very rewarding. I have enjoyed teaching it and have had very positive feedback from the students. Also, students have almost uniformly exceeded expectations. Nearly all projects have contained the basis for publishable work.

Interaction Design. I worked with Saul Greenberg on creating a fourth year course on Human Computer Interaction with a considerably novel focus. This course is being taught on a student inquiry led basis, similar to many design studio courses. The Design Studio concept is an entirely appropriate pedagogy, for this course concerns the development of the student's interface design skills. This represents a considerable shift from conventional computing science teaching practices. While from my fine arts teaching experience I have taught many design studio courses, finding the right blend to teach interaction design as computer science has taken considerable thought and discussion. Saul Greenberg and I are taking this series of discussions around interaction design and design studio teaching and combining them with his knowledge about computer science instruction and input from other design experts to create a new computer studio design course. In Computer Science, this is a brand new and radically different course. Saul Greenberg has taught this course several times very successfully.

Design Methodologies for Computer Scientists. This new graduate course was developed with Brian Wyvill. The course had two parts: A series of seminars by selected computer science professors and design professionals. The seminars will look at design issues and methodologies selected from: prototyping, software tools, mathematical tools, design research, visualization, interaction design, representational design. Structuring and Escaping: Practical Techniques for Structured Creativity, taught by visiting Professor Kees van Overveld, from Eindhoven University of Technology (EUT).

Software Engineering for Mobile and Wireless Applications. This quarter course was developed and co-taught (1/3, 1/3, 1/3) with Frank Maurer and Abraham Fapojuwo. This course gave an overview on how to build software for wireless and mobile devices such as cell phones or Palm-based devices. The course discussed network protocols, usability of small devices as well as technologies for building wireless applications (WAP, J2ME). I developed and taught the third on usability for small devices.

Supervision

Supervisor

Name, Degree Program and Topic

Expected Completion

Post Doctoral Fellows

Dr. Tobias Isenberg
 Alberta Ingenuity Post-Doctoral Fellowship
 Research topic: Applying Non-Photorealistic Rendering to Information Visualization
 Sept. 2007

PhD Students

Torre Zuk
 Ph.D. Computing Science (NSERC Industrial)
 Research topic: Visualizing Uncertainty
 Aug. 2007

Mark Hancock
 Ph.D. Computing Science (NSERC, Alberta Ingenuity, iCore)
 Research topic: Exploring Issues in 3D Collaborative Tabletop Interfaces
 Aug. 2008

Charlotte Tang
 Ph.D. Computing Science (Alberta Ingenuity, iCore)
 Research topic: Asynchronous, Collocated Collaboration
 Apr. 2009

Petra Neumann
 Ph.D. Computing Science (Alberta Ingenuity, iCore)
 Research topic: Collaborative Information Visualization Interfaces
 Aug. 2009

Christopher Collins
 Ph.D. Computing Science, University of Toronto (NSERC)
 Research topic: Visualizing Linguistic Data
 Co-Supervisor (Supervisor G. Penn)
 Apr. 2009

Masters Students

Annie Tat
 MSc. Computing Science and Fine Arts
 Research topic: Visualizing Human Dialog
 Co-supervised with Paul Woodrow
 Apr. 2007

Jeroen Keijser
 MSc. Computing Science
 Research topic: Alternate control/display space mapping for 3D interaction
 Co-supervised with Ken Barker
 Jul. 2007

Eric Penner
 MSc. Computing Science (NSERC, iCore)
 Research topic: Interactive exploration of 3D visualization
 Dec. 2007

Uta Hinrichs
 MSc. Computing Science
 Research topic: Integrated input for tabletop displays
 Aug. 2008

Matthew Tobiasz Aug. 2008
 MSc. Computing Science
 Research topic: Information Visualization

Exchange students

Martin Schwarz June 2007
 Internship, Computing Science, University of Magdeburg
 Research topic: Interface for finger painting on tabletop displays

Supervisory Committees

Name, Degree Program and Topic	Expected Completion
Carman Zannier, Ph.D. Computing Science, Decision processes in agile programming	Aug.2008
Pauline Jepp, Ph.D. Computing Science, NPR for Implicit Surfaces	Dec. 2006
John Broz, Ph.D. Computing Science, Alternate Perspective Framework	Apr. 2009

Examiner

Name, Degree Program and Topic	Awarded
Lawrence Liu, MSc., Computing Science, Supervisor: Frank Maurer An Environment for Collaborative Agile Planning	Dec. 2005
Uta Hinrichs, Diplom thesis, University of Magdeburg, Supervisor: T. Strothotte Using Interface Currents: Evaluating a Fluid Interface for Tabletop Collaboration	Sept. 2005
Michael Boyle, Ph.D., Computing Science, Supervisor: S. Greenberg Mitigating privacy issues in always on video	March 2005
Petra Neumann, Diplom thesis, University of Magdeburg, Supervisor: T. Strothotte ArcTrees: Representing additional relations with hierarchical structure	Sept. 2004
Shui Chun Charlotte Tang, MSc. Computing Science, Supervisor: S. Greenberg Capturing and Visualizing Histories of Multitmedia-based Casual Interactions	Dec. 2003
Carman Neustaedter, MSc. Computing Science, Supervisor: S. Greenberg Balancing Privacy and Awareness in Home Media Spaces	May 2003
Mark Mathews, MSc. Computing Science Surface curvature in flower petals resulting from growth hormones	Dec. 2002
Kevin Baker, MSc. Computing Science, Supervisor: S. Greenberg Research topic: Heuristic Evaluation of Groupware	May 2002
Mai Nur, MSc. Computing Science, Supervisor: B. Wyvill Animating Implicit Surfaces	March 2002
James Tam, MSc. Computing Science, Supervisor: S. Greenberg Change Awareness in Software Engineering	Feb. 2002

Shaun Kaasten, MSc. Computing Science, Supervisor: S. Greenberg
Improving BackButton Response

April 2004

Previous Supervision

Previous Ph.D. Students

Name, Research Topic and Current Position

Year

Stacey Scott

March 2005

Ph.D. Computing Science (NSERC, Alberta Ingenuity, iCore)

Research topic: Territoriality in Collaborative Tabletop Workspaces

Co-supervised with K. Inkpen, Dalhousie University

Current position: Postdoctoral Associate, Humans & Automation Laboratory

Massachusetts Institute of Technology (MIT) in Cambridge, MA, USA

Katherine Mason

May 2006

Ph.D. Computing Science (NSERC)

Research topic: A Framework for Element-Based Computer Graphics

Current position: Electronic Arts

Previous MSc. Students

Name, Research Topic and Current Position

Year

Elena Fanea

April 2006

MSc. Computing Science

Research topic: EdgeLens: Interacting with large graphs

Current position: Researcher, Sun Center of Excellence for Visual Genomics

Nelson Wong

April 2005

MSc. Computing Science

Research topic: EdgeLens: Interacting with large graphs

Current position: Ph.D. student at University of Saskatchewan

Russell Kruger

July 2004

MSc. Computing Science (NSERC PGSA, , Alberta Ingenuity, iCore)

Research topic: Interacting with information on horizontal displays

Currently position: studying intellectual property law

Charles Baker,

April 2003

MSc. Computer Science, Topic: Visualizing Genetic Regulation

Current position: Manager of Information Technology

Southern Alberta Mass Spectrometry Centre

Previous Under-graduates, Research Assistants and Exchange Students

Name, Research Topic and Current Position

Year

Andrew Seniuk, Undergraduate Summer NSERC student

2006

Research topic: visualizing software program structure

Current position: starting MSc, Queens University in Sep. 2007

Simon Nix

2006

Research topic: Lenses as force field interaction for tabletops Current position: Electronic Arts	
Lothar Schlesier, Diplom, Computing Science, University of Magdeburg Research topic: Applying Information Visualization to Decision Support Tools for Mountain Pine Beetle Landscape Management	
Andre M, MSc. Computing Science, University of Magdeburg Research topic: Buffer-Based Framework for High Resolution Displays	2006
Eric Penner, Undergraduate Summer NSERC student Research topic: Interactive graphics for large displays Current position: MSc. University of Calgary	2004
Anand Agrawala, Undergraduate research project, Computing Science Research topic: 3D Input for large screens Current position: MSc. University of Toronto	2004
Matthew Tobiasz, Undergraduate research project, Computing Science Research topic: Visualizing flow-routing algorithms Current position: MSc. University of Calgary – starting Sept. 2006	2004
Erin Wallace, Undergraduate Thesis, Computing Science Research topic: Casual Organization Techniques Current position: Human Computer Interaction R&D, SMART Technologies Inc.	2003
Annie Tat, under-graduate research project: Computer Science, Research topic: Visualizing Human Dialog Current position: MSc. student, University of Calgary	2002
R. Kruger, under-graduate research project: Computer Science, Research topic: Tabletop Displays Current position: studying Law	2002
Rong Xing, under-graduate research project: Computer Science, Research topic: Edge Lens Software Developer: Terradox Inc.	2001
Uta Hinrichs, Exchange Student, University of Otto von Guerike, Magdeburg Research topic: Using Interface Currents to share information Current position: Diplom student, University of Otto von Guerike, Magedeburg	2004/05
Thomas Heine, Exchange Student, University of Otto von Guerike, Magdeburg Research topic: Magnification Lens for 3D models Current position: Diplom student, University of Otto von Guerike, Magedeburg	2003/04
Henry Sonnet, PhD research exchange student Research topic: Expanding Annotations with a 3D Explosion Probe Current position: PhD, Computing Science, at University of Otto von Guerike, Magedeburg, Supervisor T. Strothotte	2003
Adreas Oppermann, Exchange Student, University of Otto von Guerike, Magdeburg Research exchange student Topic: Virtual wax resist interface for virtual batik Current position: Diplom student, University of Otto von Guerike, Magedeburg	2003
Lothar Schlesier, Exchange Student, University of Otto von Guerike, Magdeburg Topic: Alternate forms of perspective Current position: Diplom student, University of Otto von Guerike, Magedeburg	2003
Petra Neumann, Exchange Student, University of Otto von Guerike, Magdeburg	2002/03

