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George Tallman and Florence Barrett Ladd Professor in Engineering
Department of Mechanical Engineering
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Education

Ph.D.	University of California, Berkeley, CA, April, 1990, Mechanical Engineering
M.S.	University of Rochester, Rochester, NY, January, 1985, Mechanical Engineering
B.S.	University of Rochester, Rochester, NY, December, 1983, Mechanical Engineering

Positions Held

4/17-present	**Associate Dean for Graduate and Faculty Affairs,** College of Engineering
8/16-present	**Faculty Co-Director**, Swartz Center for Entrepreneurship
7/16-present	**Head,** MS in Technology Ventures, Bi-Coastal Program
9/15-3/17	**Associate Dean for Strategic Initiatives,** College of Engineering
10/13-present	**Head,** MS in Software Management, Silicon Valley
8/13-present	**Co-Director,** Integrated Innovation Institute
7/13-9/15	**Director of Innovation and Entrepreneurship,** College of Engineering
5/13-8/14	**Co-Chair of Strategic Planning,** College of Engineering
5/08-12/11	**Co-Director**, Center for Product Strategy and Innovation
11/07-present	**George Tallman and Florence Barrett Ladd Professorship in Engineering**
7/03-2/17	**Co-Director**, Master of Integrated Innovation for Products and Services (formerly MPD)
7/99- present	**Professor**, Dept. of Mechanical Engineering
6/00 - present	**Faculty Appointment**, School of Design
9/97-6/99	**George Tallman and Florence Barrett Ladd Associate Professorship in Engineering**
1/97-12/06	**Faculty Appointment**, Biomedical Engineering
7/95-6/99	**Associate Professor**, Dept. of Mechanical Engineering
12/93-12/13	**Courtesy Appointment**, Dept. of Computer Science
7/90-6/95	**Assistant Professor**, Dept. of Mechanical Engineering Carnegie Mellon University, Pittsburgh, PA
10/02-4/09	**Co-Founder and Chief Technologist** DesignAdvance Systems, Inc., Pittsburgh, PA [formerly called Desatnage, Inc.] *(company acquired by EMA Design Automation)*
11/84-7/86	**Applied Research Engineer**, Engineering Technology Laboratory
5/81-10/84	**Cooperative Intern** Eastman Kodak Company, Rochester, NY

Research Interests

Design theory, methods, and automation, product design and concurrent engineering: spatial synthesis and layout, formal design synthesis, traditional, qualitative, and stochastic optimization techniques; computer-aided innovative and creative design; design representations; design grammars; product design methodologies; cognition and problem solving; agent-based design; integrated product development; industrial and service design; entrepreneurship; strategic

planning, brand strategy; design preference; design preference; neuroscience applied to design; internet of things; bio-based design synthesis; additive manufacturing.

Teaching Experience

Graduate Courses:	AI in Design (introduced course)
	Optimization in Mechanical Engineering (introduced course)
	Healthcare Engineering for Independent Living (introduced course)
	Product Research and Conceptualization (introduced course)
	Emotion-based Product Research (introduced course)
	Design for Manufacturing and the Environment (introduced course)
	Grand Challenges: Technology Identification and Product Design (introduced course)
	Technology-based Product Innovation and Enterprise Creation (introduced course)
	Grand Challenge Innovation (introduced course)
Undergraduate Courses:	Introduction to Mechanical Engineering
	Statics and Dynamics
	Engineering Design
	Design for Manufacturing
	Manufacturing Sciences
Integrated Innovation Courses:	
	Integrated Product Development (graduates and seniors; co-taught with business school and industrial design)
	Integrated Product Development Methods (co-introduced course)
Professional Development:	User-Centered Integrated Product Development
	Faculty-to-faculty course: Designing for the Human Experience
	Executive and team training to: Jarden Corp., Ford Motor Company, Procter & Gamble, Navistar (International Truck), Alcoa Corp., Industrial Scientific Corp., Giant Eagle Corp., Respironics Corp., Lubrizol Corp., Dormont Manufacturing, HP, Bayer, MSA, Lockheed Martin, CMU Tepper Executive Education Program, CMU Carnegie Bosch Institute, Global Management for Engineers
Notes:	Several dozen US patent applications filed by Ford, Navistar/International Truck and Engine, Kennametal, Alcoa, Respironics, McKesson Automation, Jarden, from student project courses at Carnegie Mellon

Awards

- *ASME Design Theory and Methodology Award*, 2016
- *Best Paper Award in Design Computation, 2016 International Conference of Design Computation and Cognition*
- *Reviewers' Favourite Award, 2015 International Conference on Engineering Design (Two Awards given for separate papers)*
- *Best Paper Award, 2015 ASME Virtual Environments and Systems, CIE Conference*
- *Best Paper Award, 2014 ASME Design Theory and Methodology Conference*
- *Reviewers' Favourite Award, 2013 International Conference on Engineering Design*
- *Best Paper Award, 2012 ASME Design Theory and Methodology Conference*
- *Best Paper Award in Design Cognition, 2012 International Conference of Design Computation and Cognition*
- *Best Paper Award, 2011 ASME Design Theory and Methodology Conference*

- *Best Paper Award, 2010 ASME Design Automation Conference*
- *Best Paper Award, 2008 ASME Design Theory and Methodology Conference*
- *Carnegie Institute of Technology Outstanding Research Award, 2007*
- *George Tallman and Florence Barrett Ladd Professorship in Engineering. 2007*
- *ASME Curriculum Innovation Award, 2003 (w/ C. Vogel & L. Weingart)*
- *Winner, EnterPrize Business Plan Competition, 2003 (w/ R. Eager)*
- *B.R. Teare Teaching Award, Carnegie Institute of Technology, 2002*
- *In Appreciation Award, Mon Valley Initiative, 2002*
- *Fellow of the ASME, elected 2000*
- *Philip L. Dowd Fellowship Award, Carnegie Institute of Technology, 2000*
- *Xerox Best Paper Award, 1998 ASME Design Theory and Methodology Conference*
- *Professor of the Year, 1997 - voted on by CMU's Mechanical Engineering graduating class*
- *George Tallman and Florence Barrett Ladd Development Professorship in Engineering, 1997*
- *Distinguished Paper Award, 1996 ASME Design Theory and Methodology Conference*
- *SAE Ralph R. Teetor Educational Award, 1996*
- *National Science Foundation Young Investigator Award, 1992*
- *National Science Foundation Research Initiation Award, 1991*

