http://code.arc.cmu.edu/~mdg

EDUCATION

Massachusetts Institute of Technology   Ph.D. Design Theory & Methods 1986
   Dissertation title: ***Design as Exploring Constraints***; committee: NJ Habraken, A Fleisher, S Papert

Massachusetts Institute of Technology   B.S., Architectural Design, 1978

PROFESSIONAL EXPERIENCE

2004 – present	**Carnegie Mellon University**
	Professor, Computational Design, Associate Head, Director of Graduate Programs (School of Architecture); Affiliate faculty Human Computer Interaction Institute
2008 – present	**Modular Robotics, LLC**
	co-founder and research director of a robotics construction toy company
1999 - 2004	**University of Washington, Seattle**
	Professor (from Sept 2002), Department of Architecture
1990 - 1999	**University of Colorado, Boulder and Denver**
	Associate (1997-1999) and Assistant (1990-1997) Professor, College of Architecture and Planning, Department of Planning and Design
1998	**Nara Advanced Institute of Science and Technology, Nara, Japan**
	Visiting Research Scholar, Cognitive Science Lab, Information Systems Division
1988 - 1990	**Design Technology Research, Cambridge, MA and Tokyo**
	Principal Investigator
1981 - 1988	**Massachusetts Institute of Technology**
	Lecturer & Postdoctoral Research Associate, School of Architecture and Planning
1982-1984	**Atari Cambridge Research Laboratory, Cambridge, Massachusetts**
	Research Staff, Computers and Education
1981	**Logo Computer Systems Inc, Boston, MA**
	Programming Language Design, Computer Animation
1980 - 1981	**Technical University of Eindhoven (SAR)**
	Visiting Researcher
1978 - 1980	**MIT Artificial Intelligence Laboratory**
	System Programmer, Logo Project
1976 - 1978	**The Architecture Machine Group, MIT**
	Undergraduate Research Assistant

JOURNAL ARTICLES

2011   **Experiments in Design Synthesis when Behavior is Determined by Shape**, Schweikardt, E and Gross, MD *J Personal and Ubiquitous Computing, special issue on Material Computing,* 15(2): 123-132

      Hyperform Specification: designing and interacting with self-reconfiguring materials, Weller, M, Gross, MD, and Goldstein SC *J Personal and Ubiquitous Computing, special issue on Material Computing* 15(2): 133-149

2010   **A Constraint-Based Furniture Design Critic**, Yeonjoo Oh, Mark D Gross, Suguru Ishizaki, Ellen Yi-Luen Do, *Research and Practice in Technology-Enhanced Learning* **5**(2):97-122

2009   **Computational Support for Sketching in Design: A Review**, Johnson, G., Gross, M.D., Hong, J. and Do, E. Y-L. *Foundations and Trends in Human-Computer Interaction,* 2(1): 1-93

Educating the New Makers: Cross-disciplinary creativity, M.D. Gross, and Do, E Y-L. *Leonardo* **42**(3) (June 2009).

ArchiDNA: An Interactive System for Creating 2D and 3D Conceptual Drawings in Architectural Design, Kwon, Doo Young, M.D. Gross, and Do, E Y-L. *J. Computer Aided Design* 41(3):159-172 (March 2009)

2006 **FlexM: Designing a Physical Construction Kit for 3D Modeling**, Markus Eng, Ken Camarata, Ellen Yi-Luen Do, Mark D Gross, *International Journal Architectural Computing,* **4**(2):27- 47

Energy Cube and Energy Magnets, Ken Camarata, Ellen Yi-Luen Do, Mark D Gross, *International Journal Architectural Computing*, Volume 4, Number 2, pp 49- 66

2004 **Let there be light**, E. Y-L Do and M. Gross, *International Journal Architectural Computing,* Volume 2, Number 2, 1 June 2004 pp 211: 227

2003 **A Physical Computing Studio: Exploring Computational Artifacts and Environments**, K Camarata, M Gross, E Y-L Do *International Journal Architectural Computing* **1**(2):169-190.

Design of Software and Software for Design, M. Gross and Y. Yamamoto, *Journal of the Human Interface Society* (in Japanese)

2001 **Thinking with Diagrams in Architectural Design**, Do, E. Y-L and M.D. Gross, in *Artificial Intelligence Review* **15**:135-149.

2000 **Drawing on the Back of an Envelope: a framework for interacting with application programs by freehand drawing,** M.D. Gross and E. Do. in *Computers and Graphics Journal* **24**(2000):835-849.

Intentions in and Relations among Design Drawings, Do, E. Y-L, Gross, M.D., Neiman, B., Zimring, C., *Design Studies*, 21 (5):483-503.

Digital Clay: Deriving Digital Models from Freehand Sketches. Schweikardt, E., and Gross, M.D., *J. Automation in Construction* 9:107-115. (first appeared in Proceedings of ACADIA '98 National Conference, Quebec)

1999 **From Critiquing to Representational Talkback: Computer Support for Revealing Features in Design**, Nakakoji K, Yamamoto, Y., Suzuki, S., Takada, S., Gross, M., *Knowledge Based Systems,* 457-468.

1998 **Collaboration and Coordination in Architectural Design: approaches to computer mediated work**, Gross, M.D., E. Do, R. McCall, W. Citrin, P. Hamill, A. Warmack, and K. Kuczun. J. *Automation in Construction* 7:465-473. (first appeared in Proceedings 1997 TeamCAD conference, Atlanta GA).

1997 **Resolving archaeological site data with 3D computer modeling: The case of Ceren,** Lewin, J. and M.D. Gross, *J. Automation in Construction,* 6(4) 323-334. (first appeared in Proceedings 1996 ACADIA National Conference, Tucson AZ).

1996 **Why can't CAD be more like Lego?** Gross, M.D., *Automation in Construction Journal,* 5:285-300.

The Electronic Cocktail Napkin - computer support for working with diagrams, Gross, M.D., *Design Studies* **17**(1), 53-70.

PDA based Graphical Interchange for Field Service and Repair Workers, Citrin, W.V., and M.D. Gross, *Computers and Graphics*, **20**(5):641-649.

1994 **Avoiding conflicts in architectural subsystem layout,** Gross, M.D., *Journal of the Concurrent Engineering Research Association* **2**:163-171.

Roles for Computing in Schools of Architecture and Planning, Gross, M.D., *Journal of Architectural Education*, **48**(1):56-64.

EML: A Modeling Environment for Exploring Landscape Dynamics, Theobald, D. and M.D. Gross. *Computers, Environment, and Urban Systems,* **18**(3):193-204

1988   **Concept Design Games**, Habraken, N.J. and M.D. Gross, *Design Studies* **9**(3):150-158.

Constraints: Knowledge Representation in Design, Gross, M.D., S. Ervin, J. Anderson, A.Fleisher, *Design Studies* **9**(3):133-143.

1987   **RoadLab - A Constraint-based Laboratory for Road Design,** Gross, M.D. and S. Ervin, *Artificial Intelligence in Engineering Journal,* **2**(4): 224-234.

1984   **A Computer Model for Design,** Gross, M.D., *Design Studies* **3**(5):142-145.

Design as the Exploration of Constraints, Gross, M. and A. Fleisher, *Design Studies* **3**(5),137-138.

Writing Form, Gross, M.D. and N.J. Habraken, *Design Studies* **3**(5).

1982   **The Turtle Tissue Project,** Gross, M.D. and N.J. Habraken. *Open House International*, **7**(2):3-12.

CONFERENCE PAPERS IN PEER-REVIEWED PROCEEDINGS

2011   **The RayMatic: a thermostat with a human face**, Yun R and Gross MD, ACM SIGCHI Proc Tangible Embedded, Embodied Interaction, (TEI) Madeira Portugal, 61-62.

Interactive Fabrication: New Interfaces for Digital Fabrication, Willis KDD, Xu C, Wu KJ, Levin G, and Gross MD, ACM SIGCHI Proc Tangible Embedded, Embodied Interaction (TEI), Madeira Portugal, 69-72.

Red Balloon, Green Balloon, Sensors in the Sky, Stacey Kuznetsov, George Noel Davis, Eric Paulos, Mark D. Gross, Jian Chiu Cheung. ACM SIGCHI Proc Ubiquitous Computing (UbiComp), Beijing China (to appear)

2010   **Interactive Paper Devices: End-user Design & Fabrication,** Saul G, Xu C, Gross, MD, Proc. ACM Tangible Embedded and Embodied Interaction (TEI), Boston, 205-212.

WearAir: Expressive T-shirts for Air Quality Sensing, Kim S, Paulos E, and Gross MD, Proc. ACM Tangible Embedded and Embodied Interaction (TEI), Boston, 295-296.

Supporting Coordination in Surgical Suites: Physical Aspects of Common Information Spaces, Scupelli, P, Xiao Y, Fussell SR, Kiesler S, Gross MD, ACM Human Factors in Computing (CHI), Atlanta GA, 1777-1786

Ubiquitous Drums, a tangible, wearable musical interface, Smus B and Gross MD, ACM Human Factors in Computing (CHI) Work In Progress, 4009-4014.

Personal, Public: Using DIY to explore citizen-led efforts in urban computing: Bisker S, Gross M, Carter D, Paulos E, Kuznetsov S; ACM Human factors in Computing (CHI) Work in Progress, 3547-3552

Topaoko: Interactive Construction Kit, Wu KJ, Gross MD, ACM Human factors in Computing (CHI) Work in Progress, 3619-3624.

WallBots: Interactive Wall-Crawling Robots In the Hands of Public Artists and Political Activists, Kuzenetsov, S., Paulos E, and Gross MD, ACM SIGCHI Designing Interactive Systems (DIS), Aarhus Denmark, 208-217.