Topic: Discrete uses of Elastic Presentation Current position: Ph.D. Student, University of Calgary under my supervision Julia Schliebenow, Exchange Student, University of Otto von Guericke, Magdeburg	2002/03
Topic: Probe for 3D data exploration Current position: Diplom student, University of Otto von Guericke, Magdeburg Ryan Schmidt	2004/05
Research Assistant: Assembling large displays Current position: MSc. Student, University of Calgary, supervisor Dr. B. Wyvill Shannon Goodman	2001
Research Assistant: Human Computer Interaction Studies Current position: HCI Research and Development, SMART Technologies Inc. Cathy Montagnese	2000/01
Research Associate: Elastic Presentation Libraries Current position: Research and Development, Idelix Software Inc. Katherine Mason	Summer '99
Research Assistant: SEED (Simulating Exploring Ecosystem Dynamics) Project Current position: Ph.D. Student, University of Calgary under my supervision Mark Tigges	Summer '98 '99
Research Assistant: SEED (Simulating Exploring Ecosystem Dynamics) Project Current position: Manager: Research and Development, Idelix Software Inc, Dave Cowperthwaite	1997-1999
Research Assistant: SEED (Simulating Exploring Ecosystem Dynamics) Project Current position: Research Scientist, Intel Inc Dan Kenneth	Spring '98

Previous Supervisory Committees

Name, Degree Program and Topic	Awarded
Carman Neustaedter, Ph.D. Computing Science, Research topic: Calendar for home activities	Jan. 2007
Callum Galbraith Ph.D. Computing Science Research topic: Modelling Natural Phenomena	Sept. 2005
Michael Boyle Ph.D., Computing Science Research topic: Mitigating privacy issues in always on video	Mar. 2005
Stewart Morgan MSc. Environmental Design Research topic: Augmented reality	June 2002
Oliver Kuederle MSc. Computing Science, SFU Research topic: Comparing Detail-in-context and thumbnails	Aug. 2000

Technology Transfer

Elastic Presentation Framework. When IDELIX Software Inc decided to create presentation tools based on my Ph.D. research, they grew rapidly from no paid employees in 1999 to approximately twenty-five paid employees in 2002. Through Idelix, GeoConnections Canada and BOEING Autometric are incorporating EPF-based concepts into their software. A BOEING customer, Atlantic Air Survey Ltd., has announced that they have gained twenty-percent productivity with technology developed from Elastic Presentation. In January 2003, IDELIX won the "Imaging Solution of the Year" from Advanced Imaging Magazine. This award recognized their detail-in-context technology, based on my research, as practical and forward-looking.

Antarctic Waves. I consulted with Braunarts and the British Antarctic Survey to create Antarctic Waves. This project uses visuals to integrate scientific results with Antarctic sounds to create a tool to inspire musical composition. Antarctic Waves won a British Academy of Film and Television Arts, **BAFTA, Interactive Entertainment Award**, in the Offline Learning category. The criteria for this award is *the most effective use of offline interactive media for education*. (British equivalent in Canada to GENIE Award, in USA to an Emmy (television) or an Oscar (film))

CodeZebra. This science/arts collaboration led by S. Diamond looks at creating an artistic chat environment. It has received considerable interest and support both nationally and internationally. I have contributed to the visualization aspects, taking part in CodeZebra workshops in San Francisco, London, and Rotterdam and was part of a presentation at the San Francisco Museum of Modern Art.

The SEED (Simulating and Exploring Ecosystem Dynamics) Project. The SEED Project is composed of the simulation engine, SELES (Spatially Explicit Landscape Event Simulator), and the visualization environment, Tardis. The SEED project was funded by FRBC (Forest Renewal British Columbia). Publication and dissemination of results beyond the boundaries of BC was not encouraged. As a result, while there are three prize winning posters presented locally in BC [57, 58, 59] there have been comparatively few publications [17, 22]. Instead the results were disseminated directly through outreach to government agencies and companies. This includes

- government agencies including the BC Ministry of Forests (head office, or forest regions and districts), the BC Ministry of Environment, the Canadian Forest Service and the model forest network,
- companies such as MacMillan Bloedel, and
- environmental non-governmental organizations including the Vancouver Island Marmot Recovery Team.

A SEED project colleague, Dr. A. Fall established Gowlland Technologies to continue this research direction and outreach. His services are much in demand. I am continuing this collaboration.

RESEARCH GRANTS**In Submission**

Name(s)	Title	Total Amount	Year(s)
M.S.T. Carpendale	Interactive Information Visualization NSERC Discovery Grant	\$355,000 (\$71,000/yr)	2007-11
S. Greenberg M.S.T. Carpendale	NSERC/iCORE/SMART Technologies Industrial Research Joint Chair in Interactive Technologies granting agency: NSERC	\$500,000 (\$100,000/yr) (50%)	2007-11

Currently held

Name(s)	Title	Total Amount	Year(s)
M.S.T. Carpendale, S. Greenberg	iCORE/SMART Technologies Industrial Research Joint Chair in Interactive Technologies Industrial grant : SMART Technologies Inc. granting agency: iCORE	\$1,000,000 (\$200,000/yr) (50%)	2007-11
Ron Baeker, PI, S. Carpendale plus 12 others	The Network for Effective Collaboration Technologies through Advanced Research (NECTAR) granting agency: NSERC	\$5,500,000 (6%)	2004-09
M.S.T. Carpendale	CFI Equipment grant: Innovations in Visualization granting agency: CFI	\$182,020	2004
M.S.T. Carpendale	CRC Chair in Information Visualization	\$500,000 (\$100,000/yr)	2004-09
M.S.T. Carpendale	Information Visualization Methodologies NSERC Discovery Grant	\$136,000 (\$34,000/yr)	2003-07

Previously Held

Name(s)	Title	Total Amount	Year(s)
M.S.T. Carpendale	Collaborative Visualization Laboratory CFI	\$293,000	2002-04

M.S.T. Carpendale	University Faculty Award (renewal) NSERC	\$80,000 (\$40,000/yr)	2003-05
B. Wyvill, PI, M.S.T. Carpendale and several others	3D Web Canadian Heritage New Media Research	\$700,000/yr (5%)	2003-04
Borwein, PI, plus 52 others	15,000,000 WestGrid CFI/ASRIP/Industry- equipment access only)	\$15,000,000 (equipment access only)	2003
M.S.T. Carpendale	Investigating Elastic Presentation Intel Corporation	\$96,135 \$69,178 \$71,536	2000-01 2001-02 2002-03
M.S.T. Carpendale	Investigating Elastic Presentation Intel Corporation: Equipment grant	\$18,000 \$9,920	2000-01 2002-02
M.S.T. Carpendale	MAYA – 3D Software Alias Wavefront in kind software donation	\$270,000 \$60,000 \$40,000	2001 2002 2003
M.S.T. Carpendale	Large Displays for Visualization Smarter Kids Foundation (purchase large displays)	\$141,650	2003
M.S.T. Carpendale	Information Visualization Methodologies NSERC Operating Grant	\$60,000 (\$20,000/yr)	2000-03
M.S.T. Carpendale	University Faculty Award NSERC	\$120,000 (\$40,000/yr)	2000-03
L. Katz, M.S.T. Carpendale and 6 others	Chair Recruitment Grant ICORE	\$10,000	2001
M.S.T. Carpendale	REE: Start-up Equipment grant University of Calgary	\$70,000	1999
F. D. Fracchia, M.S.T. Carpendale and 4 others	Simulating and Visualising Forest Ecosystem Dynamics FRBC – Forest Renewal BC	\$499,200	1996-99
F. D. Fracchia, M.S.T. Carpendale D. Cowperthwaite	Accessing Three-Dimensional Representations Intel Corporation: Equipment and travel grant	\$40,000	1998
F. D. Fracchia, M.S.T. Carpendale D. Cowperthwaite	Equipment grant Intel Corporation: Equipment and travel grant	\$20,000	1998

PROFESSIONAL ACTIVITIES

Honours and Awards

A Best Paper award: IEEE Conference on Information Visualisation	2002
Best Ph.D., 1998/1999 School of Computing Science, Simon Fraser University (field of nine)	1998/1999
CSS Excellent Student Poster Award SEED: Simulating & Exploring Ecosystem Dynamics, ASI Exchange M.S.T. Carpendale, D. Cowperthwaite, A. Fall,	1999
ASI Best Student Paper Award and CSS Best Student Poster Award SEED: Simulating & Exploring Ecosystem Dynamics, ASI Exchange M.S.T. Carpendale, D. Cowperthwaite, A. Fall,	1998
ASI Best Student Paper Award and CSS Best Student Poster Award SEED: Simulating & Exploring Ecosystem Dynamics, ASI Exchange D. Cowperthwaite, M.S.T. Carpendale, A. Fall,	1997
NSERC, Postgraduate Scholarship B	1994 – 96
Simon Fraser University Graduate Fellowship	1996
NSERC, Postgraduate Scholarship A	1992 – 94
Simon Fraser University Special Graduate Research Fellowship	1992
Simon Fraser University Open Scholarship	1988 – 91
Simon Fraser University Alumni Scholarship	1990

Positions in professional societies

General Co-Chair, Computational Aesthetics (EuroGraphics Workshop Series)	2007
Panels Co-Chair, IEEE Information Visualization and IEEE Visualization	2007
Videos Chair, ACM Conference on Computer Supported Cooperative Work CSCW'02	2006
Videos Chair, IEEE Information Visualization	2006
Posters and Videos Co-Chair, IEEE Information Visualization	2005, 06
Publications Chair, IEEE Information Visualization	2003
Program Committee, IEEE Information Visualization	2001-07
Program Committee, Pacific Graphics	2003
Program Committee, I-KNOW'03 Workshop on Knowledge and Information Visualization, KIV2003	2003

Program Committee, Graphics Interface	2000–06
Local Organizer, Artificial Intelligence/Graphics Interface/Vision Interface	2002
Student Volunteer Coordinator, Graphics Interface	2002
Organizing Committee, Workshop: Co-located Tabletop Collaboration Held at the ACM Conference on Computer Supported Cooperative Work CSCW'02	2002
Organizing Committee, Bridges II	2002
Organizing Committee, Workshop: Interactive Walls and Tables Held at the ACM Conference on Ubiquitous Computing, UbiComp'02	2002
Member Association for Computing Machinery	1995 – ...
Member IEEE	1999 – 01
Co-ordinator Support groups: Women's Centre, Nelson, BC	1983 – 86
Co-ordinator Peace in the Family Festival, Nelson, BC	1984
Coordinator/Treasurer, Women in the Arts Festival, Vancouver, BC	1981 – 82
Member, Board of Directors, Women in Focus, Vancouver, BC	1978 – 82
Founding member, Harbourfront Arts Center, Toronto, ON	1976 – 79
Member, Board of Directors, Mariposa Folk Festival, Toronto, ON	1977 – 79
Co-ordinator Crafts: Mariposa Folk Festival, Toronto, ON	1975 – 79