Citations

- *Who's Who in Science and Engineering*
- *Who's Who in the World*
- *Dictionary of International Biography*
- *Outstanding People of the 20th Century*

Professional Associations and Service

Fellow- *American Society of Mechanical Engineers (elected 2000)*

Professional Engineer - *Pennsylvania license no. PE-040885-R*

Chairperson- *External Advisory Board of Engineering Product Development Pillar at Singapore University of Technology and Design, 2013-2014*

Member - *American Society of Mechanical Engineers, American Association for the Advancement of Science, Industrial Designer Society of America, Design Society*

Member- *Board of Directors, DesignAdvance Systems, Inc., Pittsburgh, PA, 2002-2009*

Member- *Advisory Board, The Design Society, 2005-2011*

Member- *Advisory Board, RedZone Robotics, Inc., Pittsburgh, PA, 2003-2006*

Member- *Advisory Board, Pittsburgh Product Strategy Network, 2003-2005*

Chair - *ASME Design Theory and Methodology Committee, 1996-1998*

Member - *Phi Beta Kappa, Tau Beta Pi, and Sigma Xi National Honor Societies*

Participant- *NAE/DFG First German-American Frontiers of Engineering Symposium, May 13-16, Dresden, Germany, 1998.*

Selected Editorial Roles

Major Roles

Associate Technical Editor: *Transactions of the ASME Journal of Mechanical Design*, 1998-2001 and 2008 - 2014.
Associate Editor: *Design Studies*, 2012 - present.
Associate Editor: *Design Science*, 2014 - present.
Advisory Editor: *Research in Engineering Design*, 1999 - present.
Advisory Board: *Artificial Intelligence in Engineering Design, Analysis and Manufacturing*, 2001-present.
Editorial Board: *Journal of Engineering Design*, 2003 – present
Editorial Board: *Design Studies*, 2008-2012
Editorial Board: *Computer Aided Design*, 2002 - 2004
Area Editor: *Transactions of the SDPS Journal of Integrated Design & Process Science,* 1996-1998.
Advisory Board: Design Society, 2005-2011
Workshop Co-chair: *NSF Workshop: Discussion on Individual and Team-Based Innovation*, Knoxville, TN, January 7, 2008.
Organizing Committee: *NSF Workshop on Science of Innovation and Discovery*, Washington, DC, May 17-18, 2006.
Steering Committee: *NSF Planning Workshop on Engineering Design in 2030*, Gold Canyon, AZ, March 26-29, 2004.
Conference Chair: *ASME 1996 Design Theory and Methodology Conference*, Irvine, CA, August 18-21.

Other Roles

Member - *Program Committee: AAAI Symposium on Design from Physical Principles, Cambridge, MA, October, 1992.*

Session co-organizer and chair*: "Quality and Tolerancing: The Link Between Design and Manufacturing", ASME Design Theory and Methodology Conference, Minneapolis, September, 1994.*

Session organizer and chair*: "Methodology for Design Automation: Application and Theory", ASME International Mechanical Engineering Congress and Exposition, Chicago, November 6-11, 1994.*

Review Coordinator*: ASME Design Theory and Methodology Conferences.*

Conference Vice-Chair and Member of Best Presentation Award Committee*: 1996 International Conference on Artificial Intelligence in Design, Palo Alto, CA, June, 1996.*

Member, International Scientific and Advisory Board: *JSME International Symposium on Optimization and Innovative Design, Tokyo, July 28-30, 1997.*

Conference Vice-Chair and Member of Best Presentation Award Committee*: 1998 International Conference on Artificial Intelligence in Design, Portugal, July 19-21, 1988.*

Conference Vice-Chair*: 2000 International Conference on Artificial Intelligence in Design, Worcester, MA, July, 2000.*

Workshop Committee Member: *International Workshop on Agents in Design at MIT, Cambridge,*

28-30 August 2002.

Member, Scientific Advisory Panel: *ICED 03: International Conference on Engineering Design, August 19-21, Stockholm, Sweden, 2003.*

Member, Steering Committee: *Strategic Planning Workshop for NSF's Engineering Design Program, March 26-29, AZ, 2004.*

Conference Vice-Char*: International Conference on Design Computing and Cognition*, *MIT*, *Cambridge*, *July 2004*

Member, Scientific Advisory Board: *ICED 07: International Conference on Engineering Design, August 28-31, Paris, France, 2007.*

Member, Advisory Board: *DCC 08: 3rd International Conference on Design Computing & Cognition '08, July 22-25, Atlanta, GA, 2008.*

Member, Advisory Board: *DCC 10: 5th International Conference on Design Computing & Cognition '12, June 7-9, College Station, TX, 2012.*

Proposal Reviews - *NSF, ASME, Ben Franklin Technology Center of Western PA, Georgia Tech, CMI (UK)*

Reviewer, *Graduate Program of the Design, Architecture and Planning School*, of the University of Cincinnati, 2008.

Conference Vice-Char*: International Conference on Design Computing and Cognition*, *Northwestern*, *Chicago*, *July 2016*

Journal Reviews - *ASME Journal of Mechanical Design; Research in Engineering Design; Artificial Intelligence in Design, Analysis, and Manufacturing; Computer Aided Design, AI Journal; AIAA Journal; IEEE Transactions on Components, Packaging, and Manufacturing Technology Society, International Journal of Design Computing*, *Environment and Planning B*, *ASME Journal of Computing and Information Science in Engineering*, *ASCE Journal of Structural Engineering*, *Design Studies*, *Journal of Engineering Design*, *Design Issues*, *Journal of Aerospace Engineering*, *ASME Journal of Energy Resource Technology*, *Design Science*

Conference Reviews - *International Conference on Artificial Intelligence in Design, ASME Design Theory and Methodology Conference,, IFIP WG 5.2 1991 Working Conference on Intelligent CAD, ASME Design Automation Conference, IJCAI-93, IFIP 1993 Conference Towards World Class Manufacturing, ASME International Mechanical Engineering Congress and Exposition, ASME Design for Manufacturing Conference, International Conference on Engineering Design, International Conference on Design Computing and Cognition*

Students Advised

Postdoctoral Students

Kenneth Brown, A Shape Annealing Approach to Process Planning *(1994-95) - now Lecturer at University of Aberdeen*
Jay McCormick, Shape Grammar Interpreters for Product Design *(6/03-5/04)*
Shraddah Joshi, Design of Connected Products *(9/14 – 8/16)*
Jarrod Moss, Research on Open Goals in Creative Problem Solving *(6/06-5/07)*
Ut Na Sio, Team-based Problem Solving *(co-advised with K. Kotovsky) (9/12-present)*