2009   **Design of Prismatic Cube Modules for Convex Corner Traversal in 3D,** Weller MP, Kirby BT, Brown,HB, Gross MD and Goldstein SC, IEEE Intelligent Robotics and Systems (IROS) St Louis, Oct 11-13, 1490-1495.

State Machines are Child's Play: Observing children ages 9 to 11 playing Escape Machine, Weller, M., Do, E. Y-L., Gross M., ACM Interaction Design for Children (IDC), Como Italy, 282-289.

Tangible Sketching in 3D with Posey, Weller, M., Do, E. Y-L., Gross M., ACM Human Factors in Computing (CHI) Interactive Demonstrations: April 4-6. 3193-3198.

Easigami: A reconfigurable folded-sheet TUI, Huang, Y., Gross, M.D. Do, Y-L,, Eisenberg, M. ACM Tangible and Embedded Interaction (TEI), Cambridge UK, Feb 16-19. 107-112.

A Tangible Construction Kit for Exploring Graph Theory, Schweikardt, E., Elumeze, N., Eisenberg, M., Gross, M. , ACM Tangible and Embedded Interaction (TEI), Cambridge UK, Feb 16-19. 373-376.

An Optocoupled Poseable Ball and Socket Joint for Computationally Enhanced Construction Kits, Weller, M.P., E YL Do, and M. Gross. ROBOCOMM, IEEE 2nd International Conference on Robotic Communication and Coordination, Odense Denmark, March 2009.

Co-designed Paper Devices, Saul, G and Gross MD, Workshop on Material Computing and Programmable Reality, Conference on Human Factors (CHI)

Designing Systems to Design Themselves, Schweikardt, E and Gross MD, Workshop on Material Computing and Programmable Reality, Conference on Human Factors (CHI)

Hyperform Specification – designing with self-reconfiguring materials, Weller MP, Gross MD, and Goldstein SC, Workshop on Material Computing and Programmable Reality, Conference on Human Factors (CHI)

Delivery types and communication modalities in the furniture factory design critiquing system, Oh Y, Do, EY-L, Gross, MD, Ishizaki, S, Proc. Computer Aided Architectural Design Futures (CAAD Futures), Montreal, June 17-19.

2008   **Computing Spatial Qualities in Architecture**, Key, S., Do, E. Y-L., Gross, M., Proc. Association for Computer Aided Design in Architecture (ACADIA), Minneapolis, MN Oct 15-17.

Learning About Complexity with Modular Robots, Schweikardt E. and Gross, M. Proc. IEEE Digital Game and Intelligent Toy Enhanced Learning (DIGITEL), Banff, Canada November 16-19. pp.116-123

Posey: Instrumenting a Poseable Hub and Strut Construction Toy, Weller, M.P., Do, E. Y-L., and Gross, M.D. Proceedings, Tangible and Embedded Interaction 2008 (TEI), Bonn, Germany, pp 39-46.

The Robot is the Program: Interacting with roBlocks, Schweikardt, E., and Gross, M.D., Proceedings, Tangible and Embedded Interaction (TEI) 2008, Bonn, Germany, pp 167-168.

Computer-aided Critiquing Systems: Lessons Learned and New Research Directions, Oh, Y., Gross, M.D., and Do, E. Y-L., Proc. Computer Aided Architectural Design Research in Asia (CAADRIA), Chiang-Mai, Thailand

Escape Machine: Building a tangible state machine game controller with Posey, Weller, M.P., Do, E. Y-L., and Gross, M.D. ACM Conference on Interaction Design for Children (IDC) Chicago, IL, June 2008.

A Perspective on Computer Aided Design after Four Decades, Earl Mark, Gross, M.D., Goldschmidt, G. in 26th international conference on Education in Computer-Aided Architectural Design in Europe (eCAADe), Antwerp, Sept 17-20, 2008. pp. 169-178.

2007   **Environments for Creativity – A Lab for Making Things** Gross, M.D. and Do, E. Y-L. Proceedings, ACM SIGCHI Creativity and Cognition 2007, pp. 27-36

Why Toys Shouldn't Work Like Magic: Children's Technology and the Values of Construction and Control Gross, M.D. and M. Eisenberg, Proceedings First IEEE workshop on Digital Game and Intelligent Toy Enhanced Learning (DIGITEL) 2007, Jhongli Taiwan, March 26-28 2007, pp. 25-32.

A Brief Survey of Distributed Computational Toys, Schweikardt, Eric and M.D. Gross, Proceedings First IEEE workshop on Digital Game and Intelligent Toy Enhanced Learning (DIGITEL) 2007, Jhongli Taiwan, March 26-28 2007, pp. 57-64.

Strategies for Research about Design: a multidisciplinary graduate curriculum, Gross, Mark D., S.Finger, J.Herbsleb, M.Shaw, Proc. 2nd Intl Conf on Design Science Research in Information Systems & Technology (DESRIST), Claremont CA, May 13-15 2007

roBlocks: Understanding Emergent Complexity from the Bottom Up, Schweikardt, Eric and M.D. Gross, RSS 2007: Robotics Science and Systems Workshop on Research in Robots for Education, June 27-30, 2007, Atlanta, GA.

2006   **roBlocks: A Robotic Construction Kit for Mathematics and Science Education**, Schweikardt, Eric and M.D. Gross, Proceedings ACM International Conference on Multimedia Interaction (ICMI), Banff, Canada, Nov 2-4 2006, pp. 72-75.

The Designosaur and the Furniture Factory, Yeonjoo Oh, Gabe Johnson, Mark D Gross and Ellen Yi-Luen Do, in *Design Computing and Cognition,* (ed) John S Gero, Springer, pp. 123-140

Flow Select: A Time-Based Selection and Operation Technique for Sketching Tools, Gabe Johnson, Mark D Gross, Ellen Yi-Luen Do, International Conference of Advanced Visual Interfaces (AVI 2006) Venice, Italy, May 23-26, 2006

2004   **3 R's of Drawing and Design Computation,** M. Gross and E. Y-L Do, Design Computing and Cognition, J. Gero (ed), Kluwer, Cambridge Massachusetts, pp 613-632

A Computationally Enhanced Play Board for Group Interaction, O. Shaer, B. Ziraknejad, K. Camarata, E. Y-L. Do, M. Gross. (poster) Pervasive 2004, Vienna

As if You Were Here – Intelligent Annotation in Space: 3D Sketching as an Interface to Knowledge Based Systems, E. Y-L. Do, M. Gross, American Association for Artificial Intelligence (AAAI), Fall Symposium Oct 22-24

Critiquing Design Sketches, Y. Oh, E. Y-L. Do, M. Gross, American Association for Artificial Intelligence (AAAI), Fall Symposium Oct 22-24

2003   **MouseHaus Table, a Physical Interface for Urban Design** (poster) , Chen-Je Huang, Ellen-Yi Luen Do, Mark D Gross, Proc. User Interface Software Tools (UIST) 2003, Vancouver, CA

Light Pen: Sketching light in 3D, Thomas Jung, Mark D. Gross, Ellen Yi-Luen Do, Computer Aided Architectural Design Futures 2003, Tainan, Taiwan

MouseHaus Table (poster) Chen-Je Huang, Ellen Yi-Luen Do, Mark D Gross, Computer Aided Architectural Design Futures 2003, Tainan, Taiwan

Window Seat (poster), YeonJoo Oh, Ellen Yi-Luen Do, et al., Computer Aided Architectural Design Futures 2003, Tainan, Taiwan

Junk Mail to Spam Converter (poster), Michael Weller, Ellen-Yi-Luen Do, Jim Nicholls, Mark D. Gross, Fifth International Conference on Ubiquitous Computing, Seattle WA, ACM: 229-230.

2002 **Physical Computing: A Design Studio Bridging Art and Engineering,** Ken Camarata, Mark D. Gross, Ellen Yi-Luen Do, Proc. Int'l Conf. of the Learning Sciences (ICLS) 2002 (Seattle, WA) pp. 520-521.

Computationally-Enhanced Construction Kits for Children: Prototype and Principles, Michael Eisenberg, Ann Eisenberg, Mark Gross, Khomkrit Kaowthumrong, Nathaniel Lee, and Will Lovett, Proc. Int'l Conf. of the Learning Sciences (ICLS) 2002 (Seattle, WA). pp. 79-85.

Sketching Annotations in 3D on the Web T. Jung, E. Do, and M. Gross, ACM Conference on Human Factors (SIGCHI), ACM Press, pp. 618-619.

Navigational Blocks: Tangible Navigation of Digital Information, K. Camarata, E. Do, M. Gross, B. Johnson, ACM Conference on Human Factors (SIGCHI), ACM Press, pp. 751-752.

Annotating and Sketching on 3D Web Models, T. Jung, E. Do, and M. Gross, ACM Intelligent User Interfaces 2002, San Francisco, Jan 13-16, ACM Press, pp 95-102.

Navigational Blocks: Navigating Information Space with Tangible Media, K. Camarata, E. Do, M. Gross, B. Johnson, ACM Intelligent User Interfaces 2002, San Francisco, Jan 13-16, ACM Press, pp 31-38.

2001 **Smart Objects: Constraints and Behaviors in a 3D Design Environment,** D. Eggink, M.Gross, E. Do, in Proceedings of 19th Conference on Education in Computer Aided Architectural Design in Europe, Helsinki, August 31, 2001, pp 460-465.