Reviewer

Computer Supported Cooperative Work (CSCW)	2006
Transaction on Human Computer Interaction	2005-06
EuroGraphics	2004-05
NSERC	2000-06
Canada Research Chairs	2004-05
ACM CHI (Computer-Human Interaction)	1998 – 06
Transactions on Visualization and Computer Graphics	2002 – 06
Journal of Information Visualization	2002 – 05
Information Design Journal	2001 – 02
SIGGRAPH	2001
Graphics Interface	1999 – 06
ACM Symposium on User Interface Software and Technology (UIST)	1996, 2000 – 06
IEEE Information Visualization	1996, 98, 2001 - 06
IEEE Visualization	1994, 03, 04
Pacific Graphics	2003
ACM Journal of Human Computer Interaction	2003

Journal of Database Management	2003
IEEE Computer Graphics and Applications	1999, 2003-06

University Committees

University of Calgary

Member: Hiring Committee; CRC Creative Practice	2006-07
Member: Hiring Committee; Digital Arts	2006
Member: Review Committee; Alberta Ingenuity Studentships	2005
Member: Steering Committee, Ward of the 21 st Century	2004-07
Member: Under-graduate Affairs Committee	2004-07
Member: Conjoint Faculties Research Ethics Board	2001-06
Member: Departmental Annual Assessment Committee	2003
Faculty of Science Representative to the Faculty of Fine Arts Council	2002/03
Graduate Affairs Committee, Department of Computer Science	2000-02
TUCFA Department of Computer Science Representative	2000
Member: Dean's Women in Science Advisory Group	2000

Simon Fraser University

Graduate Program Representative, School of Computing Science, to the Graduate Student Association	1998-99
Graduate Student Harassment Officer, School of Computing Science	199 -99
Women's Representative, Computing Science Graduate Student Association	1993-96
Graduate Liaison Committee, School of Computing Science	1994-96
Treasurer, Computing Science Graduate Student Association	1995

PUBLICATIONS

Refereed Journal Papers

1. S.D. Scott, M.S.T. Carpendale. Guest Editor's Introduction: Interacting with Digital Tables. *IEEE Computer Graphics & Applications Special Issue Interacting with Digital Tabletops*, 26(5), p 24-27, 2006
2. S.D. Scott, M.S.T. Carpendale, S. Habelski. Storage Bins: Mobile Storage for Collaborative Tabletop Displays. *IEEE Computer Graphics and Applications: Special Issue on Large Displays*, 25(4), pages 58-65, 2005.
3. R. Kruger, M.S.T. Carpendale, S.D. Scott, S. Greenberg. Orientation and Collaboration on Tables: Comprehension, Coordination and Communication. *Journal of Computer Supported Cooperative Work, Springer*, vol. 13(5-6), pages 501-537, 2004
4. C.A.H. Baker, M.S.T. Carpendale, P. Pruisiewicz, M. Surette. GeneVis: Simulation and visualization of genetic networks. *Journal of Information Visualization, Special Issue on Coordinated Multiple Views, guest editor Jonathan Roberts, Palgrave-Macmillan*, vol. 2(4), pages 201-217, 2003.
5. M.S.T. Carpendale. Elastic Presentation Space. *Information Design Journal, John Benjamin's Publishing Co.*, vol. 10(1), pages 58-69, 2001.
6. J. van der Heyden, K. Inkpen, S. Atkins and M.S.T. Carpendale. Exploring Presentation Methods for Tomographic Medical Image Viewing. *Journal of Artificial Intelligence in Medicine, Special Issue, Information Visualization in Medicine*, vol. 22, pages 89-109, 2001.
7. M.S.T. Carpendale, D. J. Cowperthwaite, and F. D. Fracchia. Extending Distortion Viewing Techniques from 2D to 3D Data. *IEEE Computer Graphics and Applications, Special Issue on Information Visualization, IEEE Computer Society Press*, vol. 17(4), pages 42-51, July 1997.

Book Chapters

8. M.S.T. Carpendale. Viewing Transformations: Perspective, Distortion and Deformation. In *SIGGRAPH'03 Course Notes; Theory and Practice of Non-Photorealistic Graphics: Algorithms, Methods, and Production Systems Presentation. Editor Mario Costa-Sousa. ACM SIGGRAPH 2003*.
9. M.S.T. Carpendale, D. J. Cowperthwaite, and F. D. Fracchia. Extending Distortion Viewing Techniques from 2D to 3D Data. *Readings in Information Visualization: Using Vision to Think. edited by: S. Card, J. Mackinley, B. Shneiderman. Morgan Kaufmann Publishers 1998. (as 7)*

Panels (invited and refereed)

10. S. Diamond, M.S.T. Carpendale, V. Interrante, J. Portway S. Xin-Wei. Panel: Visualization, Semantics and Aesthetics. *SIGGRAPH 2001*. Los Angeles, USA, Aug. 2001. (repeated at: IEEE Information Visualization IV'02 London England 2002).

Refereed Conference Papers

11. Neumann, P., Tat, A., Zuk, T., Carpendale, S. KeyStrokes: Personalizing Typed Text with Visualization. In press: *Eurographics/IEEE VGTC Symposium on Visualization 2007*.
12. Collins, C., Carpendale, S., Penn, G. Visualization of Uncertainty in Lattices to Support Decision-Making. In press: *Eurographics/IEEE VGTC Symposium on Visualization 2007*.
13. Hancock, M.S., Carpendale, S., Cockburn, A. Shallow-Depth 3D Interaction: Design and Evaluation of One-, Two- and Three-Touch Techniques. In press: *Conf. Human-Computer-Interaction, CHI'06*.
14. Tang, C., Carpendale, S. An Observational Study on Information Flow during Nurses' Shift Work. In press: *Conf. on Human-Computer-Interaction, CHI'06*.
15. Keijser J., Carpendale, S., Hancock, M.S., Isenberg, T. (2007). Exploring 3D Interaction in Alternate Control-Display Space Mappings. In press: *Proc. IEEE Symposium on 3D User Interfaces, 3DUI'07*
16. Wong, N., Carpendale, S. (2007) (in press) Supporting Interactive Graph Exploration Using Edge Plucking. *Proc. Conference on Visualization and Data Analysis, SPIE-IS&T Electronic Imaging*.
17. L. Schlesier, J. Hughes, A. Fall, S. Carpendale. The LuMPB Key: A Multiple View Interface to Explore High Dimensional Mountain Pine Beetle Simulation Data. In *the Proceedings of the 4th International Conference on Coordinated and Multiple Views in Exploratory Visualization, CMV 2006, co-located with the International Conference on Information Visualization, London, England. IEEE Computer Society Press, July 2006*.
18. T. Isenberg, P. Neumann, S. Carpendale, M. Costa-Sousa, J. Jorge. Non-Photorealistic Rendering in Context: An Observational Study. *Proceedings of the Symposium on Non-Photorealistic Animation and Rendering, NPAR'06, ACM Press, France, June 2006*.
19. U. Hinrichs, S. Carpendale, and S.D. Scott. Evaluating the Effects of Fluid Interface Components on Tabletop Collaborations. In *the Proceedings of Advanced Visual Interfaces, AVI'06, pages 27–34, Venezia, Italy. ACM Press, May 23-26 2006*.
20. M.S. Hancock, J.D. Miller, S. Greenberg, S. Carpendale. Exploring Visual Feedback of Change Conflict in a Distributed 3D Environment. In *the Proceedings of Advanced Visual Interfaces (AVI'06), pages 209–218, May 23-26, Venezia, Italy. ACM Press, May 23-26 2006*.
21. T. Zuk, L. Schlesier, P. Neumann, M.S. Hancock, S. Carpendale. Heuristics for Information Visualization Evaluation. *Workshop Proceedings of BELIV'06 – Beyond Time and Errors: Novel Evaluation Methods for Information Visualization, ACM Conference on Advanced Visual Interfaces AVI'06, pages 55–60, ACM Press, 2006*.
22. P. Neumann, S. Carpendale, A. Agarawala. PhylloTrees: Phyllotactic Patterns for Tree Layout. In *Proceedings of Eurographics / IEEE VGTC Symposium on Visualization, EuroVis'06, Eurographics Workshop Series, pages 59–66, Aire-la-Ville, Lisbon, Portugal, May 8-10, 2006*.
23. A. Tang, M. Tory, B. Po, P. Neumann, S. Carpendale. Group Cohesion on Collaborative Tabletop Displays. In *Proceedings of the ACM Conference on Human-Computer-Interaction, CHI'06, pages 1181-1290, Montreal, QC, Canada, April, 2006*.