Chris McComb, Computational Team Design *(co-advised with K. Kotovsky) (8/16-present)*

Ph.D. Students

Manish Agarwal, Supporting Automated Design Generation: Function Based Shape Grammars and Insightful Optimization *(9/99) - now Senior Vice President at AXA Equitable Life Insurance Co*

Chandankumar Aladahalli, Improved Pattern Search Algorithm Using an Objective Function Effect Based Move Schedule for 3D Component Layout *(co-advised with K. Shimada) (12/04) – now Lead Engineer at GE India*

Matthew Campbell, A-Design: An Agent-Based Conceptual Design Methodology *(co-advised with K. Kotovsky) (7/00) – now Professor at Oregon State University*

Daniel Clymer, Detecting Labral Tears *(5/19 est.) (co-advised with P. LeDuc)*

Bryony DuPont, Exploring the Application of an Advanced Extended Pattern Search Algorithm within a Multi-Agent System to Wind Farm Optimization *(5/13) – now Assistant Professor at Oregon State University*

Paul Egan, Emergent Computational and Cognitive Model of Multi-Scale BioMechanics Design *(co-advised with P. LeDuc) (5/14) – now Postdoc at ETH Zurich*

Katherine Fu, Discovering and Exploring Structure in Design Databases and Its Role in Stimulating Design *(co-advised with K. Kotovsky) (5/12) – now Assistant Professor at Georgia Tech*

Joshua Gyory, Understanding Expertise in Design Team Mamagment *(co-advised with K. Kotovsky) (5/20 est)*

Kosa Goucher-Lambert, Influencing the Environmental Impact of Generative Designs *(5/16 est.)*

Lindsay Hanna Landry, Combinatory Adaptive Optimization with Multi-Agent Systems *(12/09) – now engineer at United Technologies*

Chris McComb, Designing the Characteristics of Design Teams via Cognitively Inspired Computational Modeling, *(8/16) (co-advised with K. Kotovsky) – now Post-Doc at Carnegie Mellon University*

Jay McCormick, Implementing Parametric Shape Grammars to Capture and Explore Product Languages *(5/03) – now Associate Professor at Rose-Hullman*

Jarrod Moss, The Role of Open Goals in Noticing Relevant Information in Problem Solving *(Psychology student, co-advised with K. Kotovsky) (5/06) – now Associate Professor at Mississippi State University*

Jesse Olson, The Collective Potential: Achieving Organizational Potential by Design *(co-advised with K. Kotovsky) (6/06) – now engineer at Northrop Grumman*

Seth Orsborn, Quantifying Aesthetic Preference Through Statistics Applied to an Agent-based Shape Grammar Implementation *(11/07) – now Assistant Professor at Bucknell University*

Linda Schmidt, An Implementation Using Grammars of an Abstraction-Based Model of Mechanical Design for Design Optimization and Design Space Characterization *(5/95) – now Professor at University of Maryland at College Park*

Kristina Shea, Essays of Discrete Structures: Purposeful Design of Grammatical Structures by Directed Stochastic Search *(8/97) – now Professor at ETH Zurich.*

Brian Sylcott, Understanding the Role of Aesthetic Judgment in Consumer Choice and Preference Modeling *(5/13) – now Assistant Professor at East Carolina University*

Simon Szykman, Optimal Product Layout Using Simulated Annealing *(5/95) – now Chief Technology Officer, Federal Services at Attain*

Ian Tseng, The Unification of Stylistic Form & Function *(co-advised with K. Kotovsky) (5/11) – now Engineer at Nuclear Regulatory Commission*

Hubert Vasseur, Manufacturing Quality and Process Capability: a Cost-Based Analysis *(co-advised with T.R. Kurfess) (8/94) – now Engineer at Renault*

Mark Whiting, Emergent Biologically-based Design *(Co-advised with P, LeDuc) (12/17 est.)*

Matthew Wood, Problem Representation and Team Mental Model Development in Individual and Team Problem Solving Performance *(Psychology student, co-advised with K. Kotovsky) (5/13) – now Research Scientist at US Army Corps of Engineers)*

Xiangyang Xin, *Product Innovation in A Cultural Context - A Method Applied To Chinese Product*

Development (Design student co-advised w/ C. Vogel) (8/06) – now Professor and Dean at Jiangnan University, China

Su Yin, A Pattern Search-Based Algorithm for Automated Product Layout *(5/00) – now Engineer at Smiths Aerospace*

M.S. Project Students

Manish Agarwal, A Language of Coffee Makers *(5/97)*

Ashwini Asokan Design Languages for Cultural Context (*Design student, 5/05*)

Chandankumar Aladahalli, Characterizing Layout Spaces *(co-advised with K. Shimada) (5/01)*

Matthew Campbell, A-Design: An Agent-Based Conceptual Design Methodology *(co-advised with K. Kotovsky) (5/97)*

Hillary Carey, A Corporate Decision Model of the Product Design Process *(Design student, C. Vogel primary advisor) (5/03)*

Steven (Pinzhi) Chen, fMRI Studies and Data Mapping of Form-Function Reasoning *(12/13)*

Daniel Clymer, Process Specification Design for Additive Manufacturing *(8/16) (co-advised with J. Beuth)*

Drew Degentesh, Effective Computational Structural Design and Analysis *(co-advised with P. Steif) (5/96)*

Saurabh Deshpande, Agent-Based Optimal Process Planning (5/01)

Quan Ding, Optimal Packing of Automobile Trunks (12/01)

Ashish Kolli, Layout of Non-linear Shapes *(5/96)*

Gyuho Kwak, A User-Interactive Optimizing Routing Algorithm*, (5/97)*

Rosa Lopez, Quality Estimation Through Neural Networks *(5/94)*

Jay McCormick, Shape Grammars for Product Design *(5/00)*

Jesse Olson, A Collaborative Approach to Agent-based Design *(5/03)*

Luis Oms, Investigation of Hip Fractures in the Elderly and Hip Pad Solution *(co-advised with P. Steif) (12/98)*

Seth Orsborn, Using Shape Grammars to Model Product Characteristics *(5/05)*

Shashvat Prakash, Hierarchical Method for Approximating MEMS Analysis *(12/99)*

Giridhar Reddy, Topological Generation of Truss Structures *(8/93)*

Julie Reyer, Computer Aided Systems Simulation *(co-advised with T.R. Kurfess) (5/93)*