FormWriter: A Little Language for Generating Three-Dimensional Form Algorithmically, Gross, M.D., in B. de Vries, J. van Leeuwen, and H. Achten. *Proc. Computer Aided Architectural Design Futures 2001, Eindhoven, Netherlands*. Kluwer Academic Publishers, pp. 577-588.

The Design Amanuensis: an Instrument for Multimodal Design Capture, Gross, M.D. Do, E. Y-L., and Johnson, B.R., in B. de Vries, J.P. van Leeuwen, and H.H. Achten. *Proc. Computer Aided Architectural Design Futures 2001, Eindhoven, Netherlands*. Kluwer Academic Publishers, pp. 1-13.

Gesture Modelling: Using Video to Capture Freehand Modeling Commands, Gross M.D. and A. Kemp, in B. de Vries, J.P. van Leeuwen, and H.H. Achten. *Proc. Computer Aided Architectural Design Futures 2001, Eindhoven, Netherlands*. Kluwer Academic Publishers, pp. 33-46.

Space Pen: Annotating and Sketching on 3D Models on the Internet, Jung, T., Gross M.D., and Do, E., in B. de Vries, J.P. van Leeuwen, and H.H. Achten. 2001. *Proc. Computer Aided Architectural Design Futures 2001, Eindhoven, Netherlands*. Kluwer Academic Publishers, pp. 257-270.

Emergence in a Recognition Based Drawing Interface, Gross, M.D., in *Visual and Spatial Reasoning II*, J. Gero, B. Tversky, T. Purcell, eds., Key Centre for Design Cognition and Computing, Sydney Australia, pp. 51-65.

2000 **Beyond the Low-hanging Fruit: Information Technology in Architectural Design, Past, Present, and Future,** Gross, M.D., Do, E.Y., and Johnson, B.R., Proc. ACSA Technology Conference 2000, Cambridge MA, pp. 100-106.

Place Based Web Resources for Historic Buildings, M. A. Ehrhardt and M.D. Gross, *Proc. Education in Computer Aided Architectural Design in Europe (eCAADe) 2000*, Weimar, Germany, pp. 177-179.

1999 **Collaborative Design with NetDraw,** Dongqiu Qian and M.D. Gross, *Proceedings of Computer Aided Architectural Design Futures '99*, G. Augenbroe and C. Eastman, eds., Kluwer, Dordrecht, the Netherlands, pp. 213-226.

Immersive Redlining and Annotation of 3D Design Models on the Web, T. Jung, E. Do, and M.D. Gross, *Proceedings of Computer Aided Architectural Design Futures '99*, G. Augenbroe and C. Eastman, eds., Kluwer, Dordrecht, the Netherlands, pp. 81-98.

Drawing and Design Intentions — an Investigation of Freehand Drawing Conventions in Design, E. Do, M.D. Gross, and C. Zimring, in *Proceedings Design Thinking Research Symposium*, G. Goldschmidt and W. Porter, eds., Cambridge MA, pp. 1-10.

Sketches and Their Functions in Early Design: A Retrospective Analysis of Two Houses, Neiman, B. Do, E. and M.D. Gross. In *Proceedings Design Thinking Research Symposium*, G. Goldschmidt and W. Porter, eds., Cambridge MA, pp. 255-266.

Integrating Digital Media in Design Studio: Six Paradigms, Gross, M.D. and E. Do., *Proc. American Collegiate Schools of Architecture (ACSA) National Conference '99*, pp. 144-148.

1998   **Digital Clay: Deriving Digital Models from Freehand Sketches.** Schweikardt, E., and Gross, M.D., Digital Design Studios: Do Computers Make A Difference? ACADIA 98, T. Seebohm and S. V. Wyk, eds, *Association for Computer-Aided Design in Architecture*, Quebec City, pp. 202-211

Representational Talkback: An Approach to Support Writing as Design, Yamamoto, Y., Gross, M.D., Takada, S., Nakakoji K, *IEEE Asia Pacific Computer Human Interaction (APCHI) Conference*. IEEE, Los Alamitos, CA, pp.125-131.

The Ceren Web Resource: Enabling Students to Become Anthropologists In A Virtual Site, Lewin,J. Ehrhardt, M. and M.D. Gross, *ACM Conference on Computer Graphics (SIGGRAPH 98) Educators Program*, pp. 42-43.

3D Modeling of Historic Makkah: Strategies for Constructing Accurate CAD Models of Historic Buildings, N. Koshak and Gross, M.D., in *Proc. CAADRIA 98 (The Third Conference on Computer Aided Architectural Design Research in Asia*.

1997   **Support for Mobile Pen-Based Applications,** Citrin, W.V., M.D. Gross, P. Hamill, and A. Warmack, *Proc. Third ACM/IEEE International Conference on Mobile Computing and Networking (MobiCom'97)* 241-247.

Network Design Tools and Tasks, Kuczun, Kyle and M.D. Gross, *Proc. ACM Conference on Designing Interactive Systems*, Amsterdam, pp. 215-222.

Tools for visual and spatial analysis of CAD models, Do, E. and M.D. Gross, *Computer Assisted Architectural Design Futures '97*, R. Junge, ed., Kluwer, Dordrecht, pp. 189-202.

Not Just Another Pretty Face: Image and argument in an archaeological web site, Lewin, J., M. Erhardt, and M.D. Gross*, Computer Assisted Architectural Design Futures '97*, R. Junge, ed., Kluwer, Dordrecht, pp. 635-654.

MUD: Exploring Tradeoffs in Urban Design, Parker, L., A. Elliott, and M.D. Gross, *Computer Assisted Architectural Design Futures '97*, R. Junge, ed., Kluwer, Dordrecht, pp. 373-388.

Digital Sketchbooks for Collaborative Design, W. Citrin, P. Hamill, M.D. Gross, and A. Warmack, Collaboration and Coordination in Architectural Design: approaches to computer mediated work, *TeamCAD symposium on collaborative CAD,* Graphics, Visualization, and Usability Center, Georgia Tech. May 12-13, 1997, pp. 213-217.

Collaboration and Coordination in Architectural Design: approaches to computer mediated work, Gross, M.D., E. Do, R. McCall, W. Citrin, P. Hamill, A. Warmack, and K. Kuczun. *TeamCAD symposium on collaborative CAD,* Graphics, Visualization, and Usability Center, Georgia Tech, May 12-13, 1997, pp. 17-24.

Inferring Design Intentions from Sketches, Do, E. and M.D. Gross, *Proceedings of Computer Aided Architectural Design Research in Asia '97*, pp. 217-227.

1996 **Elements that Follow Your Rules: Constraint Based CAD layout,** Gross, M.D., *Proceedings of Association for Computer Aided Design in Architecture (ACADIA) '96*, Tuscon, AZ, pp. 115-122.

Resolving archaeological site data with 3D computer modeling: The case of Ceren, Lewin, J. and M.D. Gross, *Proceedings of Association for Computer Aided Design in Architecture (ACADIA) '96*, Tucson, AZ, pp. 255-266.

Ambiguous Intentions: A paper-like interface for creative design, Gross, M.D. and E. Do., *Proc. ACM Conf. on User Interface Software Technology (UIST) '96* Seattle, WA, pp. 183-192.

Reasoning about cases with diagrams, Do, E. and M.D. Gross, American Society of Civil Engineers (*ASCE) 3rd Congress on Computing in Civil Engineering*, Anaheim CA, J. Vanegas and P. Chinowsky, eds., pp. 314-320.

Drawing as a means to design reasoning, Do, E. and M.D. Gross, *Artificial Intelligence in Design (AID) '96 Workshop on Visual Representation, Reasoning and Interaction in Design*, Palo Alto, CA.

Demonstrating the Electronic Cocktail Napkin, Gross, M.D. and E. Do, *Conference Companion, ACM Conference on Human Factors in Computing (CHI '96)*, Vancouver, pp. 5-6.

Distributed Architectures for Pen-Based Input and Diagram Recognition, Citrin, W. and M.D. Gross, *ACM Conference on Advanced Visual Interfaces '96*, pp. 132-140.

1995 **Drawing Analogies - Supporting Creative Architectural Design with Visual References,** Gross, M.D. and E. Do, in *3d International Conference on Computational Models of Creative Design*, M-L Maher and J. Gero, eds., Sydney: University of Sydney, pp. 37-58.

Drawing Analogies: Finding visual references by sketching, Do, E. and M.D. Gross, *Proc. Association Computer Aided Design in Architecture (ACADIA), 1995 National Conf.*, Seattle, pp. 35-52.

Shape Based Reminding as an aid to Creative Design, Do, E. and M.D. Gross, *Global Design Studio Computer Aided Architectural Design Futures '95*, M. Tan and R. Teh, eds., National University of Singapore: Singapore, pp. 79-89.

1994 **The Fat Pencil, the Cocktail Napkin, and the Slide Library,** Gross, M.D., *Proc. Association for Computer Aided Design in Architecture (ACADIA), 1994 National Conf.*, St Louis, pp. 103-113.

Stretch-A-Sketch, a dynamic diagrammer, Gross, M.D., in A. Ambler, ed., *IEEE Symposium on Visual Languages 1994,* pp. 232-238.

Recognizing and Interpreting Diagrams in Design, Gross, M.D., in T. Catarci. M. Costabile, S. Levialdi, G. Santucci eds., *Advanced Visual Interfaces '94*, ACM Press, pp. 89-94.

Using Diagrams to Access a Case Base of Architectural Designs, Gross, M.D., C. Zimring, and E. Do., in J. Gero, ed., *Artificial Intelligence in Design '94*, Kluwer, pp. 129-144.

1992 **Graphical Constraints in CoDraw,** Gross, M.D., *IEEE Workshop on Visual Languages*, Seattle, pp. 81-87.