24. T. Isenberg, A. Miede, S. Carpendale. A Buffer Framework for Supporting Responsive Interaction in Information Visualization Interfaces. In *Proceedings of the Fourth International Conference on Creating, Connecting and Collaborating through Computing, C⁵ 2006*, Berkeley, California, USA, IEEE Computer Society Press, January 26–27, 2006.
25. T. Zuk, M.S.T. Carpendale. Theoretical analysis of uncertainty visualizations. In *SPIE: Conference on Visualization and Data Analysis, 2006*, edited by Robert F. Erbacher, Jonathan C. Roberts, Matti T. Gröhn, Katy Börner, *Proc. of SPIE-IS&T Electronic Imaging*, SPIE Vol. 6060, 606007, January 2006.
26. A. Tat, M.S.T. Carpendale. CrystalChat: Visualizing Personal Chat History. In *Persistent Conversations, at the Hawaii International Conference on System Sciences, HICSS-39*, January 2006.
27. M.S. Hancock, F.D. Vernier, D. Wigdor, M.S.T. Carpendale, C. Shen. Rotation and Translation Mechanisms for Tabletop Interaction. In *IEEE International Workshop on Horizontal Interactive Human-Computer Systems, TableTop06*, pages 79–86, Adelaide, Australia, 05-07 January 2006.
28. T. Zuk, M.S.T. Carpendale, W.D. Glanzman. Visualizing Temporal Uncertainty in 3D Virtual Reconstructions. In *the 6th International Symposium on Virtual Reality, Archaeology and Cultural Heritage, VAST'05, cooperation with ACM and Eurographics*, pages 99-106, November 2005.
29. E. Fanea, S. Carpendale, and T. Isenberg. An Interactive 3D Integration of Parallel Coordinates and Star Glyphs. In *Proceedings of the IEEE Symposium on Information Visualization (InfoVis'05)*, Minneapolis, Minnesota, USA, pages 149-156, October 23-25, 2005.
30. H. Sonnet, M.S.T. Carpendale and T. Strothotte. Integration of 3D Data and Text: The Effects of Text Positioning, Connectivity, and Visual Hints on Comprehension. In *INTERACT 2005, International Conference on Human-Computer Interaction*. Rome, Italy. pages 615-628, September 12-16, 2005.
31. U. Hinrichs, S. Carpendale, S.D. Scott, E. Pattison. Interface Currents: Supporting Fluent Collaboration on Tabletop Displays. In *Proceedings of Smart Graphics. Lecture Notes in Computer Science*. Springer, 3638, pages 185-197, August 2005.
32. K. Mason, J. Denzinger, M.S.T. Carpendale. Negotiating Gestalt: Artistic Expression by Coalition Formation Between Agents. In *Proceedings of Smart Graphics. Lecture Notes in Computer Science*. Springer, 3638, pages 103-114, August 2005.
33. P. Neumann, S. Schlechtweg and M.S.T. Carpendale. ArcTrees: Visualizing Relations in Hierarchical Data. *Proceedings of Eurographics / IEEE VGTC Symposium on Visualization, EuroVis 2005*, pages 53-60, Leeds, England, UK, Eurographics Series, June 1-3, 2005.
34. T. Isenberg, M.S.T. Carpendale, M. Costa-Sousa. Breaking the Pixel Barrier. In *Proceedings of the First Eurographics Workshop on Computational Aesthetics in Graphics, Visualization and Imaging 2005*, Girona, Spain, May 18-20, 2005.
35. R. Kruger, M.S.T. Carpendale, S.D. Scott and A. Tang. Fluid Integration of Rotation and Translation. In *Proceedings of the ACM Conference on Human-Computer-Interaction, CHI'05*, pages 601-610, Portland, OR, USA, April, 3-7, 2005.

36. T. Zuk and M.S.T. Carpendale. Interactive simulation and visualization using the GPU. In *SPIE: conference on Visualization and Data Analysis*, pages 262-273, 2005.
37. S.D. Scott, M.S.T. Carpendale, and K.M. Inkpen. Territoriality in Collaborative Tabletop Workspaces. In *Proceedings of the ACM Conference on Computer-Supported Cooperative Work (CSCW)'04, CHI Letters vol. 6(3)*, ACM Press. pages 294-303. Chicago, IL, USA., November 6-10, 2004.
38. M.S.T. Carpendale, J. Light and E. Pattison. Achieving Higher Magnification in Context. In *Proceedings of the 17th annual ACM symposium on User interface software and technology UIST'04, CHI Letters vol.6(2)*, ACM Press, pages 71-80, Santa Fe, New Mexico, USA., October, 2004.
39. H. Sonnet, M.S.T. Carpendale and T. Strothotte. Integrating Expanding Annotations with a 3D Explosion Probe. In *ACM Advanced Visual Interfaces*, ACM Press. pages 61-70. Gallipoli, Italy. May 2004.
40. B. Wyvill, K. van Overveld and M.S.T. Carpendale. Rendering Cracks in Batik. In *Proceedings of the 3rd international symposium on Non-photorealistic animation and rendering, NPAR'04*, pages 61-67, Annecy, France. June 2004.
41. R. Kruger, M.S.T. Carpendale, S. Scott, S. Greenberg. How People Use Orientation on Tables: Comprehension, Coordination and Communication. In: *Group 2003, an ACM Conference on Computer Supported Cooperative Work*, pages 369-378, Chicago, USA. Nov. 2003.
42. N. Wong, M.S.T. Carpendale, S. Greenberg. EdgeLens: An Interactive Method for Managing Edge Congestion in Graphs. In *InfoVis'03: Proceedings of the IEEE Symposium on Information Visualization*. pages 51-58, USA., October 2003.
43. C.A.H. Baker, M.S.T. Carpendale, M. Surette, P. Prusinkiewicz. GeneVis: Visualization Tools for Genetic Regulatory Network Dynamics. *Proceedings of IEEE Conference on Visualization, VIS'02*. pages 243-250, Boston, Mass. USA. October, 2002.
44. A. Tat, M.S.T. Carpendale. Visualizing Human Dialog. *Proceedings of IEEE Conference on Information Visualization IV'02*, pages 16-24, London, UK. July 2002 (Won a Best Paper Award).
45. A. Duta, M.S.T. Carpendale, K. Barker. VICO: A Tool for Supporting Visual Comparisons of Different Pine-Beetle Management Approaches. *Proceedings of IEEE Conference on IEEE Information Visualization IV'02*, pages 234-242, London UK. July 2002.
46. A. Zanella, M.S.T. Carpendale, M. Rounding. Studying Comprehension Issues with Distortion. *Proceedings of ACM Nordi-CHI Conference on Human-Computer Interaction. Oct. 2002. Nordi-CHI'02*, pages 119-128, ACM Press. Aarhus, Denmark. Oct. 2002.
47. M.S.T. Carpendale and C. Montagnese. A Framework for Unifying Presentation Space. In *Proceedings of the 14th annual ACM symposium on User interface software and technology UIST'01, CHI Letters vol. 3(2)*, ACM Press, pages 61-70, Orlando, Florida, USA., November, 2001.
48. K. Mason and M.S.T. Carpendale. Artist-Driven Expressive Graphics. *Proceedings of Eurographics: Short Papers*, pages 87-96, Manchester UK. Sept. 2001.

49. O. Kuederle, K.M. Inkpen, S. Atkins and M.S.T. Carpendale. Interacting with Image Sequences: Detail-in-Context and Thumbnails. *Proceedings of Graphics Interface*, pages 111-118, Ottawa, ON, June 2001.
50. J. van der Heyden, K. Inkpen, S. Atkins and M.S.T. Carpendale. A User Centred Task Analysis of Interface Requirements for MRI Viewing. *Proceedings of Graphics Interface'99, GI'99*, pages 18-26, Kingston, ON, June 1999.
51. J. van der Heyden, S. Atkins, K. Inkpen and M.S.T. Carpendale. Visual Presentation of Magnetic Resonance Images. *Proceedings of SPIE International Symposium on Medical Imaging 1999*, 3658: pages 370-381, San Diego, CA, February 1999.
52. M.S.T. Carpendale, D. J. Cowperthwaite, M. Tigges, A. Fall and F. D. Fracchia. The Tardis: A Visual Exploration Environment for Landscape Dynamics. *Proceedings of SPIE Conference on Visual Data Exploration and Analysis VI*, vol. 3643, pages 110-119, Jan. 1999.
53. M. Lantin and M.S.T. Carpendale. Case Study: Supporting Detail in Context for the DNA Representation, HCurves. *VIS'98: Proceedings of the IEEE Conference on Visualization*, pages 443-446, IEEE Computer Society Press, 1998.
54. J. van der Heyden, M.S.T. Carpendale, K. Inkpen and S. Atkins. Case Study: Visual Presentation of Magnetic Resonance Images. *VIS'98: Proceedings of the IEEE Conference on Visualization*, pages 423-426, IEEE Computer Society Press, 1998.
55. M.S.T. Carpendale, D.J. Cowperthwaite, and F.D. Fracchia. Making Distortions Comprehensible, *IEEE Symposium on Visual Languages*, pages 36 - 45, IEEE Computer Society Press, 1997.
56. M.S.T. Carpendale, D.J. Cowperthwaite and F.D. Fracchia. Distortion Viewing Techniques for 3D Data. *INFO-VIS'96: Proceedings of the IEEE Conference on Information Visualization*, pages 46 - 53, IEEE Computer Society Press, 1996.
57. M.S.T. Carpendale, A. Fall, D.J. Cowperthwaite, J. Fall and F.D. Fracchia. Case Study: Visual Access for Landscape Event Based Temporal Data. *VIS'96: Proceedings of the IEEE Conference on Visualization*, pages 425 - 428, ACM Press, 1996.
58. M.S.T. Carpendale, D.J. Cowperthwaite and F.D. Fracchia. Three-Dimensional Pliable Surfaces: For Effective Presentation of Visual Information. *UIST'95, Proceedings of the ACM Symposium on User Interface Software and Technology*, pages 217 - 226, ACM Press, 1995.
59. M.S.T. Carpendale, D.J. Cowperthwaite, F.D. Fracchia, and T. Shermer. Graph Folding: Extending Detail and Context Viewing into a Tool for Subgraph Comparisons. *F. J. Brandenburg, editor, GD'95; Symposium on Graph Drawing, Lecture Notes in Computer Science 1027*, pages 127 - 139, Springer-Verlag, Berlin, 1995.

Refereed Short Papers

60. U. Hinrichs, M.S.T. Carpendale, and S.D. Scott. Interface Currents: Supporting Fluent Face-to-Face Collaboration. To appear: *Technical Sketch, Proceedings of SIGGRAPH '05 ACM SIGGRAPH*, ACM Press, Los Angeles, USA. Aug. 1-4, 2005.

61. M.S.T. Carpendale, and R. Xing. Examining Edge Congestion. *ACM CHI'01: Conference on Human Factors in Computing Systems, Conference Companion*, pages 115-116, ACM Press, Seattle, USA. April 2001.
62. M.S.T. Carpendale, D.J. Cowperthwaite, and F.D. Fracchia. Multi-scale Viewing. *Technical Sketch, Visual Proceedings of SIGGRAPH '96, ACM SIGGRAPH*, page 149, ACM Press, New Orleans, USA. Aug. 4-9, 1996.
63. D. Cowperthwaite, M.S.T. Carpendale, and F.D. Fracchia. Visual Access for 3D Data. *ACM CHI '96: Conference on Human Factors in Computing Systems, Short Paper, Conference Companion*, pages 175 - 176, ACM Press. Vancouver BC. 1996.