Jamie Rugnetta, Innovative Design of Walkers for Elders *(co-advised with K. Kotovsky) (5/00)*

Noah Tovares, Virtual Preference Function-based Design *(5/14)*

Erika Wetzel, Understanding Chaos in the Design Process *(5/04)*

Andrew Whittam, Formal Criteria for Robust Optimality *(8/94)*

M.S. Coursework-based Project Students

Edwin Comparini, Development of a Curriculum in Green Design for the Mechanical Engineering Capstone Design Course *(8/98)*

Kathy Constantine, Manufacturing Costs for Shape Grammar Design *(5/97)*

Mike Cummings, Application of Taguchi Methods to Sheet Metal Stamping *(8/92)*

Michael DeGuire, 3-D Layout of Electronic-Mechanical Designs *(5/95)*

David Eyvazzadeh, Understanding the SET Factors in Industrial Products*(5/03)*

Mark Hamblin, Social Impact Analysis in Product Development *(12/03)*

Jiun-Tza Han, Applying Robust Activity Analysis to Bulk Manufacturing Process Planning *(5/99)*

Alan Leung, Development of a Shape Grammar for Bulk Manufacturing Processes *(5/99)*

Simone Mauri, Understanding the SET Factors in Industrial Products*(5/03)*

Michael Pugliese, Modeling Complexities in the Product Development Process *(6/01)*

Jeff Tucker, Dimension and Tolerance Selection for Minimal Manufacturing Costs *(co-advised with T.R. Kurfess) (8/91)*

Undergraduate Students (Project Students)

Mark Baptista, A Utility Function for Value Opportunities *(5/03)*
Dan Boggard, A Utility Function for Value Opportunities *(5/03)*
Brian Campbell (University of Virginia), REU project: Computer Aided Systems Simulator *(8/92)*
Matt Campbell, Layout of 3-D Electronic Components *(co-advised with C. Amon) (5/95)*
Felix Chiu, Computational Implementation of Multi-Scale Myosin-Based Design *(5/13 est)*
Alison Coleman (CFA), CASS: Computer Aided Systems Simulator *(co-advised with T.R. Kurfess) (8/92)*
Andrew Concilio, Agent Models of Spacecraft *(5/06)*
Aubrey Donnellan, Value of Product Packaging *(5/07 est)*
Jason Fung, Product Opportunity Gaps in the Biomedical Field *(5/03)*
Stephen Goode, Generation of Coffee Makers using the Coffee Maker Shape Grammar *(5/00)*
Tiffany Ho, A Study of Multi-scale Myosin-based Design in Engineers and Medical Students *(5/13 est)*
Becky Lee, A Kinect-based VR environment to Derive Consumer Preference *(5/94 est)*
Todd Jerry, An Improved 3-D Tube Routing Algorithm with Shape Annealing *(5/94)*
Gary Liu, An Implementation of the First Order Necessary Conditions of Robust Optimality *(5/94)*
Jeremy Michalek, Implementation of the Coffee Maker Grammar *(5/99)*
Volus McKenna, Understanding and Designing Walkers for the Elderly Population *(5/98)*
Klaus Moser, Understanding and Designing Walkers for the Elderly Population *(5/98)*
Bijal Patel, CASS: Computer Aided Systems Simulator *(co-advised with T.R. Kurfess) (5/93)*
Michael Pugliese, The Development of Shape Grammars to model Engineering Artifacts *(5/00)*
Joe Sanders, CASS: Computer Aided Systems Simulator *(co-advised with T.R. Kurfess) (5/92)*
Kristina Shea, 3-D Tube Routing with Shape Annealing *(5/93)*
Guochen Shen, Computational Modeling of Internet of Things Systems for Design *(5/16)*
Ed Wilcox, Innovative design of a Bicycle Frame *(5/94)*
Jenny Williams, Component Selection During Product Layout *(5/96)*
David Wynne, Mapping Design Organizations to Product Organization *(5/04)*
Wing Tong Wong, Design Conceptualization Through Crowd Sourcing *(5/16 exp)*

Other Students

Woncheol Choi, Determination of Optimal Inspection Point Locations *(Ph.D. student co-advised with T.R. Kurfess; Kurfess primary advisor; Cagan departmental advisor) (5/96) – now Research Scientist at Seoul National University*

Patents

Cagan, J., A. Kolli, S. Szykman and R. Rutenbar, "Method of Optimizing Component Layout Using A Hierarchical Series of Models, " United States Patent No. 5,825,660, issued October 20, 1998.

Yin, S. and J. Cagan, "Method of Optimizing Component Layout Using a Pattern Based Search," United States Patent No. 5,953,517, issued September 14, 1999.

McCormack, J., and J. Cagan, "Parametric Shape Grammar Interpreter," United States Patent No. 7,050,051, issued May 23, 2006.

McCormack, J., and J. Cagan, "Parametric Shape Grammar Interpreter," United States Patent No. 7,415,156, issued August 19, 2008.

McCormack, J., and J. Cagan, "Parametric Shape Grammar Interpreter," United States Patent No. 7,502,511 issued March 10, 2009.

Cagan, J., S. Orsborn, P. Boatwright, "Statistically-based Method Using a Shape Grammar or Other Means for Quantifying Aesthetic Preference," United States Patent application US2007/010345, submitted April 27, 2007.

Cagan, J., A. Concilio, L. Hoxie, F. Humbert, E. Kemner, N. Kim, M. Langdon, K. Shin, "Shopping Cart," United States Patent No. 8,066,291, issued November 29, 2011.

Publications

Books

Cagan, J., and C. M. Vogel, *Creating Breakthrough Products: Innovation from Product Planning to Program Approval*, Financial Times Prentice Hall, Upper Saddle River, NJ, 2002. Translated to Finnish and Chinese. [second edition: *Creating Breakthrough Products: Revealing the Secrets that Drive Global Innovation*, Financial Times Press, 2013.]

Antonsson, E. K., and J. Cagan, *eds.*, *Formal Engineering Design Synthesis*, accepted by peer review of proposal: Cambridge University Press, Cambridge, UK, 2001. Paperback version published in 2005.