1991 **Grids in Design and CAD**, Gross, M.D., in G. Goldman and S. Zdepski, eds., *Proceedings ACADIA 91 - Reality and Virtual Reality,* Los Angeles, pp. 33-43.

1990 **Knowledge-Based Support for Subsystem Layout in Architectural Design,** Gross, M.D., in Gero, J., ed., *Proceedings 1990 Conference on Artificial Intelligence in Engineering — Design*, Southampton: Computational Mechanics Press.

Buildings, Memory, and Wayfinding, Gross, M.D. and C. Zimring, *Environmental Design Research Association (EDRA) Conference*, Champaign-Urbana, Illinois, pp. 85-93.

Relational Modeling: A Basis for Computer-Assisted Design, Gross, M.D., in McCullough, Mitchell and Purcell, eds., The Electro*nic Design Studio*, Cambridge, MA: MIT Press, pp. 123-136.

1987   **Designing With Constraints**, Gross, M.D., J. Anderson, S. Ervin, A. Fleisher, in *The Computability of Design,* Y. Kalay, ed., New York: Wiley and Sons, pp. 53-83.

INVITED ARTICLES AND BOOK CHAPTERS

2010   **Tangible Interaction = Form + Computing**, Baskinger, M and M Gross; Interactions Magazine xvii.1 January•February 2010 pp 6-11.

2009   **Visual Languages and Visual Thinking: Sketch Based Interaction and Modeling**, Gross MD, Eurographics Workshop on Sketch-Based Interaction and Modeling (keynote address), New Orleans, August 1 2009

Editor's Introduction: Back to the real world—Tangible interaction for design, Do, E-Y and M. Gross, Artificial Intelligence for Engineering, Design, Analysis, and Manufacturing (AI-EDAM), 23, 221-223.

Now More Than Ever: computational thinking and a science of design, Gross M.D., *JSSD: Journal of the Japanese Society for the Science of Design,* Vol 16-2 No 62

Thinking with Diagrams in Architectural Design, Do EY-L, Gross MD, in special student edition of "The Diagram," Architectural Review, p 50-54, printed by the Concrete Centre

2008   **Teletables and Window Seat: bilocative furniture-based interfaces,** Oh, Y., Camarata, K., Weller, M., Gross, M., Do, Y-L. in TYL Theng and H. Duh, Ubiquitous Computing: Design, Implementation and Usability, Idea Group Publishers.

2004   **Between Worlds: Visions and View for the Future of CAD,** Ellen Yi-Luen Do and Mark D Gross, in Generative CAD Systems, Edited by Ö. Akin, R. Krishnamurti, and K.P. Lam, pp. 61-78, Carnegie Mellon University (ISBN 0-9762941-0-9)

2004   **Diagramming and Drawing in Computer Aided Design –** entry for the Encyclopedia of Human-Computer Interaction, Berkshire Publishing Group.

2003   **How is a piece of software like a building? Toward general design theory and methods.** Position paper for National Science Foundation workshop on Science of Design: Software Intensive Systems, Virginia, Nov 2-4.

2002   **An Interactive Guide to Ancient Cerén Before the Volcano Erupted** Jen Lewin, Mark A. Ehrhardt, Mark D. Gross, and Payson Sheets CD-ROM, University of Texas Press

1999   **Drawing, Seeing, and Reasoning: The Added Value of Computer Aided Architectural Design,** Gross, M.D., in Proceedings Second Conference on Added Value of Computer Aided Architectural Design (AVOCAAD), Brussels, 8-10 April, 1999, [keynote], pp. 26-33.

1998   **Sketchy (Informal) Interfaces for Design of Intelligent Systems,** Gross, M.D., in Trends and Controversies, *IEEE Intelligent Systems (formerly IEEE Expert)* May, pp. 10-19.

Smart House- In *Encyclopedia of Housing,* W. van Vliet--, ed Sage, pp. 546-547.

Computer Assisted Design - In *Encyclopedia of Housing*, W. van Vliet--, ed., Sage, pp. 75-76.

1995   **Diagram Query and Image Retrieval in Design,** Gross, M.D. and E. Do, in *Proceedings, 2nd IEEE International Conference on Image Processing*, vol II: 308-311.

Indexing visual databases in architecture with diagrams, Gross, M.D., in A. Koutamanis, H. Timmermans and I. Vermeulen, eds., *Visual Databases,* Aldershot: Avebury, pp. 1-14.

1992   **Predicting wayfinding in buildings - a schema-based approach,** Gross, M.D. and C. Zimring, in Y. Kalay and L. Swerdloff, eds., *Evaluating and Predicting Design Performance*. New York: Wiley, pp. 367-378.

1991   **Searching for the Environment in Environmental Cognition Research**, Gross, M.D. and C. Zimring, in Evans and Gärling, eds. *Environmental Cognition and Action*, Oxford University Press. pp. 78-95.

Constraint Based Design Environments for Architecture and Engineering, Gross, M.D., *Proceedings SOBRACON 1991 Conference on Computer Graphics in Architecture and Engineering Construction.* São Paulo. [keynote address]

A New Learning Environment: the NeoMuseum. Ueda, N. and M.D. Gross, *Proceedings International Conference on Hypermedia and Interactivity in Museums*, Pittsburgh, pp. 169-178.

1987   **Design and Use of a Constraint-Based Laboratory for Learning Design,** Gross, M.D., in *Artificial Intelligence and Education,* R. Lawler and M. Yazdani eds., New Jersey: Ablex, pp. 167-181.

BOOK REVIEWS

1998   Designing Digital Space by Daniela Bertol, *Computer Aided Design Journal* **30**(1):91.

1995   Electronic Color by Richard Norman. *Journal of Architecture and Planning Research* **12**(4):386-387.

1993   Visual Methods in Design Research by H. Sanoff. *J .Architecture and Planning Research* **10**(4):269-70.

PROCEEDINGS AND OTHER NON-REFEREED VOLUMES

2011   **Proceedings, Tangible Embedded, Embodied Interaction** of the ACM SIGCHI conference in Funchal, Madeira, Portugal, January 23-26 (co-editor with Nuno Nunes, Ellen Yi-Luen Do, Stephen Brewster, and Ian Oakley)

2011   **Proceedings, Work-in-Progress Tangible Embedded, Embodied Interaction Workshop** of the ACM SIGCHI conference in Funchal, Madeira, Portugal, January 23-26 (co-editor with Ellen Yi-Luen Do, and Ian Oakley)

2009   **Proceedings, Creativity and Cognition 2009** of the ACM SIGCHI conference in Berkeley, California, October 27-30 (editor).

2009   **Tangible Interaction in Design**, editor (with EY-L Do) special issue of *Artificial Intelligence in Engineering Design, Analysis, and Manufacturing (AI-EDAM)*.

2007   **Strategies for Research about Design: a multidisciplinary graduate curriculum**, Gross, M.D. Finger, S., Herbsleb, J., Shaw, M., in Humboldt State University (CA) Science of Design Workshop

2007   **Creative Design Computing**, Gross, M.D. Do, E., in Humboldt State University (CA) Science of Design Workshop

2007   **roBlocks: Understanding Emergent Complexity from the Bottom Up,** Eric Schweikardt and Mark D Gross, Robotics Science and Systems, Workshop on Robots for Education, Atlanta June 30

2004   **FlexM, Designing a Physical Construction Kit for 3D Modeling,** M. Eng, K. Camarata, E. Y-L Do, M. Gross, in Proceedings on CD ROM, Generative Computer Aided Design Systems conference, Carnegie Mellon University, Pittsburgh July 11-14.

       Design Evaluator, Critiquing Freehand Sketches, Y. Oh, E. Y-L. Do, M. Gross, in Proceedings on CD ROM, Generative Computer Aided Design Systems conference, Carnegie Mellon University, Pittsburgh July 11-14

       EspressoCAD, a System to support the design of dynamic structure configurations, M. Weller, E. Y-L Do, M. Gross, in Proceedings on CD ROM, Generative Computer Aided Design Systems conference, Carnegie Mellon University, Pittsburgh July 11-14

       A**rtifacts for Displaying Home Energy Use,** K. Camarata, D. Bregel, E. Y-L. Do, M.. Gross, in Proceedings on CD ROM, Generative Computer Aided Design Systems conference, Carnegie Mellon University, Pittsburgh July 11-14

2001   ***Tools and Conceptual Frameworks for Early Stages of Design***, Workshop Proceedings, ACM CHI '01 (Human Factors in Computing) conference, Seattle WA, Nakakoji, K. Gross, M.D., Candy, L., Edmonds, E., eds.

1992   ***Equitable and Sustainable Habitats, Proceedings of the 23d annual meeting of the Environmental Design Research Association (EDRA-23),*** Arias, E. and Gross, M.D. eds., April 7-12 1992, Boulder

1989   ***Spatial Coordination Demonstration Program,*** Gross, M.D.; N.J. Habraken; C. Fry; and M. Ruano, Final Project Report to Shimizu Corporation (3 volumes).

       Designing and Designing Knowledge in Engineering and Architecture: Final Report to the National Science Foundation, Bucciarelli, L., S. Ervin, A. Fleisher., G. Goldschmidt, M.D. Gross, D. Schön, G. Wiggins, Grant # 8611357-DMC.

1988   ***Concept Design Games* (volume 1: *Defining*; volume 2 *Playing*)**, Habraken, N.J., Gross M.D. et al, final report to the National Science Foundation.

1986   ***Design as Exploring Constraints,*** Gross, M.D., Ph.D. dissertation, Massachusetts Institute of Technology.