Refereed Posters, Videos and Demos

64. S. Carpendale, T. Isenberg, S.D. Scott, U. Hinrichs, A. Miede, R. Kruger, S. Habelski, K. Inkpen. Collaborative Interaction on Large Tabletop Displays. *Interactive Demo: ACM CSCW'06 Conference on Computer Supported Co-operative Work Conference Companion, extended abstracts*. 2006
65. Hinrichs, U., Carpendale, S., Scott, S.D. Interface Currents: Supporting fluid face-to-face collaboration. *Video: ACM CSCW'06 Conference on Computer Supported Co-operative Work Conference Companion, extended abstracts*. 2006.
66. M. Nunes, S. Greenberg, S. Carpendale, C. Gutwin. Demonstrating Timeline: Video Traces for Awareness. *Video: ACM CSCW'06 Conference on Computer Supported Co-operative Work Conference Companion, extended abstracts*. 2006.
67. Nunes, M., Greenberg, S., Carpendale, S. and Gutwin, C. Demonstrating Timeline: Video Traces for Awareness. *Interactive Demo: ACM CSCW'06 Conference on Computer Supported Co-operative Work Conference Companion, extended abstracts*. 2006.
68. P. Neumann, A. Tat, T. Zuk, S. Carpendale. Visualization of Typed Communication. *Interactive Demo: ACM CSCW'06 Conference on Computer Supported Co-operative Work Conference Companion, extended abstracts*. 2006
69. Seniuk, A. Carpendale, S. Visualizing Program Syntax to Support Agile Programming. *Interactive Demo: ACM CSCW'06 Conference on Computer Supported Co-operative Work Conference Companion, extended abstracts*. 2006.
70. Isenberg, T., Tobias Isenberg, Petra Neumann, Sheelagh Carpendale, Simon Nix, and Saul Greenberg. Interactive Annotations on Large, High-Resolution Information Displays. *Poster: IEEE Symposium on Information Visualization, InfoVis'06*, 2006.
71. Neumann, P., Tat, A., Zuk, T., Carpendale, S. Interactive Poster: Personalizing Typed Text Through Visualization. *Poster: IEEE Symposium on Information Visualization, InfoVis'06*, 2006.
72. Tat, A., Kruger, R., Carpendale, S., Dunning, A. Plant Post: Visualizing Temporal Aspects of Message Posting. *Poster: IEEE Symposium on Information Visualization, InfoVis'06*, 2006.
73. Seniuk, A. Carpendale, S. Visualizing Program Syntax to Support Agile Programming. *Poster: IEEE Symposium on Information Visualization, InfoVis'06*, 2006.

74. P. Neumann, T. Isenberg, and S. Carpendale. NPR Lenses: Local Effect Control for Non-Photorealistic Line Drawings. In *Doug DeCarlo and Lee Markosian, editors, Posters of the Fourth International Symposium on Non-Photorealistic Animation and Rendering, NPAR 2006*, Annecy, France, June 5–7, 2006.
75. E. Penner, R. Schmidt, S. Carpendale. A GPU Cluster without the Clutter: A Drop-in Scalable Programmable-Pipeline with Several GPUs and Only One PC. In the *ACM Conference on Interactive 3D Interface's Poster Compendium, I3D'06*, pages 17–18, March, 2006.
76. P. Neumann, S. Schlechtweg, S. Carpendale. Interactive Poster: ArcTrees --- Relations in Hierarchies. *IEEE Symposium on Information Visualization: Published in IEEE Information Visualization Symposium Compendium, InfoVis'05*, Minneapolis, Minnesota, USA, October 23-25, 2005
77. Tee, K., Carpendale, S. and Greenberg, S. Interactive Poster: Visualizing Online Interaction. *IEEE Symposium on Information Visualization: Published in IEEE Information Visualization Symposium Compendium, Infovis'2005*, Minneapolis, Minnesota, USA, October 23-25, 2005
78. N. Wong, S. Carpendale. Interactive Poster: Using Edge Plucking for Interactive Graph Exploration *IEEE Symposium on Information Visualization: Published in IEEE Information Visualization Symposium Compendium, Infovis'2005*, Minneapolis, Minnesota, USA, October 23-25, 2005
79. E. Fanea, S. Carpendale, T. Isenberg. An Interactive 3D Integration of Parallel Coordinates and Star Glyphs. (The Video). *Electronic Video DVD Proceedings of IEEE Symposium on Information Visualization, InfoVis'05*, IEEE Press. (companion to identically-named paper published in the same conference) 2005.
80. M.S.T. Carpendale, A. Agarawala (2004). PhylloTrees: Harnessing Nature's Phyllotactic Patterns for Tree Layout. To appear: Extended Abstracts of IEEE Symposium on Information Visualization (InfoVis), October 10-12, Austin, Texas, USA.
81. K. Mason, J. Denzinger, M.S.T Carpendale (2004). Negotiating Gestalt: Artistic Expression and Coalition Formation in Multi-agent Systems. Poster: In *the ACM International Joint conference on Autonomous Agents and Multi Agent Systems AAMAS'04*, pages 1350-1351, July 19-23, New York City, NY, USA.
82. Wong, N., Carpendale, S., Greenberg, S. (2003) EdgeLens: An Interactive Method for Managing Edge Congestion in Graphs (The Video). *Electronic Video DVD Proceedings of IEEE Symposium on Information Visualization, InfoVis'03*, IEEE Press. (companion to identically-named paper published in the same conference) 2003.
83. R. Kruger, M.S.T. Carpendale, S. Greenberg. Collaborating over Physical and Electronic Tables. *In Extended Abstracts of ACM CSCW'02 Conference on Computer Supported Co-operative Work*, pages 137-138. New Orleans USA. ACM Press Nov. 2002.
84. C. Neustaedler, S. Greenberg, M.S.T. Carpendale. IMVis: Instant Messenger Visualization. *Video, in ACM CSCW'02 Conference on Computer Supported Co-operative Work Conference Companion*, pages 221-222. New Orleans USA. ACM Press Nov. 2002.

85. C.A.H Baker, M.S.T. Carpendale, M. Surette. Using Visual Simulation to Observe Genetic Regulatory Networks. *Pacific Symposium on Biocomputing* 2002.
86. C.A.H Baker, M.S.T. Carpendale, M. Surette. GeneVis: Genetic Network Visualizer. *BioNorth* Ottawa ON. 2001
87. M. Tigges, M. S. T. Carpendale, B. Wyvill. Alternate Distance Metrics for Implicit Surface Modeling. *Graphics Interface, GI'99*, pages 25-26, Kingston, ON, June 1999.
88. M. S. T. Carpendale, D. Cowperthwaite, M.-A. D. Storey, F. D. Fracchia and A. Liestman. Distinct Aspects of the Distortion Viewing Paradigm. *CODATA Euro-American Workshop Visualization of Information and Data, Paris Workshop on Visualization of Information and Data, Poster Presentation*, June 24 - 25, 1997.

Other Refereed Publications

89. Tang, C. and Carpendale S. (2006). Healthcare Quality and Information Flow during Shift Change. *Workshop on Pervasive Healthcare, Ubicomp*, Sept. 2006 in Newport Beach, California.
90. Isenberg, T., Neumann, P., Carpendale, S., Costa Sousa, M., Jorge, J.A. Aesthetics of Hand-Drawn and Computer-Generated Illustrations. In *Dagstuhl Seminar 06221 on Computational Aesthetics in Graphics, Visualization and Imaging*. 2006.
91. A. Tat, S. Carpendale. Visualizing Digital Text Conversations. In *Karahalios, K. and Viegas, F. (Eds) ACM CHI 2006 Workshop on Social Visualization: Exploring Text, Audio, and Video Interactions*. April 22-27, 2006.
92. M. Nunes, S. Greenberg, S. Carpendale and C. Gutwin. Video traces. In *Karahalios, K. and Viegas, F. (Eds) ACM CHI 2006 Workshop on Social Visualization: Exploring Text, Audio, and Video Interactions*. April 22-27, 2006. Also published as Report 2006-809-02.
93. C. Tang, C. Experience Centered Observational Study in a Medical Setting. In *ACM CHI 2006 Workshop on Theory and Method for Experience Centered Design*. April 22-27, 2006.
94. R. Schmidt, E. Penner, M.S.T. Carpendale. Reconfigurable Displays. In *Ubiquitous Display Environments. Workshop: Ubiquitous Display Environments ACM Conference on Ubiquitous Computing, UBICOMP 2004*. Nottingham, United Kingdom. Sept. 7-10, 2004.
95. M.S.T. Carpendale. Elastic Presentation Space Libraries. *Workshop on Information Visualization Software Infrastructures; organizers K. Börner, J.-D. Fekete, at IEEE Conference on Visualization*. Austin Texas. Oct. 2004.
96. M.S.T. Carpendale. Are Concepts from Post-Normal Science Applicable to the Evaluation of Collocated Collaborative Processes? *Workshop: Methodologies for Evaluating Collaboration Behaviour in Co-Located Environments, ACM Conference on Computer Supported Cooperative Work 2004*. Organisers: K. Inkpen, R. Mandryk, J. M. DiMicco, S. Scott. Chicago, USA. Nov., 2004.
97. Scott, S., Grant, K., Carpendale, S., Inkpen, K., Mandryk, R., & Winograd, T. (2002). Co-located Tabletop Collaboration: Technologies and Directions. Workshop at CSCW2002 (In *Extended*

Abstracts of the ACM Conference on Computer-Supported Cooperative Work (CSCW)'02, p 21), Nov. 16-20, 2002, New Orleans, LA, USA.

98. Tandler, P., Magerkurth, C., Carpendale, S., Inkpen, K., & Scott, S. (2002). Collaboration with Interactive Walls and Tables Workshop at the *Conference on Ubiquitous Computing (UbiComp)'02*, Sept. 29-Oct 1, 2002, Göteborg, Sweden.
99. M. S. T. Carpendale, C.A.H. Baker. An Abstract Approach to Genetic Visualization. *Workshop: Visualization in Bioinformatics and Cheminformatics. IEEE Visualization*. Workshop Chairs: G. Grinstein, J. P. Lee. Boston Mass. Oct. 2002.
100. R. Kruger, M.S.T. Carpendale. Orientation and Gesture on Horizontal Displays. *Workshop: Collaboration with Interactive Walls and Tables, UBICOMP 2002*. Organisers: P. Tandler, C. Magerkurth, M.S.T. Carpendale, K. Inkpen. Goteborg, Sweden. Sept. 29 – Oct. 1, 2002.
101. M. S. T. Carpendale, M. Tigges, David J. Cowperthwaite and F. D. Fracchia. Bringing the Advantages of 3D Distortion Viewing into Focus. *INFO-VIS'98: Hot Topics, IEEE Conference on Information Visualisation*, pages 17-20, IEEE Computer Society Press, 1998.