Author of three chapters:
- Antonsson, E.K., and J. Cagan, *Introduction.*
- Cagan, J., "Engineering Shape Grammars: Where Have We Been and Where are We Going?"
- Cagan, J., Kotovsky, K., and H.A. Simon, "Scientific Discovery and Inventive Engineering Design: Cognitive and Computational Similarities."

Cagan, J., and C. M. Vogel, *Understanding the Value in Great Products*, e-doc for Amazon.com, Financial Times Prentice Hall, Upper Saddle River, NJ, 2002.

Vogel, C. M., J. Cagan and P. B. H. Boatwright, *The Design of Things to Come: How Ordinary People Create Extraordinary Products*, Wharton School Press/Prentice Hall, Upper Saddle River, NJ, 2005. Translated to Chinese, Korean, Japanese, Spanish, Italian.

Boatwright, P. B. H., and J. Cagan, *Built to Love - Creating Products That Captivate Customers*, Berrett-Koehler Publishers, San Francisco, 2010.

Journal Papers

Cagan, J. and L. Taber, "Large Deflection Stability of Spherical Shells with Ring Loads," *J. of Applied Mechanics*, V. 53, No. 4, pp. 897-901, 1986.

Cagan, J. and V. Genberg, "PLASHTRAN - An Expert Consultant on Two-Dimensional Finite Element Modelling Techniques," *Engineering With Computers*, V. 2, pp. 199-208, 1987.

Cagan, J. and A.M. Agogino, "Innovative Design of Mechanical Structures from First Principles," *Artificial Intelligence in Engineering Design, Analysis, and Manufacturing*, V. 1, No. 3, pp. 169-189, 1987.

Cagan, J. and A.M. Agogino, "Inducing Constraint Activity in Innovative Design," *Artificial Intelligence in Engineering Design, Analysis, and Manufacturing*, V. 5, No. 1, pp. 47-61, 1991.

Cagan, J. and A.M. Agogino, "Dimensional Variable Expansion - A Formal Approach to Innovative Design," *Research in Engineering Design*, V. 3, pp. 75-85, 1991.

Aelion, V., J. Cagan, and G. Powers, "Inducing Optimally Directed Innovative Designs from Chemical Engineering First Principles," *Computers and Chemical Engineering*, V.15, No. 9, pp. 619-627, 1991.

Aelion, V., J. Cagan, and G. Powers, "Input Variable Expansion - An Algorithmic Design Generation Technique," *Research in Engineering Design*, V. 4, pp. 101-113, 1992.

Cagan, J., and W.J. Mitchell, "Optimally Directed Shape Generation by Shape Annealing," *Environment and Planning B*, V. 20, pp. 5-12, 1993.

Vasseur, H., J. Cagan, and T.R. Kurfess, "Economic Analysis of Quality Innovation in Design and Manufacturing," *Manufacturing Review*, V. 6, No. 4, pp. 343-352, 1993.

Cagan, J., "Shape Annealing Solution to the Constrained Geometric Knapsack Problem," *Computer-Aided Design* , V. 28, No. 10, pp. 763-769, 1994.

Reddy, G., and J. Cagan, "Optimally Directed Truss Topology Generation Using Shape Annealing," *ASME Journal of Mechanical Design*, Vol 117, No. 1, pp. 206-209, 1995.

Szykman, S., and J. Cagan, "A Simulated Annealing-Based Approach to Three-Dimensional Component Packing," *ASME Journal of Mechanical Design*, Vol 117, No. 2(A). pp. 308-314, 1995.

Reddy, G., and J. Cagan, "An Improved Shape Annealing Algorithm For Truss Topology Generation," *ASME Journal of Mechanical Design*, Vol 117, No. 2(A). pp. 315-321, 1995.

Schmidt, L.C., and J. Cagan, "Recursive Annealing: A Computational Model for Machine Design", *Research in Engineering Design*, Vol 7, pp. 102-125, 1995.

Szykman, S., and J. Cagan, "Synthesis of Optimal Non-Orthogonal Routes," *ASME Journal of Mechanical Design*, Vol. 118, No. 3, pp. 419--424, 1996.

Williams, B.C., and J. Cagan, "Activity Analysis: Simplifying Optimal Design Problems Through Qualitative Partitioning" *Engineering Optimization*, Vol 27, pp. 109-137, 1996.

Szykman, S., and J. Cagan, "Constrained Three Dimensional Component Layout Using Simulated Annealing," *ASME Journal of Mechanical Design*, Vol. 119, No. 1, pp. 28-35, 1997.

Cagan, J., I.E. Grossmann and J. Hooker, "A Conceptual Framework for Combining Artificial Intelligence and Optimization in Engineering Design", *Research in Engineering Design*, Vol. 9, No. 1, pp. 20-34, 1997.

Campbell, M.I., C.H. Amon, and J. Cagan, "Optimal Three-Dimensional Placement of Heat Generating Electronic Components", *ASME Journal of Electronic Packaging*, Vol. 119, No. 2, pp. 106-113, 1997.

Vasseur, H., T.R. Kurfess, and J. Cagan, "Use of a Quality Loss Function to Select Statistical Tolerances," *ASME Journal of Manufacturing Science and Engineering*, Vol 119, No. 3, pp. 410-416, 1997.

Shea, K., J. Cagan, and S.J. Fenves, "A Shape Annealing Approach to Optimal Truss Design with Dynamic Grouping of Members", *ASME Journal of Mechanical Design*, Vol 119, No. 3, pp. 388-394, 1997.

Brown, K.N., and J. Cagan, "Optimized Process Planning by Generative Simulated Annealing", *Artificial Intelligence in Engineering Design, Analysis and Manufacturing*, Vol. 11, pp. 219-235, 1997.

Shea, K., and J. Cagan, "Innovative Dome Design: Applying Geodesic Patterns with Shape Annealing", *Artificial Intelligence in Engineering Design, Analysis and Manufacturing*, Vol. 11, pp. 379-394, 1997.

Cagan, J., and K. Kotovsky, "Simulated Annealing and the Generation of the Objective Function: A Model of Learning During Problem Solving", *Computational Intelligence*, Vol. 13, No. 4, pp. 534-581, 1997.

Schmidt, L.C., and J. Cagan, "GGREADA: A Graph Grammar-Based Machine Design Algorithm", *Research in Engineering Design*, Vol. 9, No. 4, pp. 195-213, 1997.

Vogel, C. M., J. Cagan, and J. H. Mather, "Teaching Integrated Product Development: Educational Innovation at Carnegie Mellon University", *Design Management Journal*, Vol. 8, No. 4, pp. 58-65, 1997.