TECHNICAL REPORTS

2007   Design Research Summer School report to the National Science Foundation (Gross, Finger, Herbsleb, Shaw); http://code.arc.cmu.edu/~johnsogg/drss_wrapped/

2001   Final report to National Science Foundation, Back of an Envelope Project, Grant # IIS-96-19856 and IIS-00-96138. Gross, M.D.

2000   The PlaceMaker, Design Machine Group Technical Report, Gross, M.D.

1999   Collaboratively Annotating 3D Design Worlds Design Machine Group Technical Report, Gross, M.D. E, Do, T. Jung.

Sketch that Scene for Me: Creating Virtual Worlds by Freehand Drawing, Design Machine Group Technical Report, Gross, M.D., E. Do.

1997   HyperSketch II, Final report to Colorado Advanced Software Institute, Gross, M.D. and M. Dalrymple, Undergraduate Research Grant.

PDA based graphical interchange for field service and repair workers, Gross, M.D., W. Citrin, P. Hamill, A. Warmack, and S. Laufmann, Final report to Colorado Advanced Software Institute.

1996   Drawing as an Interface to Knowledge Based Design, Gross, M.D., J. Lewin, E, Do, K. Kuczun, and A. Warmack, final report of a Colorado Advanced Software Institute Undergraduate Research Grant.

1993   User Interfaces with Intelligent Objects, Gross, M.D. and Boyd, C., Colorado Advanced Software Institute Technical Report

1992   Constraints Provide Domain Behavior in a Construction Kit, Gross, M.D. and Boyd, C. University of Colorado Computer Science Technical Report (CU-CS-583-92).

1989   Summary Report CM2: A Constraint Based Design Environment, Ervin, S., M.D. Gross, and A. Fleisher. in Bucciarelli, L.; S. Ervin; A. Fleisher.; G. Goldschmidt; M.D. Gross; D. Schön; G. Wiggins Designing and Designing Knowledge in Engineering and Architecture: Final Report to the National Science Foundation, Grant #DMC-86-11357.

CM2: A Constraint Manager for Design Exploration on the Macintosh, Ervin, S., and M.D. Gross, in Bucciarelli, L.; S. Ervin; A. Fleisher.; G. Goldschmidt; M.D. Gross; D. Schön; G. Wiggins Designing and Designing Knowledge in Engineering and Architecture: Final Report to the National Science Foundation, Grant #DMC-86-11357.

1981   SAR/LOGO Tissue Model, Gross, M.D. and J. Kapteijns, S.A.R. Working Paper.

NON-REFEREED PAPERS

2007   Gross, M. D. (2007). Designers Need End-User Software Engineering. End-User Software Engineering, Dagstuhl, Germany, Internationales Begegnungs- und Forschungszentrum fuer Informatik (IBFI), Schloss Dagstuhl, Germany.

1999   Freehand Drawing as an Interface to Knowledge Based Design, Gross, M.D. and E. Do, in Proc. Human-Computer Interface Grantees Workshop '99, K. Stanney and G. Strong, eds., Orlando FL, Feb. 21-23, pp. 162-163

1998   The Sundance Lab: Design Systems of the Future, Do, E. and M.D. Gross, *Association for Computer Aided Design in Architecture Quarterly*, December 1998

1997   Thinking with Diagrams in Architectural Design, Do, E. and M.D. Gross, paper for Thinking with Diagrams workshop, Alan Blackwell, chair Portsmouth, UK.

1995   Avoiding Conflicts in Subsystem Layout, Gross, M.D., NSF Grantees Conference, San Diego

1993   CAD in Education, Gross, M.D., in *ACADIA Quarterly*.

1989   Automated Coordination for Construction Management, Gross, M.D., *Proceedings of the Conference International Batiment (CIB)* Paris.

BROCHURES, CATALOGS, AND OTHER PUBLICATIONS

2001   Design Machine Group, project work catalog at University of Washington's Design Machine Group.

1999   Introduction to Into 3D with form•Z: Modeling, Rendering, and Animation by Lachmi Khemlani, McGraw Hill, Gross, M.D.

1998   Multimedia Unplugged: A Learning Design Workshop, Workshop Catalog, NeoMuseum, Yoshino, Japan.

1998   KosmoPolis MultiOptikon, Workshop Catalog, Istanbul from Taksim to Sultanahmet Square. Yildiz Multimedia Workshop.

VIDEOTAPES AND ELECTRONIC PUBLICATIONS

2001   SpacePen, Videotape demonstration, Jung, T., E. Do, and M.D. Gross

Digital Sandbox, Videotape demonstration, Harris, R., E. Do, (production M.D. Gross)

1999   Digital Clay, Videotape demonstration (5:00), Gross, M.D. and E. Do

Collaborative Design with NetDraw, Videotape demonstration (6:00), Gross, M.D., D. Qian, & E. Do

the Electronic Cocktail Napkin, Videotape demonstration, Gross, M.D. and E. Do

Architects for the Twenty-first Century: Race, Class, and Culture, Videotape (30:00) of workshop held at University of Colorado, March 13,1999, Gross, M.D., J. Ramos, and A. Fabrikant.

Immersive Redlining, Videotape demonstration (8:55), Gross, M.D., T. Jung, E. Do, J. Davidson.

The Ceren Web Resource (CD-ROM) and Web Site (http://ceren.colorado.edu), Gross, M.D., Sheets, P., Lewin, J., and Ehrhardt, M.

The Pyramids of Knowledge (CD-ROM) and Web Site. Thomas Jung, Developer; Project Supervisors Mark D. Gross and Ellen Yi-Luen Do.

1998 the Hagia Sophia Web Resource, Gross, M.D. and M.Ehrhardt., interactive Web site http://depts.washington.edu/dmachine/istanbul

KosmoPolis MultiOptikon: Istanbul from Taksim to Sultanahmet Square, interactive Web site Gross, M.D. and Lewin, J. (with students from Yildiz Technical University) http://depts.washington.edu/dmachine/kosmopolis

1997 Local Area Networks Tools and Tasks, Videotape demonstration, Gross, M.D. and K. Kuczun.

1996 Ambiguous Intentions: Contextual Recognition, Gross, M.D. & E. Do, Video (8:00) demo.

INVITED TALKS AND PRESENTATIONS

2010 Keynote: Global COE Conference on "Biofied Buildings", Keio University, Japan (November)

Invited talks: Tainan University of Technology, Shu-Te University, Taiwan (June)

Distinguished Speaker: Institute for Software Research, University of California, Irvine (April 23 2010.

2009 Invited talks: National Central University, Jhong-Li Taiwan, Department of e-learning (November)

Keynote: Eurographics Workshop on Sketch-Based Interaction and Modeling, New Orleans, (August 1, 2009)

Colloquium, Centre for Playware, Danish Technical University, Copenhagen (March 2009)

2007 Invited participant: Dagstuhl (Germany) Workshop on End User Software Engineering

Invited talk: Brown University Pen-Centric Computing Center, Symposium on Pen-Centric Computing.

2006 Keynote: How to better design things and how to design better things? Danish HCI Symposium, Aarhus Denmark, Nov 15, 2006

2003 Invited Lecture: The Legacy of Horst Rittel: toward a science of design, computationally expressed. Design Theory & Methods Symposium, University of California, Berkeley, Oct 3-4, 2003.

2002 Keynote: Design, Computation, and the Interface - at Software Symposium 2002, Matsue, Japan (national conference of the Japan Software Engineering Association). July 17 2002

Lecture: from computing to design and back again - NTT Communication Sciences Research Lab, Kyoto, Japan. July 22, 2002

Lecture: Design, Computation, and the Interface - University of Tokyo, Research Center for Advanced Science and Technology, July 15, 2002

Lecture: Design Machine Group: current work Architecture Department, Carnegie Mellon University, March 4, 2002

2001   Lecture: Current Work at the Design Machine Group (with E. Do, B. Johnson, T. Jung) – Industrial Design Department, Technical University of Delft, July 12, 2001

Workshop co-organizer: (with L. Candy, E.Edmonds, K. Nakakoji) Tools and Conceptual Frameworks for Early Stages of Design ACM CHI '01 (Human Factors in Computing) conference, Seattle WA, April 1, 2001

Lecture: Sketchy Interfaces, ACM SIGCHI (Association for Computing Machinery: Special Interest Group in Computer Human Interaction), Puget Sound Chapter, Feb 22, 2001

2000   Lecture: Information in Place - invited speaker, Society for Technical Communication, Puget Sound Chapter, Nov 14, 2000

Invited Lecture: Collective Creativity and Interactive Systems in Design, Sakigake workshop on Collective Creativity, Nara Japan, August 7-8, 2000

Keynote address: Research and Computer Aided Design, DRN2000 - Design Research in the Netherlands 2000, Eindhoven, the Netherlands, May 24-25, 2000

1999   Keynote address: Design and Human-Computer Interaction, IHC'99 (Brazilian Human-Computer Interaction society), Campinas, Brazil, October 19, 1999

McKinley Invited Lecture: Architecture in the Digital Age: Creativity, Method, and Computer Aided Design, University of Washington, Seattle, October 7, 1999

Keynote address: Drawing, Seeing, and Reasoning,, Second International AVOCAAD Conference: the added value of computer aided architectural design, Brussels, Belgium, April 8-10, 1999

Panelist, Launch Party and Discussion Forum for the ATLAS Millennium Web Site, Front Porch Series, Department of Fine Arts, University of Colorado, 18 March, 1999

1998   Lecture and Invited workshop Digital Representations of Place at Yildiz Technical University, Istanbul, May 1- 5, 1998

Lecture: Computer Aided Design Research at the Sundance Lab, College of Architecture, Georgia Institute of Technology, March 20, 1998

Lecture: Human Computer Interaction and Computer Aided Design College of Computing, Georgia Institute of Technology, March 19, 1998

Computer Aided Design in Architecture, Department of Architecture, University of Washington, March 9, 1998

Lecture: Sketching as Media for Interacting with Computers in Design at Computer Science Department, Tokyo Institute of Technology, February 23, 1998

Lecture: CAD Tools for Collaboration at Communication Department, Tama Art University, Tokyo, February 22, 1998

Lecture: Interactive Tools for Design at Nara Advanced Institute of Science and Technology, Jan 17, 1998

1997   Lecture: PDA based graphical interchange for field service and repair workers, Colorado Advanced Software Institute, Phipps Mansion, Denver, Colorado.