Independent refereed papers produced by people under my supervision

102. Tang, C. Designing Technology to Support Information Flow for Asynchronous Co-located Medical Shift Work. *Doctoral Colloquium: ACM CSCW'06 Conference on Computer Supported Co-operative Work Conference Companion*. ACM Press, 2006
103. Collins, C. DocuBurst: Document Content Visualization Using Language Structure. *Poster: IEEE Symposium on Information Visualization, InfoVis'06*, 2006.
104. Tang, C. Experience Centered Observational Study in a Medical Setting. In *ACM CHI 2006 Workshop on Theory and Method for Experience Centered Design*. April 22-27, 2006.
105. Scott, S.D. (2003). Territory-Based Interaction Techniques for Tabletop Collaboration. *Doctoral Colloquium: Conference Supplement of Symposium on User Interface Software and Technologies, UIST'03*, p 17-20, 2003

Other Publications

106. Hancock, M., Carpendale S. Interaction in Shallow Depth 3D. *Poster: the Annual NSERC NECTAR Research Networks AGM, November 2006*
107. Hinrichs, U., Carpendale, S., Scott S.D. Interface Currents. *Poster: the Annual NSERC NECTAR Research Networks AGM, November 2006*
108. Tang, C., Carpendale, S. Observing Information Flow during Nurses's Shift Change. *Poster: the Annual NSERC NECTAR Research Networks AGM, November 2006*
109. Isenberg, T., Carpendale, S. Maintaining Interactive Rates on Large High Resolution Displays. *Poster: the Annual NSERC NECTAR Research Networks AGM, November 2006*
110. S.D. Scott, S. Carpendale. Investigating Tabletop Territoriality in Digital Tabletop Workspaces. *University of Calgary Technical Report. TR-2006-836-29*. 2006

111. M.S. Hancock, S. Carpendale. The Complexities of Computer-Supported Collaboration. *University of Calgary Technical Report. TR-2006-812-05.* 2006
112. M. Nunes, S. Greenberg, S. Carpendale and C. Gutwin. Video traces. *University of Calgary Technical Report. TR-2006-809-02.* 2006
113. T. Isenberg, A. Arennecke, M. Costa Sousa, and S. Carpendale. Beyond Pixels: Illustration with Vector Graphics. *Technical Report 2005-804-35. Department of Computer Science, University of Calgary, Canada, December 2005.*
114. T. Isenberg, P. Neumann, S. Carpendale, M. Costa Sousa, and J.A. Jorge. Non-Photorealistic Rendering in Context: An Observational Study. *Technical Report 2005-805-36. Department of Computer Science, University of Calgary, Canada, December 2005.*
115. R. Diaz-Marino, S. Carpendale, S. Greenberg. Lyric Text. *Video Report, Interactions Laboratory, Department of Computer Science, University of Calgary, Calgary, Alberta CANADA T2N 1N4.* Duration 3:42, May, 2005.
116. N. Wong and S. Carpendale. Supporting Interactive Graph Exploration with Edge Plucking. *Department of Computer Science, University of Calgary, Technical Report (2005-795-26)*
117. K. Elliot and S. Carpendale. Awareness and Coordination: A Calendar for Families. *Department of Computer Science, University of Calgary, Technical Report (2005-791-22)*
118. E. Fanea, S. Carpendale and T. Isenberg. An Interactive 3D Integration of Parallel Coordinates and Star Glyphs. *Department of Computer Science, University of Calgary, Technical Report (2005-782-13)*
119. E. Fanea and S. Carpendale. A Linguistic Formalism for Specifying Visual Representations. *Department of Computer Science, University of Calgary, Technical Report (2005-781-12)*
120. U. Hinrichs, S. Carpendale, S.D. Scott. Interface Currents: Supporting Co-Located Collaborative Work on Tabletop Displays. *Department of Computer Science, University of Calgary, Technical Report (2005-773-04)*
121. P. Neumann, T. Isenberg, S. Carpendale, and T. Strothotte. Expressive Distortion of Strokes and 3D Meshes. *Technical Report 2005-776-07, Department of Computer Science, University of Calgary, Canada, March 2005.*
122. U. Hinrichs, S. Carpendale, S.D. Scott. Interface Currents: Supporting Co-Located Collaborative Work on Tabletop Displays. *Technical Report 2005-773-04. Department of Computer Science, University of Calgary. Calgary, AB, Canada. , March 2005*
123. S. D. Scott, M.S.T. Carpendale, and S. Habelski. Storage Bins: Mobile Storage for Collaborative Tabletop Displays. *Department of Computer Science, University of Calgary, Technical Report 2004-767-32.*
124. R. Schmidt, M.S.T. Carpendale and E. Penner. MAD Boxes: A Plug-And-Play Tiled Display Wall. *Department of Computer Science, University of Calgary, Technical Report 2004-768-33.*

125. R. Kruger, M.S.T. Carpendale, A. Tang and S. D. Scott. Fluid Orientation on a Tabletop Display: Integrating Rotation and Translation. *Department of Computer Science, University of Calgary, Technical Report 2004-747-12*
126. S.D. Scott, M.S.T. Carpendale and K. Inkpen. Territoriality in Collaborative Tabletop Workspaces. *Department of Computer Science, University of Calgary, Technical Report 2004-743-08*
127. S.D. Scott, M.S.T. Carpendale and K. Inkpen. Exploring Casual Tabletop Interactions. *Department of Computer Science, University of Calgary, Technical Report 2004-742-07*
128. P. Neumann and M.S.T. Carpendale. Taxonomy for Discrete Lenses. *Department of Computer Science, University of Calgary, Technical Report 2003-734-37*, December 2003.
129. A. Tang, D. Kraft, M.S.T. Carpendale and A. Dunning, Sensing and Visualizing Physiological Arousal. *Department of Computer Science, University of Calgary, Technical Report 2003-727-30*, 2003.
130. K. Mason, M. S. T. Carpendale and B. Wyvill. Perspective in Context. In *Proceedings of the Western Computer Graphics Symposium*, p. 40-50, March, 2003.
131. B. Wyvill, K. van Overveld and M. S. T. Carpendale. The Batik Trick. In *Proceedings of the Western Computer Graphics Symposium*, p. 59-66, March, 2003.
132. R. Kruger and M.S.T. Carpendale. Exploring Orientation on a Table Display. *Department of Computer Science, University of Calgary, Technical Report 2003-726-29*. 2003.
133. B. Wyvill, K. van Overveld, M.S.T. Carpendale. Visualizing Batik. *Technical Report No. 2002-701-04, Department of Computer Science, University of Calgary*. 2003.
134. M.S.T. Carpendale. Considering Visual Variables as a Basis for Information Visualisation. Department of Computer science, University of Calgary Technical Report 2001-693-16, January 30, 2003.
135. R. Kruger, M.S.T. Carpendale. The e-Table: Exploring collaborative interaction on a horizontal display. Department of Computer Science, University of Calgary, Technical Report 2002-714-17, December 2002.
136. A. Duta and M.S.T. Carpendale. VICO: A Tool for Supporting Visual Comparisons of Different Pine-Beetle Management Approaches. In the Proceedings of the Western Computer Graphics Symposium, British Columbia. 2002.
137. C.A.H. Baker, M.S.T. Carpendale, M.G. Surette. Simulation and Visualisation of Genetic Regulatory Networks. Department of Computer Science, University of Calgary, Technical Report 2001-696-19. Dec. 20, 2001.
138. K. Mason, M.S.T. Carpendale, P. MacMurchy, B. Wyvill. Eastern Perspectives and the Question of Personal Expression, Department of Computer Science, University of Calgary, Technical Report 2001-696-19. Dec. 20, 2001.
139. K. Mason and M.S.T. Carpendale. Expanding the Expressive Palette. In the Proceedings of the Western Computer Graphics Symposium, Kamloops, British Columbia. 2001.

140. A. Zanella, M. Rounding and M.S.T. Carpendale. On the effects of visual cues in comprehending distortions. Technical Report 2000-668-20, Department of Computer Science, University of Calgary, Calgary. October 12, 2000
141. M. Rounding, S. Greenberg, M.S.T. Carpendale. Awareness Projected: Moving Awareness to a Public Space. In Proceedings of the Western Computer Graphics Symposium, March 26-29, 2000.
142. M. Boyle, S. Kaasten, M. Rounding, J. Tam, A. Zanella, S. Greenberg, M.S.T. Carpendale, and F. Maurer. Grouplab at Skigraph, Report 2000-652-04, Department of Computer Science, University of Calgary, Calgary, Alberta, Canada. March 2000.
143. D. J. Cowperthwaite, M. S. T. Carpendale and F. D. Fracchia. Editing in Elastic Presentation Spaces. Technical Report: U-SFraser-CMPT-TR: 1999-11, School of Computing Science, Simon Fraser University, Oct. 1999.
144. M. S. T. Carpendale Ph.D. thesis, March 1999 "A Framework for Elastic Presentation Space", Topic: Information Visualization, Computing Science Simon Fraser University., Committee: David Fracchia (Co-Senior Supervisor), Tom Shermer (Co-Senior Supervisor), Art Liestman, (Supervisor), SFU Examiner: John Dill, External Examiner: Thomas Strothotte
145. M. Tigges, M. S. T. Carpendale and B. Wyvill. Generalized Distance Metrics for Implicit Surface Modeling. Proceedings of the Tenth Western Computer Graphics Symposium, pages 14-18, March 1999.
146. M.S.T. Carpendale, D. Cowperthwaite and A. Fall. SEED: Simulating & Exploring Ecosystem Dynamics, 1998, *Poster Presentation, BC Advanced Systems Institute (ASI) Exchange*, Vancouver, BC. March 1999. (CSS Excellent Student Poster Award)
147. M. Lantin and M. S. T. Carpendale. Supporting Detail-in-Context for the DNA Representation, H-Curves. Technical. Report No. CMPT1998-09, School of Computing Science, Simon Fraser University, April 1998.
148. M.S.T. Carpendale, D. Cowperthwaite and A. Fall. SEED: Simulating & Exploring Ecosystem Dynamics, 1998, *Poster Presentation, BC Advanced Systems Institute (ASI) Exchange*, Vancouver, BC. March 1998. (ASI Best Student Paper Award and CSS Best Student Poster Award)
149. M.S.T. Carpendale, D. Cowperthwaite, M.-A. D. Storey, and F. D. Fracchia. Exploring Distinct Aspects of the Distortion Viewing Paradigm. Technical. Report No. CMPT1997-08, School of Computing Science, Simon Fraser University, March 1997.
150. D. Cowperthwaite, A. Fall and M.S.T. Carpendale. SEED: Simulating & Exploring Ecosystem Dynamics, 1998, *Poster Presentation, BC Advanced Systems Institute (ASI) Exchange*, Vancouver, BC. March, 1997 (ASI Best Student Paper Award and CSS Best Student Poster Award)

151. D. Cowperthwaite, M. S. T. Carpendale, and F. D. Fracchia. Distortion Viewing Techniques for 3-Dimensional Data. Technical. Report No. CMPT1995-06, School of Computing Science, Simon Fraser University, November 1995.
152. M.-A. D. Storey, F. D. Fracchia, and M. S. T. Carpendale. A Top-down Approach to Algorithm Animation. Technical. Report No. CMPT1994-05, School of Computing Science, Simon Fraser University, September 1994.
153. M. S. T. Carpendale. MBG: A Storyboard Approach for Visualising Minimum Broadcast Graph Research. *Poster Presentation, BC Advanced Systems Institute (ASI) Exchange*. March 1993.