Agarwal, M., and J. Cagan, "A Blend of Different Tastes: The Language of Coffee Makers", *Environment and Planning B: Planning and Design*, Vol. 25, No. 2, pp. 205-226, 1998.

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Cagan, J., "Engineering Shape Grammars: Where are we and where are we going?," *NSF Workshop on Shape Computation*, MIT, April 25 and 26, 1999 (invited paper).

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Moss, J., J. Cagan, and K. Kotovsky, “Learning from Design Experience in an Agent-Based Design System”, Proceedings of: International Workshop on Agents in Design – WAID’02, MIT, Cambridge, MA, 28-30 August, 2002.

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Cagan, J., and R. C. Smith, “Progress Toward Capturing and Implementing Product Brand Through Shape Grammars,” *NSF Design and Manufacturing Grantees Conference*, Phoenix, AZ,, January, 2004.

Cagan, J., R. C. Smith, and S. Orsborn “Using Shape Grammars to Capture Vehicle Classifications and to Design Innovative Vehicle Types,” *NSF Design and Manufacturing Grantees Conference*, St. Louis, MO, July, 2006.

Other Writings

Joskowicz, L., B. Williams, J. Cagan, and T. Dean, "Design from Physical Principles" (in: "AAAI 1992 Fall Symposium Series Reports"), *AI Magazine*, Spring, 1993, p. 11.

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Vogel, C. M., J. Cagan, and P. Boatwright, "A Strategy for Directing Innovation and Brand", Design Management News & Views, Vol. 17, No. 2, Spring, 2005.

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DuPont, B., and J. Cagan, "Employing Wind Farm Performance Data for Model Validation and Turbine Layout/Geometry Optimization," *AIAA Science and Technology Forum and Exposition*, National Harbor, MD, USA. 13-17 January, 2014.

Garrett, J., J. Cagan and R. Botti, "Expanding Collaboration, Empowering People, Elevating Impact – College of Engineering Strategic Plan," Carnegie Mellon University, 2014.

Cagan, J., "Tae Kwon Do and Innovation," *Small Business Opportunities*, Feb 2, 2015.

Orsborn, S., J. Cagan, P. Boatwright, "Continuous Visual Conjoint - Discovering Novel Design Directions that Align with User Preferences," *Innovation*, IDSA, Summer, 2015.

Posters

Cohen, P.Z., N. Sotereanos, H. Coward, J. Cagan, "Improving care and Reducing Health Care Cost for the Geriatric Orthopaedic Patient," AHERF Conference, Philadelphia, June 12, 1997.

Ghoshal, T., “Do We Judge a Book by its Cover? Unwrapping the Role of Visually Appealing Packaging in Product Evaluation,” 2012 Association for Consumer Research Conference, Vancouver, October 4-7, 2012.

Durriseau, J., J. Moss, and J. Cagan, “Understanding control and process-level activation during multi-attribute decision making," 2015 Cognitive Neuroscience Society Annual meeting, San Francisco, CA., Nov. 13-15, 2015.

Funding

"A Graph-Based Representation and Language of Features for Design Innovation,” National Science Foundation - Research Initiation Award; supplemental Travel, 9/91-8/93 (PI).

"Topological Generation of Quality Designs,” National Science Foundation - Young Investigator Award, 8/92-7/97; matching funds 8/92-7/95; REU 5/93; supplemental Travel (PI).

"An Innovative Doctoral Education in a Novel Approach to Design and Manufacturing,” National Science Foundation, 10/92-9/97 (co-PI w/ F. Prinz, T.R. Kurfess, M.L. Nagurka).

"Robust Design Analysis,” Xerox Corporation, 1/93-12/93 (PI).

"3-D Placement of HVAC Components with Shape Annealing,” United Technologies Carrier, 5/93-4/94 (co-PI w/ T. Mitchell).

"Topological Generation of Network Flow Problems,” National Science Foundation, 9/93-8/96 (co-PI w/ W.J. Mitchell).

"3-D Layout of HVAC Systems” United Technologies Carrier, 5/94-4/95 (PI).

"Xerox NYI Match Award,” Xerox Corporation, 7/94-6/97 (PI).

"Extending VLSI Layout Strategies to Geometric Synthesis of 3-Dimensional Mechanical Systems", National Science Foundation, 6/94-12/95 (co-PI w/ R. Rutenbar).

"Virtual Rapid Prototyping of 3-dimensional Electro-mechanical Layouts,” National Science Foundation, 7/95-6/98 (co-PI w/ C. Amon and R. Rutenbar).

"Tube Routing for HVAC Systems”, United Technologies Carrier, 10/95-3/97 (PI).

“Foundations for Microelectromechanical System Synthesis,” DARPA, 9/96-8/99 (co-PI w/ G. Fedder, J. Gilbert, T. Mukherjee, K. Pister, J. White).

“Curriculum and Educational Materials for Environmentally Conscious, Green Products and Processes,” National Science Foundation, 9/97-8/00 (faculty associate; C. Hendrickson and F. McMichael, PIs).

Alcoa gift, 6/97 (PI).

“Shape Grammars: A Method and Representation for Product Design”, National Science Foundation, 7/97-6/00 (co-PI w/ G. Stiny).

“Robust Activity Analysis: Partitioning Non-Monotonic Spaces into Regions of Optimality”, AFOSR, 2/98-9/00 (PI).

“Layout of Transmission Systems” - gift, Ford Motor Company, 10/98 (PI).

“Shape Grammar Representation of Artificial Hearts,” Magnetic Moments and University of Pittsburgh McGowan Center for Artificial Organ Development, 8/3/98-8/2/99 (PI).

“Integrated Team-based Design and Decision Making,” Ford Motor Co., 5/1/99-12/31/99 (faculty associate; P. Goodman, PI).

“The Design of the Hood Inner and the Modeling of Branding Via Shape Grammars and Agent

Based Search," General Motors, 7/1/99-12/31/00 (PI).

"Automated Trunk Packing Algorithm," Ford Motor Company, 12/1/99-11/30/01 (PI).

"Truck Configuration and Layout Technologies Using Pattern Search Algorithms," Daimler-Chrysler, 12/1/99 – 11/30/02 (PI).

"Integrated Product Development Course Sponsorship," Ford Motor Company, 1/15/00-5/31/00 (co-PI w/ C. Vogel).