Invited Talk The Design Studio, Gross, M.D. and E. Do, at NSF Workshop on Design Education, Georgia Tech, September 5-8 1997

Design Computing in Architecture, The Ohio State University, July 2, 1997

Presentation: Emergence in Sketching - ACM CHI'97 Workshop on Emergence of Concepts and Forms, Atlanta GA, April 1997

Panelist, on Design and Technology, for FORUM 97, National Conference of American Institute of Architectural Students (AIAS), Hyatt Regency, Denver, November 28, 1997

1995   Lecture: The Electronic Drawing Board - Design Studies and Computing Georgia Institute of Technology, College of Architecture, April 20-21, 1997

Invited Lecture: Architectural Computing Research and Education, University of Edinburgh, Scotland, Feb 5-7, 1995

1994   Invited visiting scholar, Nucleus of Informatics and Education, University of Campinas, Brazil. July 1-12

1993   Lectures: Advances in sketch recognition, Constraint-based techniques and their applications in design, and Artificial intelligence in architectural design, Georgia Institute of Technology.

1992   Lectures: Computing in Architectural Education and Design as Exploring Constraints University of California, Berkeley.

Project Report: User Interfaces with Intelligent Objects, Colorado Advanced Software Institute, Phipps Mansion, Denver Colorado.

1991   Keynote: Constraint Based Design Environments for Architecture and Engineering SOBRACON - Annual Conference, Society for Automation and Numerical Control, São Paulo, Brazil.

Convocation Speech, Intelligent Machines and Creative Work, Drury College, Springfield Missouri.

1990   Lectures: On the Architectural Argument, and Constraint Based Drawing, Georgia Institute of Technology, College of Architecture and College of Computing.

RESEARCH SUPPORT AND AWARDS

2010   Workshop: Graduate Student Consortium at Tangible Embedded Interaction 2010, National Science Foundation: $20,520.

2009   International workshop on Architectural Robotics, National Science Foundation (with Keith Evan Green, Clemson University): $32,062, at Ubicomp 2009 in Orlando, Florida.

    Association for Computer Aided Design in Architecture (ACADIA), Teaching Excellence Award.

2006   Summer Workshops for Software Design Research — National Science Foundation (with M. Shaw, J. Herbsleb, S. Finger): $130,000 to design, develop, and deliver a model interdisciplinary summer workshop in design research for graduate students.

2003   Computationally Enhanced Construction Kits — National Science Foundation (with M. Eisenberg): $1.8M for 5 years to explore the space of computationally enhanced construction kit toys and digitally produced craft.

2001   UrbanSim — National Science Foundation (with A. Borning (PI), co-PIs P. Waddell, D. Notkin, Z. Popovic, B. Friedman): $3.5M for 5 years to develop and test a system to project impacts of land use and transportation system decisions in an urban context that will enable citizens and decision makers to explore possible design alternatives.

    A Center for Digital Art — University Initiative Fund (with R. Karpen (lead), P. Berger, E. Lazowska, M. Harrison, D. Thome): $700,000 per year to establish an interdisciplinary center for digital art research and education at the University of Washington.

2000   Transforming Architectural Education through Technology — University of Washington, Tools for Transformation grant: $328,248, to enable students of architecture to employ current computational media and technologies in their architectural studio work.

1999   Research Initiation funding for Design Computing Research Laboratory — University of Washington (with E. Do) $255,508 (3 years) seed funding to establish a laboratory in Architecture Hall for exploration in computational design methods and means.

1997   Back of an Envelope an Architecture for Knowledge Based Design Environments — National Science Foundation: $320,000 (3 years) to explore and demonstrate a recognition based system architecture for freehand drawing as an interface to design application programs.

1996/7   Virtual Archaeology at the Ceren Site — University of Colorado President's Changing the Learning Paradigm: (with P. Sheets), $35,000 (1 year) to develop an interactive and informative virtual environment for learning about an archaeological site in El Salvador, using diverse Web media; continuation funding (additional $30,000) for 1997/8.

1996   PDA based graphical interchange for field service and repair workers — Colorado Advanced Software Institute and USWest Advanced Technologies: (with W. Citrin), $46,800 (1 year) to develop and demonstrate prototype software for a hand-held networked digital notepad.

    Bringing Learning Activities to Life — National Science Foundation: (with G. Fischer (PI) M. Dubin, E. Arias, T. Neese, A. Repenning): $50,000 (1 year). Planning grant for a CRLT (Center for Research in Learning Technologies) proposal.

1995   A Teaching Toolkit for Technology Enhanced Education — University of Colorado President's Fund for Educational Technology: (with J. Herdt) $35,000 (1 year) to develop software to support Web based teaching and learning.

1993   Avoiding Conflicts in Subsystem Layout in Architectural Design: a constraint based approach — National Science Foundation: $140,000 (2 years) to demonstrate the application of constraint based CAD to systematizing the layout of building components.

1993   Avoiding Conflicts in Subsystem Layout in Architectural Design — University of Colorado at Boulder, Grant in Aid, $2,450

1991   Intelligent Objects in User Interfaces — Colorado Advanced Software Institute: $30,000 (1 year) to demonstrate a graphics system that employs constraints to embed behavior in interface objects.

Support for undergraduate research assistants

1999   University of Colorado Undergraduate Research Opportunities Program: (Support for undergraduate research assistant Mark Ehrhardt, Interactive Visual Educational Environments): $600.

1997   Colorado Advanced Software Institute: Hypersketch II: Creating and Navigating Drawing Relationships-(support for undergraduate research assistant Mike Dalrymple): $3,000.

University of Colorado Teaching Award: $3000, support for undergraduate research assistant Jenniffer Lewin: Information Design Studio.

University of Colorado Faculty Grants: support for undergraduate research assistant Laura Parker: Multi-user urban design: $1400.

University of Colorado Undergraduate Research Opportunities Program: support for undergraduate research assistants (Schwekardt, Dalrymple, Page-Echols, Ehrhardt), 4 mini-grants totaling $5,000.

1996   University of Colorado Undergraduate Research Opportunities Program: support for undergraduate research assistants, 2 mini-grants totaling $2,000.

Colorado Advanced Software Institute: Drawing as an interface to knowledge based systems (support for undergraduate research assistant Kristin Mayfield): $3,000.

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

European Computer Aided Architectural Design Education (eCAADe)

Association for Computer Assisted Design in Architecture (ACADIA)

Association for Computing Machinery (ACM)

Institute of Electrical and Electronic Engineers (IEEE) Computer Society

EXCERPTS AND DESCRIPTIONS OF WORK IN POPULAR PRESS AND BOOKS

WTAE - TV local story on   http://www.thepittsburghchannel.com/video/15411139/index.html

O'Reilly Radar (April 2008) Simple Blocks to Make Robots
    http://radar.oreilly.com/archives/2008/04/roblocks-simple-blocks-to-make.html

Center for Interactive Spaces blog: (February 2008) Posey http://www.digitalexperience.dk/

The New Scientist online (January 2008)Smart Lego Conjures Up Virtual Twin -
    http://technology.newscientist.com/article/dn13261-smart-lego-conjures-up-virtual-3d-twin.html

Slashdot (January 2008) slashdot.org/article.pl?sid=08/01/31/1622215 CAAD Talks, ed Mao-Lin Chiu,
    NCKU (2003)

Pacific Northwest Science and Technology magazine, Next Generation Tools for Architects, Autumn 2002

KUOW 94.6 FM Seattle - Weekday program on Intelligent Buildings, commentator, 7 May 2001

Carillon, University of Colorado at Boulder, 12 March 1999: Code As Art: Bringing Programming to the
Masses as a Creativity Tool

Science, NetWatch column, November 20, 1998, the Ceren Virtual Archaeology Site

CADENCE Magazine: January 1999, Digital Clay Project

Rendering Real and Imagined Buildings (book by B.J. Novitski), Van Nostrand Reinhold, 1999, Ceren
Virtual Archaeology Site

INVENTION DISCLOSURES

2007   roBlocks: A Robotic Construction Kit for Mathematics and Science Education, Eric
                Schweikardt and Mark D Gross

2006   A control device for designed for controlling the color and brightness of digitally
                controlled full spectrum lighting, Jake Pierson, Ellen Do, Mark D Gross

2006   Flow Selection (a time based method of selection in graphical user computer interfaces)
                Gabe Johnson and Mark D Gross

COURSES TAUGHT

Fall 2007 - Fall 2010   Making Things Interactive
June 2007   co-organizer (with Shaw, Herbsleb, Finger): Design Research Summer School, one-week
                workshop for PhD students from other universities, to help them formulate dissertation
                research about design.
Spring 2007   Strategies for Research in Design (with Shaw, Finger, Herbsleb),

Fall 2006, Spring 2007   Architectural Robotics http://www.architecturalrobotics.org
Fall 2006 Spring 2007   Digital Fabrication   http://code.arc.cmu.edu/~mdg/DigFab07

Research Practice: (2003)
        day-to-day skills and knowledge needed to do research (writing, bibliography, funding, ethics)

Architectural Design Studio: Mapping the Terrain: (2002)
>   mixed media and construction; parking garage rehab project for artist drop-city housing.