Theses

154. Schlesier, Lothar. Creating an Interactive Visualization of Mountain Pine Beetle Simulation Data. *Diplom Thesis*, School of Computer Science, Otto-von-Guericke-University of Magdeburg, Germany.
Defence date September, 2006.
Committee: Prof. Dr. Sheelagh Carpendale: Supervisor,
Prof. Dr.-Ing. Stefan Schlechttag: Supervisor,
Location: Interactions Laboratory,
Department of Computer Science, University of Calgary, Calgary, Alberta
and
Pacific Forestry Centre, Victoria, British Columbia, Canada
155. Miede, André. Realizing Responsive Interaction for Tabletop Interaction Metaphors. *Masters of Science Thesis*, School of Computer Science, Otto-von-Guericke-University of Magdeburg, Germany.
Defense date June 9, 2006. (Subproject)
Committee: Prof. Dr.-Ing. Maic Masuch: Supervisor,
Prof. Dr. Sheelagh Carpendale: Supervisor,
Dr.-Ing. Tobias Isenberg: Supervisor
Location: Interactions Laboratory,
Department of Computer Science, University of Calgary,
Calgary, Alberta, Canada.
156. K. Mason. A Framework for Element-Based Computer Graphics.
Ph.D. Dissertation, Department of Computer Science, University of Calgary, Calgary, Alberta, Canada,
Defended May 2006.
Committee: Dr. M.S.T. Carpendale: Supervisor,
Dr. B. Wyvill: Committee Member,
Dr. F.D. Fracchia : Committee Member,
Dr. J. Denzinger: Committee Member,
Dr. B. Rusted: University Examiner,
Dr. S. Fels: External Examiner
157. E. Fanea. Establishing Graphical and Formal Relationships between Visualizations of Multi-Dimensional Data.

MSc Thesis, Department of Computer Science, University of Calgary, Calgary, Alberta, Canada, Defended April 2006.

Committee: Dr. M.S.T. Carpendale: Supervisor,
Dr. R. Kremer: Internal Examiner,
Dr. E. Braverman: External Examiner

158. U. Hinrichs. *Interface Currents: Evaluating a Fluid Interface for Tabletop Collaboration. Diplom Thesis, Otto-von-Guericke University of Magdeburg, Magdeburg, Germany, September 2005.*

Committee: Dr. M.S.T. Carpendale: Supervisor,
Dr. M. Gotze: Supervisor,
Dr. T. Strothotte: External Examiner

Location: Interactions Laboratory,
Department of Computer Science, University of Calgary,
Calgary, Alberta, Canada.

159. N. Wong. *EdgeLens: An Interactive Technique for Mitigating Edge Congestion in Graphs. MSc Thesis, Department of Computer Science, University of Calgary, Calgary, Alberta, Canada, Defended March 2005.*

Committee: Dr. M.S.T. Carpendale: Supervisor,
Dr. Ehud Sharlin: Internal Examiner,
Dr. Larry Katz: External Examiner

160. S.D. Scott. *Territoriality in Collaborative Tabletop Workspaces. Ph.D. Dissertation, Department of Computer Science, University of Calgary, Calgary, Alberta, Canada, Defended March 2005.*

Committee: Dr. M.S.T. Carpendale: Supervisor,
Dr. Kori Inkpen: Co-Supervisor,
Dr. Saul Greenberg: Committee Member,
Dr. Mike W. Chiasson: University Examiner,
Dr. Thomas Rodden: External Examiner

161. R.J. Kruger. *Fluid Orientation on Tabletop Displays: Supporting Co-located Collaboration. MSc Thesis, Department of Computer Science, University of Calgary, Calgary, Alberta, Canada. July 2004.*

Committee: Dr. M.S.T. Carpendale Supervisor,
Dr. Frank Maurer: Departmental Examiner,
Dr. Ron Wardell: External Examiner

162. C.J Baker. *GeneVis: Simulating And Visualizing Genetic Regulatory Networks. MSc Thesis, Department of Computer Science, University of Calgary, Calgary, Alberta, Canada. July 2004.*

Committee: Dr. M.S.T. Carpendale Supervisor,
Dr. P. Prusinkiewicz: Departmental Examiner,
Dr. M. Surette: Committee Member,
Dr. J. Dill, Simon Fraser University: External Examiner

Images

163. M.S.T. Carpendale, Brian Wyvill, Kees van Overveld. NPR Batik Moose Head, NPAR'04, Annecy, France, June 2004, 8 x 10 inches, Invited cover image for NPAR'04 , Refereed, 2004
164. M. S. T. Carpendale, D. J. Cowperthwaite, and F. D. Fracchia. 3D Fisheyes. To appear: Chaomei Chen. *Information Visualization: Beyond the Horizon*. Springer-Verlag, London. Ltd. 2004.
165. C.A.H. Baker, M.S.T. Carpendale, M. Surette, P. Prusinkiewicz. GeneVis: Visualizing Genetic Regulatory Network Dynamics. In *Visualization Viewpoints Column by Theresa-Marie Rhyne in IEEE CG&A*, Computer Graphics and Applications, July 2003.
166. M. S. T. Carpendale, D. J. Cowperthwaite, and F. D. Fracchia. *Cover Image, Proceedings of IEEE Information Visualization '96*, 1996.
167. M. S. T. Carpendale, D. J. Cowperthwaite, and F. D. Fracchia. Looking at hypercubes with a pliable surface, In *Visualization and Optimization. edited by Christopher V. Jones. Series: Operations research/computer science interfaces series*. Kluwer Academic, Boston, 1996.
168. M. S. T. Carpendale, D. J. Cowperthwaite, and F. D. Fracchia. Pliable surface illustrations. In *Bernhard Preim, Ph.D. Thesis: Interactive Illustrations and Animations for the Explanation of Complex Spatial Phenomena*. (published in limited edition), Magdeburg, Germany, 1998.
169. M. S. T. Carpendale, D. J. Cowperthwaite, and F. D. Fracchia. 3DPS and 3DWarp images. In *Stephen Eick. Keynote Address: CODATA Euro-American Workshop Visualization of Information and Data, Paris Workshop on Visualization of Information and Data*, June 24 1997.
170. M. S. T. Carpendale, D. J. Cowperthwaite, and F. D. Fracchia. *Images used in 'Visualisation Lies' presentation. In Rachael Brady. Seminar: On Misleading with Visuals*, NCSA / Beckman Institute, Urbana, Illinois. Dec. 1996.

Invited Conference Presentations

171. S. Carpendale. Aesthetic Interactions. *Computational Aesthetics*, Dagstuhl, Germany, May 31, 2006.
172. S. Carpendale. Information Visualization and Collaborative Interfaces. (keynote talk) *Explore-IT: Introducing teenage girls to high-tech career options*. Southern Alberta Institute for Technology (SAIT) and University of Calgary. May 10, 2006
173. S. Carpendale. Information visualization and tabletop Interaction. The CWC/Corus *New Media Career Accelerator Program*. (Thurs. March 2, 2006) February 24 – March 3, 2006.
174. M.S.T. Carpendale. (2002). Several presentations on Information Visualisation, Elastic Presentation and Human-Computer Interaction. IDELIX Software Inc. Vancouver BC. 1999 through to the present.
175. S. Carpendale. MIT, *HAL: Humans and Technology Symposium*, Cambridge, MA, January 2006.
176. S. Carpendale. Sharing Visual Information. *Wider Horizons - Clinical Telehealth in the Future. eHealth+Industry Project*, Calgary Health Region. January 24, 2006.

177. S. Carpendale. Visual and Interactive Computing. At *Industry Day, Computing Science*, University of Calgary. Nov 21, 2005.
178. S. Carpendale. (Invited Keynote Speaker): Innovations in Visualization. At *the IASTED International Conference on TELEHEALTH*. Banff Centre, Banff, Alberta, Canada. July, 19 – 21, 2005.
179. S. Carpendale. Panel Moderator: Visualizing Complex Data. Panelists: Amber Frid-Jimenez, Tom Donaldson. At *The Banff Centre Research Summit: Bodies in Play: Shaping and Mapping Mobile Applications*, Banff New Media Institute. May 19 – 22, 2005.
180. S. Carpendale. Expressive Texts and Interaction Models. At *The Banff Centre Research Summit: Bodies in Play: Shaping and Mapping Mobile Applications*. May 19 – 22, 2005.
181. S. Carpendale. Panel Moderator: Visualizing Communication – Language, System, Expression. Panelists: Christopher Collins, Andrew Salway, Andrew Klobucar. At *The Banff Centre Research Summit: Bodies in Play: Shaping and Mapping Mobile Applications*. May 19 – 22, 2005.
182. S. Carpendale. Focus on Visualizing Human Communication. At *The Banff Centre Research Summit: Bodies in Play: Shaping and Mapping Mobile Applications*. May 19 – 22, 2005.
183. S. Carpendale. Applying Information Visualization to Health Issues. At the Ward of the 21st Century Retreat. University of Calgary. May 5, 2005.
184. S. Carpendale. Invited Keynote Speaker: Interactive Visualization and Images. At the Image Research Initiative Workshop. University of Concordia, Montreal, Canada. May 2-3, 2005.
185. S. Carpendale. Information visualization and applications to e-health. At *The CWC/Corus New Media Career Accelerator Program*. March, 2005.
186. M.S.T. Carpendale, New technologies meeting the innovation imperative, *New Ways and New Technologies*, Calgary, 14/10/2004.
187. M.S.T. Carpendale, Human Technology Interface, Ward of the 21st Century, Retreat/Conference, Sheraton, Calgary, 04/10/2004.
188. Carpendale, M.S.T. (2004) Collocated Collaboration Tools. At *The Banff Centre research Summit: Participate/Collaborate: Reciprocity, Design and Social Networks*. September 30 – October 3, 2004.
189. Carpendale, M.S.T. (2004) From Scientific to Artistic simulation and visualization. At *The Banff Centre Research Summit: Simulation and Other Re-enactments: Modeling the Unseen*. April 29 – May 2, 2004.
190. Carpendale, M.S.T. (2004) Research and New Media. At *The CWC/Corus New Media Career Accelerator Program*. February 28 to March 5, 2004.
191. Carpendale, M.S.T. (2003) Elastic Presentation. Bell University Labs Conference. Toronto, Ontario, November 2003.
192. Carpendale, M.S.T.. Advances in Elastic Presentation. Department of Visualistics, University of Otto-von Guericke, Magdeburg, Germany. February, 2003.