"Integrated Product Development and the Design Differentiation Model," Ford Motor Company, 3/1/00-2/28/02 (co-PI w/ C. Vogel and L. Weingart).

"An Agent Based Approach to Optimal Configuration Design with Application to Manufacturing Process Planning," AFOSR, 10/00-9/03 (PI)

"Capturing and Generating the Essence of Brand," General Motors, 7/01-12/01 (co-PI w/ C. Vogel).

"A Model for Strategic Decision Making in New Product Development," Whirlpool Corporation, 1/02-6/02 (co-PI w/ C. Vogel, C. Pelly, J. Gregor).

"Integrated Product Development Course Sponsorship: Escape," Ford Motor Company, 1/02-5/02 (co-PI w/ C. Vogel, L. Weingart).

"Shape Grammars in Design," General Motors gift, 2002 (PI).

"Integrated Product Development Course Sponsorship," Respironics Corporation, 1/03-5/03 (co-PI w/ C. Vogel and L. Weingart).

"GOALI: Capturing, Implementing, and Generating Product Brand Through Shape Grammars," NSF, 4/03-3/06 (co-PI w/ R. Smith).

"Mechanical Engineering Senior Design Course Sponsorship," Kennametal Corporation, 8/03-12/03 (PI).

"Cognitive Approaches to Automated Engineering Design," AFOSR, 1/04-12/06 (co-PI w/ K. Kotovsky).

"Integrated Product Development Course Sponsorship," New Balance Corporation, 1/04-5/04 (co-PI w/ P. Boatwright, C. Vogel and L. Weingart).

"Integrated Product Development mini-project," Angeles Group, 1/04-5/04 (co-PI w/ C. Vogel).

"Integrated Product Development mini-project," Alcan Corporation, 1/04-5/04 (co-PI w/ C. Vogel).

"IPD Consortium Membership," General Motors, 4/04-3/05 (PI).

"A Decomposition Based Approach to Optimal Layout of Complex Systems such as UAV's and Satellites – Phase I", STTR – AFOSR, subcontract to DesignAdvance Systems, Inc., 9/04-3/05 (co-PI w/ J. McCormack).

"Mechanical Engineering Design Course Sponsorship" Alcoa, 8/04-12/04 (PI).

"Integrated Product Development mini-project," International Truck & Engine Corporation, 8/04-12/04 (co-PI w/ P. Boatwright).

"Integrated Product Development Course Sponsorship," International Truck & Engine Corporation, 1/05-5/05 (co-PI w/ E. Anderson, P. Boatwright and L. Weingart).

"A Decomposition Based Approach to Optimal Layout of Complex Systems such as UAV's and Satellites – Phase II," STTR – AFOSR, subcontract to DesignAdvance Systems, Inc., 9/05-6/07 (co-PI w/ J. McCormack).

"Mechanical Engineering Senior Design Course Sponsorship," RedZone Robotics, 8/05-12/05 (PI).

"Product Research and Conceptualization Course Sponsorship," Respironics, Inc., 8/05-12/05 (PI).

"Product Research and Realization Course Sponsorship," Respironics, Inc., 1/06-5/06 (PI).

"Integrated Product Development Course Sponsorship," International Truck & Engine Corporation, 1/06-5/06 (co-PI w/ E. Anderson, P. Boatwright and L. Weingart).

"IPD Consortium Membership," General Motors, 4/05-3/06 (PI).

"IPD Consortium Membership," General Motors, 4/06-3/07 (PI).

"Understanding the Role of Impasses and Representation Changes in Creative Design: An Initial Study," NSF, 7/06-6/07 (co-PI w/ K. Kotovsky) .

"Mechanical Engineering Senior Design Course Sponsorship," International Truck and Engine, 8/06-12/06 (PI).

"Integrated Product Development Course Sponsorship," Dormont Manufacturing, 1/07-5/07 (co-PI w/ E. Anderson, P. Boatwright and L. Weingart).

"A Geometry-based Approach to Scheduling and Packing Cargo Delivery." AFOSR, 4/1/07-12/31/08 (PI).

"Overcoming Impasses in Design Problem Solving: Environmental Input and Sources of Design Breakthroughs," NSF, 9/07-8/10 (co-PI w/ K. Kotovsky).

"Stimulating Creative Insight: A Cohesive Model of Design Innovation Across Individuals, Groups and Computer Agents," NSF, 1/08-12/10 (co-PI w/ K. Kotovsky).

"Workshop: Discussion on Individual and Team-Based Innovation," NSF, 9/07-8/08 (co-PI w/ K. Wood).

"Integrated Product Development Course Sponsorship," International Truck, 1/08-5/08 (co-PI w/ P. Boatwright).

"Integrated Product Development Course Sponsorship," MSA, 1/09-5/09 (co-PI w/ P. Boatwright).

Center for Product Strategy and Innovation – Basic Membership, International Truck, 9/08-8/09 (co-PI w/ P/ Boatwright).

Center for Product Strategy and Innovation – Basic Membership, MSA, 9/08-8/09 (co-PI w/ P/ Boatwright).

"Advanced Analogical Search With Integrated Function And Form: The Verrocchio Project," NSF, 7/09-6/12 (collaborative project with K. Wood and C. Schunn); Graduate Research Student supplements (PI).

"Integrated Product Development Course Sponsorship," Nissan, 1/10-5/10 (co-PI w/ P. Boatwright).

GlaxoSmithKline gift, 1/10 (co-PI w/ P. Boatwright).

"EAGER: Innovative Energy Farm Design," NSF , 7/09-2/11 (PI).

"Integrated Product Development Course Sponsorship," P&G, 1/11-5/11 (PI).

"Integrated Product Development Course Sponsorship," Navistar, 1/11-5/11 (co-PI w/ P. Boatwright).

GlaxoSmithKline gift, 1/11 (co-PI w/ P. Boatwright).

"Integrated Product Development Course Sponsorship," Navistar, 1/11-5/11 (co-PI w/ P. Boatwright and E. Anderson).

"Computational Design of Complex Multi-Scale Systems: Design of synthetic muscle with shape grammars and agent-based search," NSF, 7/12-6/14 (co-PI w/ P. LeDuc)

"The Cognitive and Computational Modeling of Team Problem Solving for Decision Making Under Complex and Dynamic Conditions," AFOSR, 7/12-6/15 (co-PI w/ K. Kotovsky).

"Determining Consumer Preference Through an Interactive Virtual Reality Experience," NSF, 9/12-8/14 (PI).