Architectural Design Studio: Digital Design Build (2001)
>   Explores the near-term future of architecture, where buildings will embed computational capabilities.

Theory of Design Computing (1999, 2001, 2003)
>   reviews design research and its applications in computer-aided design.

Design of Virtual Worlds: (1997, 2000, 2002)
>   Seminar about on-line communities; project work constructing web based places.

Things That Think: (1997, 1998)
>   Interdisciplinary studio-workshop course on integrating computation in physical artifacts.

Observing Built Form: (1996)
>   Students observe, document, and discuss the built environment using diverse media.

Introduction to Computing in Design:
>   Fundamentals of computer applications in architecture.

Making MultiMedia Maps:
>   Seminar using information technology to make interactive maps.

Three-Dimensional Modeling with Computer Graphics:
>   Fundamentals of 3D modeling in architecture.

Computer Graphics Programming:
>   Introduction to design and implementation of computer graphics programs.

The Future of Computer Aided Design:
>   Seminar considers impacts of information technology in design.

Design Theory and Methods:
>   Surveys design methods and processes in architectural design.

DOCTORAL DISSERTATION COMMITTEES

Karl D.D. Willis (Computational Design)
Ray Yun   (Computational Design)
Sora Key   (Computational Design)
Michael Weller   (Computational Design) Architectural Robotics
Hyunyoung Song (Computer Science, University of Maryland)
George Abraham (Informatics, Drexel University)

Yeonjoo Oh   Ph.D. '10 (chair)
>   *Toward a Theory of Design Critiquing*
>   Computational Design, School of Architecture, Carnegie Mellon University

Eric Schweikardt   Ph.D. '08 (chair)
       Designing Modular Robots
       Computational Design, School of Architecture, Carnegie Mellon University

Peter Scupelli   Ph.D. '08
       Designing information hotspots for the surgical suite:
       How architecture, artifacts, and people's behavior converge to support coordination.
       Human-Computer Interaction Institute, Carnegie Mellon University

Lisa Anthony   Ph.D. '08
       Developing Handwriting-based Intelligent Tutors To Enhance Mathematics Learning
       Human-Computer Interaction Institute, Carnegie Mellon University

Leah Buechley   Ph.D. '07
       e-textiles
       Computer Science, University of Colorado

Mamoun Sakkal (pre-comprehensive exam)
       Geometry and Computation in Traditional Islamic Architecture
       Near and Middle Eastern Studies, University of Washington.

Thomas Wrensch   Ph.D. '01
       Computation and Craft
       Computer Science (University of Colorado, Boulder)

Ellen Yi-Luen   Do   Ph.D. '98
       The Right Tool at the Right Time: inferring intention from designers' sketches
       Architecture (Georgia Tech)

Judy Gurka   Ph.D. '96
       Pedagogic Aspects of Algorithm Animation
       Computer Science (University of Colorado, Boulder)

Tamara Sumner   Ph.D. '96
       Toolbelts and Domain Oriented Design Environments
       Computer Science (University of Colorado, Boulder)

David Theobald   Ph.D. '95
       Morphology and Effects of Mountain Land Use Change in Colorado
       Geography (University of Colorado, Boulder)

Pei-Yu Huang   Ph.D. '94
       An Object Oriented Environment for Computer Aided Design
       Civil Engineering (University of Colorado, Boulder)

Jeffrey McWhirter   Ph.D. '94
       Characterization, Specification, and Generation of Visual Language Applications
       Computer Science (University of Colorado, Boulder)

Nick Wilde   Ph.D. '94
       Design of Visual Programming Environments
       Computer Science (University of Colorado, Boulder)

Roland Hübscher   Ph.D. '94
        Imposing Structure on Action: A Framework for Visual Advice-Based Programming
        Computer Science (University of Colorado, Boulder)

Alex Repenning   Ph.D. '94
        AgentSheets: From General Purpose Visual Programming Environments
        to Domain Tailorable Spatial Reasoning Substrates
        Computer Science (University of Colorado, Boulder)

Kumiyo NakakojiPh.D. '93
        Delivering Case Based Information in Integrated, Knowledge-based Design Environments
        Computer Science (University of Colorado, Boulder)

Gerry Stahl   Ph.D. '93
        Supporting Interpretation in Design
        Computer Science (University of Colorado, Boulder)

Andreas Girgensohn   Ph.D. '92
        End User Modifiability in Knowledge-Based Design Environments
        Computer Science (University of Colorado, Boulder)

MASTER THESIS COMMITTEES

Yeonjoo Oh   Master of Science, Design Computing, (June, 2004)
        Design Evaluator: critiquing freehand sketches

ChenJe Huang   Master of Science, Design Computing, (June, 2004)
        Tangible MouseHaus Table: an physical interface for collaborative design

Markus Eng   Master of Architecture, (June 2004)
        FlexM: a computationally enhanced geometric construction kit

Doo Young Kwon   Master of Science, Design Computing, December 2003
        ArchiDNA – A Generative System for Shape Configurations

Michael Philetus Weller   Master of Architecture, June 2003
        Espresso Blocks: self-configuring building blocks

Preechaya Therakomen   Master of Architecture, December 2001 (chair)
        Mouse.class: Pedestrian Behavior in Urban Places

Dustin Eggink   Master of Architecture, December 2001 (chair)
        Smart Objects

Ming Chun Lee   Master of Architecture, December 2001 (member)
        The SpaceMaker - A Symbol-based Three-dimensional Computer Modeling Tool for Early
        Schematic Development of the Architectural Design

Rob Harris   Master of Landscape Architecture, August 2001 (member)
        Digital Sandbox

William Washington   Master of Technical Communication, June 2001 (member)

Affective Media

Kennith Camarata   Master of Architecture, June 2001 (member)
    Navigational Blocks: an interplay between the physical and the virtual

Doddy Samiaji   Master of Architecture, June 2001 (chair)
    Development Simulator

Luis F. Borrero   Master of Architecture, June 2001 (chair)
    DeliverEroom: A new physical space for the residential units to come

Mathew L. Albores   Master of Architecture, June 2001 (chair)
    Y2K~02000: A Clock/Library for the Deep Future

Misun Chung   Master of Architecture, June 2000 (chair)
    A Sacred Place in CyberSpace

Dongqiu Qian   Master of Design Studies, Design Computing, June 1999 (chair)
    (University of Colorado)
    A Lightweight Java-based Computer Aided Design Toolbox

Nabeel Koshak   Master of Architecture, June 1997 (chair)
    (University of Colorado)
    Strategies for Constructing CAD Models of the Historic Buildings in the City of Makkah

Paul J. Hamill III   Master of Electrical and Computer Engineering, June 1998
    (University of Colorado)
    Internet Structure Visualizations

ADVISORY AND EDITORIAL BOARDS AND PROGRAM COMMITTEES

2011	Conference Co-Chair, Tangible Embedded Embodied Interaction '11 (Madeira, Portugal)
2010	Chair, Graduate Student Consortium, Tangible Embedded Embodied Interaction (MIT)
	Editorial Board, Journal of Educational Technology and Systems (JETS).
2009	Program Chair: ACM Creativity and Cognition
	Associate Chair: ACM Interaction Design and Children
2007	Program Committee ACM Creativity and Cognition Conference
2004, 2006	Intl Design Computing and Cognition Conference
2006-present	Research in Engineering Design
2002-present	Editorial board, *CoDesign Journal*
2001	Advisory Board, Carnegie Mellon University, Department of Architecture
	Program Committee, Diagrams 2002, 2nd Int'l Conf.Theory & Applications of Diagrams.
	Program Committee, IEEE Symposium on End User Programming
	Program Committee, Spatial and Visual Reasoning II
2000	Advisory Board, 6th Int'l Conference on Artificial Intelligence in Design
1999	Program Committee, Diagrams 2000: First International Conference on Theory and Application of Diagrams

1998	Program Committee, International Round Table Conference Computational Models of Creative Design
1997-	Editorial Board, International Journal of Design Computing
1995-1997	Steering Committee, Association for Computer Aided Design in Architecture
1991-1997	Advisory Board, International Conference on Artificial Intelligence in Design
1996	Advisory Board, Formal Aspects of Collaborative CAD '97
1995	Advisory Board, Computational Models of Creative Design '95
1992-1994	Advisory Board, Congresso Internacional de Computação Grafica
1992	co-chair (with Ernesto G. Arias), EDRA (Environmental Design Research Association) National Conference, Boulder, Colorado
1991-	Advisory Board, CADLine—Bibliographic Reference Source for CAD
1991-	Advisory Board, The Children's Media NeoMuseum, Yoshino, Japan

REFEREE OF MANUSCRIPTS, MATERIALS, AND GRANT PROPOSALS

2007	ACM Creativity & Cognition (C&C), ACM User Interface Software Technology (UIST), ACM Human Factors in Computing (CHI), ACM Visual Languages and Human-Centric Computing (VL-HCC) , Eurographics workshop on Sketch Based Interaction and Modeling, ACM Tangible and Embedded Interaction (TEI), Computer Aided Architectural Design Futures (CAAD Futures), Computer Aided Architectural Design and Research in Asia (CAADRIA), Journal of Engineering Design, National Science Foundation proposal reviews (CISE), tenure and promotion reviews (various schools)
2006	ACM User Interface Software Technology (UIST), ACM Human Factors in Computing (CHI), ACM Visual Languages and Human-Centric Computing (VL-HCC) , Eurographics workshop on Sketch Based Interaction and Modeling, ACM Tangible and Embedded Interaction (TEI), Design Computing and Cognition (DCC), Computer Aided Architectural Design and Research in Asia (CAADRIA), International Conference on Multimodal Interaction, Open House International, Journal of Engineering Design, HCI Journal, IEEE Computer Graphics and Applications, Artificial Intelligence in Engineering Design and Manufacturing (AI-EDAM), tenure and promotion reviews (various schools), program review Herbst Center for the Humanities in Engineering (U. Colorado), MIT Press
2005	Children & Youth Environments (journal), ACM Human Factors in Computing (CHI), Design Decision Support Systems (DDSS), ACM User Interface Software Technology (UIST), Artificial Intelligence in Engineering Design and Manufacturing (AI-EDAM), Interacting with Computers, Eurographics workshop Sketch Based Modeling, ACM Visual Languages and Human-Centric Computing (VL-HCC), IEEE Transactions on Multimedia, CoDesign Journal, Automation in Construction, J. Computing and Information Science in Engineering.