193. Carpendale, M.S.T. Viewing Transformations: Perspective, Distortion and Deformation. In *SIGGRAPH'03 Course; Theory and Practice of Non-Photorealistic Graphics: Algorithms, Methods, and Production Systems Presentation*. Organizer Mario Costa-Sousa. Other instructors, Brett Achorn and Daniel Teece Walt Disney Feature Animation, David S. Ebert Purdue University, Bruce Gooch University of Utah, Victoria Interrante University of Minnesota, Lisa Streit University of British Columbia, Oleg Veryovka Electronic Arts. at SIGGRAPH August 2003.
194. Carpendale, M.S.T. Applying Elastic Presentation Space to 2D and 3D Data Layouts. Dutch Electronic Arts Festival, DEAF03. Rotterdam, February, 2003.
195. Panel: Collaboration and Visualization Tools; at *The Banff research Summit: The Beauty of Collaboration: Methods, Manners and Aesthetics*. Location: Rice Studio The Jeanne and Peter Loughheed Building (JPL). Co-moderated by Sheelagh Carpendale, and Sara Diamond, May 22-25, 2003.
196. Carpendale, M.S.T. and Dunning, A. (2003) Visualization between Disciplines - Constructing a Research Scenario. at *The Banff research Summit: The Beauty of Collaboration: Methods, Manners and Aesthetics*. May 22-25, 2003.
197. Carpendale, M.S.T. (2003) Collaborative Tools: Visualization, Collaboration and Participant Design. at *The Banff research Summit: Skinning Our Tools: Designing for Context and Culture*. October 2 to 5, 2003.
198. M.S.T. Carpendale. (2002). Elastic Presentation Framework, MERL - Mitsubishi Electric Research Laboratories, Boston, USA. Oct. 2002.
199. M.S.T. Carpendale. (2002). Elastic Presentation. NewMIC. Vancouver BC. June 2002.
200. Carpendale, M.S.T. (2002). Presentation Spaces and Display Real Estate. *Speaker in a Panel on Research and Models with Sara Diamond, Marc Rioux, Kelly Booth, Pierre Boulanger*. At the Banff New Media Institute (BNMI) Conference on Quintessence: The Clumpy Matter of Art, Math and Science Visualization. Theme: Advanced Visualization. Sept. 12-15, 2002
201. Carpendale, M.S.T. (2002). Moderator - Panel: Data Visualization—Information Architectures and Visualization-Methods and Metaphors. Panellists: Luigi Benedecenti, *TR labs University of Regina- Software Agents, Visualization And Data*, Brad Paley *Digital Image Design Incorporated - From The Stock Market To Literature*, Sara Diamond, Richard Lachman, Kevin Liang, *CodeZebra: Performing Science Through Art*. At the Banff New Media Institute (BNMI) Conference on Quintessence: The Clumpy Matter of Art, Math and Science Visualization. Theme: Advanced Visualization. Sept. 12-15, 2002
202. Carpendale, M.S.T. (2002). Data Visualization Strategies, Visual Language and Interpretation, Concepts and Case Studies. At the Banff New Media Institute (BNMI) Conference on Quintessence: The Clumpy Matter of Art, Math and Science Visualization. Theme: Advanced Visualization. Sept. 12-15, 2002
203. Carpendale, M.S.T. (2002). Panel: Perspectives from the Sciences: Towards Interdisciplinary Collaboration. Co-moderated with S. Diamond, *BRIDGES Consortium Two*. At the Banff New Media Institute (BNMI) Theme: Cross-Disciplinary Research. October 4-6, 2002

204. Carpendale, M.S.T. (2002). Artificial Stupidity and Visualising Chat. *At the Banff New Media Institute (BNMI) Conference on Artificial Stupidity/Artificial Intelligence. Theme: What are the Creative Possibilities and Limits of AI.* August 1 to 4, 2002.
205. Carpendale, M.S.T. (2002). Close to the Machine: Women Inventing Technologies, Women Teaching Women Scientists. *At the Banff New Media Institute (BNMI) CWC/Corus New Media Career Accelerator. In collaboration with Corus Entertainment and Canadian Women in Communications (CWC).* March 2-8, 2002.
206. M.S.T. Carpendale. (2001). "Elastic Presentation" Human Computer Interaction Series. Stanford University, Faculty of Computing Science San Francisco, USA. Dec. 2001.
207. M.S.T. Carpendale. (2001). Elastic Presentation Framework, Intel Corporation, Research Council, Jones Farm, Portland, USA. Nov 2001.
208. Carpendale, M.S.T. (2001). Presentation Spaces, Process Spaces – Design, Virtual and Public Spaces, Visualisation. *Emotional Architectures: Designing for Immersion and Interaction, Banff Centre.* Sept. 19-24, 2001.
209. Carpendale, M.S.T. (2001). Information Visualisation: sharing digital tools. *Human Generosity Conference. Banff Centre.* Aug, 2001
210. M.S.T. Carpendale. (2001). Information Visualisation. *Bridges, UCLA Annenberg Centre, Los Angeles,* May 29 - June 2, 2001.
211. M.S.T. Carpendale. (2000). "The Tardis: an Environment for Visualising Landscape Dynamics" *Faculty for Information Technologies, Institute for Simulation and Graphics Otto-von-Guericke University, Magdeburg, Germany.* June 2000.
212. M.S.T. Carpendale. (2000). Elastic Presentation. *Otto von Guericke University of Magdeburg Faculty of Informatics, Institute of Simulation and Graphics, Magdeburg, Germany.* June 2000.
213. Diamond, S., Lewis, J., Portway, J., Carpendale, M.S.T., Grbavec, A., Sack, W., Walter, M., "CodeZebra: Visualizing Human Discourse" San Francisco Museum of Modern Art (SF MOMA). Dec. 2, 2000.
214. M.S.T. Carpendale. (2000). 3D Visualisation for Data Navigation. *Living Architectures: Designing for Immersion and Interaction, Banff Centre,* Sept 22-24, 2000.
215. M.S.T. Carpendale. (2000). 3D imaging, designing with artists from the software perspective. *Conference on Emotional Computing: Performing Arts, Fiction and Interactive Experience, Banff Centre,* May 11-13, 2000.
216. M.S.T. Carpendale. (1999). "Elastic Presentation Space" *Vision Plus 6; a UNESCO sponsored conference. IIID International Institute for Information Design Conference.* July 1999.
217. M.S.T. Carpendale. (1999). "Elastic Presentation Space" Electronic Arts, Burnaby, BC. Invited research presentation. Sept 1999.
218. M.S.T. Carpendale. A Theory of Elastic Presentation Space. *Derby, Centre for Design Research.* Derby, England. September 1998.

219. M. S. T. Carpendale. (1997). A Distortion Viewing Paradigm, Intel Corporation, Research Council, Jones Farm, Portland, USA. May 1997.
220. M.S.T. Carpendale. (1996). Pliable Surfaces: A Local Magnification Interface for Exploring Visual Information. *Dagstuhl Seminar 9608: Informatics and Semiotics*. Dagstuhl, Germany. February 1996.

Workshop Organization

221. Workshop/Panel: Science meets social science: interdisciplinary approaches, *New Ways and New Technologies*, University of Calgary, Calgary, invited, planned, moderated, October, 2004
222. Workshop: Collaboration with Interactive Walls and Tables. Organizers: Peter Tandler, Carsten Magerkurth, Sheelagh Carpendale, Kori Inkpen. *UBICOMP 2002*, Goteborg, Sweden. Sept. 29 – Oct. 1, 2002.
223. Workshop: Co-located Tabletop Collaboration: Technologies and directions. Organisers S. Scott, K. Grant, M.S.T. Carpendale, K. Inkpen, R. Mandryk, T. Winograd. *ACM CSCW'02 Conference on Computer Supported Co-operative Work, Conference Companion*. New Orleans USA. Nov. 2002.

Workshop Participation

224. Workshop: Evaluating Co-located Collaborative Technologies. *ACM CSCW'02 Conference on Computer Supported Co-operative Work, Conference Companion*, Chicago, IL, USA. November 6-10, 2004
225. Workshop: Co-located Tabletop Collaboration: Technologies and directions. *ACM CSCW'02 Conference on Computer Supported Co-operative Work, Conference Companion*. New Orleans USA. Nov. 2002.
226. Workshop: Visualization in Bioinformatics and Cheminformatics. *IEEE Visualization*. Workshop Chairs: G. Grinstein, J. P. Lee. Boston Mass. Oct. 2002
227. CodeZebra workshop, Banff New Media Institute (BNMI). August 6-16, 2002.
228. CodeZebra workshop, V2 Labs. Rotterdam, The Netherlands. July 13-15, 2002.
229. CodeZebra workshop, Banff New Media Institute (BNMI). Sept. 4-8, 2001.
230. CodeZebra workshop, Banff New Media Institute (BNMI) and SMART Labs London UK. April 20-26, 2001.
231. CodeZebra workshop, Arts Alliance, San Francisco, Nov. 27 –Dec. 4, 2000.

Patents

1. Elastic Presentation Space Inventors: M. Sheelagh T. Carpendale, David J. Cowperthwaite, Mark H. A. Tigges, Robert Komar, Jerome F. Bauer, David J. P. Baar., Assignee: Advanced Numerical Methods Ltd (Now Idelix Software Inc.).