2004	SIGGraph, eCAADe, Building Futures Conference, CoDesign Journal, Artificial Intelligence in Engineering Design and Manufacturing (AI-EDAM)
2003	CMU Conf. on Generative Computer Aided Design Systems (G-CAD), Int'l Conf. Design Computation and Cognition (DCC), Int'l Journal Document Analysis and Recognition (IJDAR), Int'l Conf. Design Decision Support Systems '04, ACM Conf. User Interface Software Technology (UIST) , 2nd International Workshop on Computer Graphics and Geometric Modeling, CGGM'2003, INTERACT '03, ACM Workshop on Interactive 3D; ACM SIGGraph '03, Education in Computer Aided Architectural Design in Europe '03; Diagrams Journal, MIT Press
2002	ACM conference on Interactive 3-D (I3D) Research in Engineering Design Journal First European Workshop on Diagrammatics and Design Design Knowledge Sharing through Internet Application ACM SIGGraph 2002, University of Sydney doctoral dissertation (external review)
2001	Second International Conference on the Theory and Applications of Diagrams International Conference on Artificial Intelligence in Design (AID '02) Computer Aided Architectural Design Research in Asia (CAADRIA '02) ACM Transactions on Internet Technology (ToIT) Computational Models of Creativity Symposium Computer Supported Cooperative Learning (CSCL) Conference ACM User Interface Software and Technology (UIST) Conferfence Human-Centered Computing Conference INTERACT '01 conference Education in Computer Aided Architectural Design in Europe (eCAADe) International Conference on Spatial & Visual Reasoning II Association for Computer Aided Design in Architecture (ACADIA) Automation in Construction Journal Computer Aided Design Journal MIT Press Tenure and promotion review, University of California, Los Angeles
2000	Computer Aided Architectural Design Futures 2001 American Society of Mechanical Engineers Design Theory & Methodology Conference Landscape Journal International Conference on Theory and Applications of Diagrams 2000 Co-Designing 2000 Association for Computer Aided Design in Architecture (ACADIA) Computer Aided Architectural Design Research in Asia (CAADRIA) Automation in Construction Journal Computer Aided Design Journal The University of California MICRO Grants Program Canadian Fund for Innovation (FCAR)
1999	Education in Computer Aided Architectural Design in Europe (eCAADe) International Conference on Artificial Intelligence in Design (AID) Design Computing Network (DCNet) conference Association of Collegiate Schools of Architecture (ACSA) National Conference ACM Symposium on Applied Computing (SAC) Computer Aided Architectural Design and Research in Asia (CAADRIA) '99

International Conference on Visual and Spatial Reasoning '99
Computer Aided Architectural Design Futures '99
Tenure and promotion review, UC Berkeley
Tenure and promotion review, Carnegie Mellon University

1998   ACM User Interface Software Tools (UIST) Conference
Transactions on Computer Human Interface (ToCHI)
2nd Int'l Conference on Added Value of Computer Aided Architectural Design (AVOCAAD)
Association for Computer Aided Design in Architecture (ACADIA) Conference
International Conference on Artificial Intelligence in Design (AID)
Encyclopedia of Creativity
Int. Journal Design Computing (IJDC)
NSF Small Business Innovative Research (SBIR) panel
Tenure and/or promotion review, University of Virginia

1997   Association for Computer Aided Design in Architecture (ACADIA) Conference
International Conference on Artificial Intelligence in Design (AID) Conference
Automation in Construction Journal
Int'l J. Human-Computer Systems
Creativity Research Journal
J. Visual Languages and Computing
Van Nostrand Reinhold publishers
NSF Information, Robotics, and Interactive Systems (IRIS)

1996   Association for Computer Aided Design in Architecture (ACADIA) Conference
International Conference on Concurrent Engineering
Knowledge Based Systems Journal
Hong Kong Papers on the Built Environment
J. Artificial Intelligence in Engineering Design & Manufacturing (AI EDAM)

1995   International Federation of Information Processing WG 5.2 conference on CAD
IEEE Computer, special issue on visual languages
Journal of Visual Languages and Computing

1994   MIT Press (Bradford Books)
Society for Applied Computing (SAC) National Conference AI track
Computer Aided Design Journal (special issue on artificial intelligence)
Journal of Concurrent Engineering Research Association

1993   Computer Aided Architectural Design Futures '93

SERVICE TO THE DEPARTMENT, COLLEGE, AND UNIVERSITY

Carnegie Mellon University

University (2009-10) Provost's committee on Tenure and Promotion
School of Architecture, Associate Head (Fall 2008-present)
School of Architecture (Spring 2007-present) Computing Task Force
School of Architecture (Fall 2007, present) director, Graduate Program

University of Washington (1999-2004)

Architecture Department: Studio Computing Integration Committee (2003/4)

College of Architecture and Urban Planning: PhD Program Steering Committee; College Council (2003/4)

Department of Civil Engineering, Search Committee (2002/3)

Provost's Advisory Committee on UIF-3 proposals, January - June 2001
> Member of a faculty and staff committee reviewing 27 pre-proposals and 8 proposals for University Initiative Funding, approximately $3.5M of permanent funding for innovative academic and administrative ventures.

Graduate School Representative on Doctoral Committees
> Marsha Lynn Whitney, Bioengineering
> Jr-Yi Shen, Mechanical Engineering

College Computing Committee September 1999 - June 2000
> Faculty advisory committee to the Associate Dean for Research + Computing on computing resource planning and management.

College Doctoral Program Proposal Committee 2002
> Faculty advisory committee to develop and propose doctoral committee for the College of Architecture and Urban Planning.

Department of Landscape Architecture
> Search Committee (2 positions) January - June 2001
> Reviewed applications and participated in 7 faculty visits for 2 faculty hires in Landscape Architecture.

Department of Architecture
> Master of Science in Design Computing implementation committee 2001 - 2002
> Administrative and academic preparation for initial class of MS students; negotiating budgets, hiring staff, writing program literature.
>
> Committee on Tenure, Promotion, Merit, Retention – Sept. 1999 - June 2001
> Faculty tenure and promotion reviews, review of faculty yearly activity reports and CVs for recommendation to the Chair for merit raises .
>
> Computing Committee - September 1999 - June 2001
> Committee advises Department Chair on computing resources management and planning.
>
> Professional Advisory Committee (IT subcommittee) Sept. 2000 - June 2001
>
> Co-author, proposal to establish a Master of Science in Architecture (design computing), submitted November 1999, approved July 2001.
>
> Co-author, Design Education for the Future, a Tools for Transformation proposal (granted May, 2000).

University of Colorado (1990-1999)

University Instructional Computing Working Group, 1994-1999
> University committee to oversee instructional computing across the Boulder campus, allocate student technology fee funds.

University Advanced Technology, Learning, And Society (ATLAS) Committee
> Advise Associate Vice President for Technology on development of Advanced Technology, Learning, And Society (ATLAS) program. Subcommittee on Technology, Arts, & Media (1998-1999)

Boulder Faculty Assembly (1992-3)
> Representative for the College of Environmental Design

College of Architecture and Planning (1992-99); College of Environmental Design (1990-92)
> Faculty advisor, National Organization of Minority Architecture Students (NOMAS) - 1997-99. Assisted students in setting up brown bag lunch series. Helped students organize 1-day workshop on Architects for the Twenty-first Century: Race, Class, and Culture March 13,1999. Workshop included distinguished panelists from architecture, law, ethnic studies, and women studies.
>
> Computer Committee 1990-1999
> Developed computing resources for the 600 students and associated faculty members in the College of Architecture and Planning at the Boulder campus; supervised support and teaching staff, developed curriculum, and through university proposals secured funding for instructional computing resources (approximately $50,000 annually); planned the development of student 'plug-and-play' studio desktop Internet access.

Department of Planning and Design:
> Author, Proposal for a Master of Science in Design Computing (approved April 1998).
>
> Search Committee (1996)
> Design Studio Head, Undergraduate Program; Search resulted in several ranked candidates, finalist hired as Associate Professor with tenure. (Architecture)
>
> Search Committee (1994)
> Assistant / Associate Professor Architecture, and Assistant / Associate Professor Planning (2 positions). Two candidates selected; one offer made and the candidate hired (Planning).
>
> Search Committee (1992)
> Assistant Professor, architectural design (search resulted in an offer, which was declined).
>
> Task force on a Ph.D. in Design and Planning
> Member of 3-person team drafting a Ph.D. program proposal (approved, July 1997).