"Integrated Product Development Course Sponsorship," MSA, 1/13-5/13 (co-PI w/ E. Anderson and P. Boatwright).

"Integrated Product Development Course Sponsorship," McKesson Automation, 1/13-5/13 (co-PI w/ E. Anderson and P. Boatwright).

"Integrated Product Development Course Sponsorship," Jarden Consumer Products, 1/14-5/14 (co-PI w/ E. Anderson and P. Boatwright).

"Integrated Product Development Course Sponsorship," Weatherford, 1/14-5/14 (co-PI w/ E. Anderson and P. Boatwright).

"Integrated Product Development Course Sponsorship," Jarden Corp., 1/15-5/15 (co-PI w/ E. Anderson and P. Boatwright).

"Integrated Product Development Course Sponsorship," Opus Mach, 1/15-5/15 (co-PI w/ E. Anderson and P. Boatwright).

"Integrated Product Development Course Sponsorship," Volvo Construction Equipment, 1/15-5/15 (co-PI w/ E. Anderson and P. Boatwright).

"Shelter Development," gift from PJ Dick Inc., 5/15

"A Synergistic Partnership Between Human Teams and Computer Agents," AFOSR, (co-PI w/ K. Kotovsky).

"Using Computational Approaches to Diagnose Labral Tears of the Shoulder through Morphological Shape Grammar Analysis of Unenhanced MRI with ANSYS," PITA (CMU), (Co-PI w/ P. LeDuc).

"Morphological Shape Grammar Analysis of Unenhanced MRI to Diagnose Labral Tears of the Shoulder," DHTI – Highmark, 10/1/16-9/30/17 (Co-PI w/ P. LeDuc; S, Akhavan, J. Long, and C. Latona (collaborators from AHN).

University Committee Work

University

Tuition Committee, 1/91-12/93
Treasurer, Faculty Senate (Chair, Social and Welfare Committee), 5/95 - 5/97
University Committee On Special Faculty Appointments, 1/97 - 12/99
University Choice Program (Co-Director), 5/97 - 5/99
Educational Affairs & Enrollment Committee of the Board of Trustees, 10/97 - 9/99
Taskforce to Capitalize on the Strengths of the Fine Arts and Humanities at CMU, 8/98 - 10/98
University Committee on Non-Tenure Appointments, 1998
Innovation & Entrepreneurship Planning Committee, 2015
Innovation Palooza, 2014 & 2015 (co-founder and co-organizer of annual event)
Faculty Co-Director, Swartz Center for Entrepreneurship, 2016-present

Engineering College (CIT)

Program Coordinator - 1994 CIT Industrial Liaison Program
Ad-Hoc Committee on Faculty Promotion and Tenure, 1999, 2000, 2002, 2009, 2011
Ad-Hoc Committee to Plan BHE Major
Chairman-Elect of the CIT Faculty, 2000-2001
Chairman of the CIT Faculty, 2001-2002
Co-Chair of Strategic Planning for CIT, 2013-2014
Director of Innovation and Entrepreneurship, CIT, 2013-2015

Co-Director of Integrated Innovation Institute, 2011-present
Head - MS in Software Management – Silicon Valley, 2013-present
Associate Dean for Strategic Initiatives, CIT, 2015-2017
Head – MS in Technology Ventures - Silicon Valley, 2016-present
Associate Dean for Graduate and Faculty Affairs, CIT, 2017-present

Department of Mechanical Engineering

Graduate Committee, 8/91-8/94, 9/95 – 5/00, 9/04-8/09 (Chair, 1998 – 2000)
Undergraduate Committee, 8/90-7/91, 9/94 - 8/95, 8/02-5/08, 9/09-present
Strategic Planning Agenda Committee: 10/96-2/97; Head - Information Technology Strategic Planning Committee, 3/97-4/97
Department Head Search Committee, 2005
Miscellaneous Committees including: Chairman, 1994 Qualifying Examinations; Computer Committee: 1993; Space Committee: 1993; Faculty Search Committee: 1994, 2001-2003; seminar organizer: 2003.
Advisor, ASME student section, 6/93 - 5/96
Co-developer and co-director, Master of Integrated Innovation for Products and Services (renamed from Master of Product Development in 2011), 2003-present
Co-founder and Co-director, Center for Product Strategy and Innovation, 2008-2011

Consulting

Timken Company
Xerox Palo Alto Research Center
ASME Press
Daimler-Benz AG
United Technologies Carrier
Daimler-Benz AG/Freightliner
Mine Safety Appliances (MSA)
Ford Motor Company
General Motors
Crown Equipment Corporation
University of Pittsburgh McGowan Center for Artificial Organ Development
Close & Farles, Co.
Southwestern Pennsylvania Industry Resource Council
Philips Respironics
Lubrizol
Decision Coaches
Alcoa
Kennametal
RedZone
Procter & Gamble
Industrial Scientific, Inc.
Navistar International Truck
DesignAdvance Systems
Ansys
Apple
Hewlett-Packard
Dormont Manufacturing
Bayer MaterialScience
GlaxoSmithKline
Miscellaneous intellectual property and liability Expert Witness cases

Significant Media Appearances

- The Sunday Business Page, KDKA TV, Pittsburgh, PA, November 11, 2001
- Morning Marketplace Report, NPR, January 19, 2002
- The Todd Mundt Show, NPR, February 11, 2002
- On Q, WQED TV, Pittsburgh, PA, March 2, 2002
- The Sunday Business Page, KDKA TV, Pittsburgh, PA, August 17, 2003
- The Sunday Business Page, KDKA TV, Pittsburgh, PA, August 21, 2005
- Our Region's Business, WPXI TV, Pittsburgh, PA, September 18, 2005
- Small Business, Bloomberg TV, September 23, 2005
- Tech Nation, NPR, September 27, 2007
- The Real Story, thestreet.com blog, October 1, 2010
- Thestreet.com, video: *Love the Product? Buy the Stock*, October 8, 2010
- WTOP radio: NAE interview on *Built to Love*, November 7, 2010
- WTAE television afternoon news: "Shoppers Let Emotions be Your Guide (Sometimes), November 30, 2010
- Our Region's Business, WPXI TV, Pittsburgh, PA, December 26, 2010
- Blog Talk Radio with Wayne Hurlbert, Feb 4, 2011
- The Sunday Business Page, KDKA TV, Pittsburgh, PA, April 7, 2013
- Our Region's Business, WPXI TV, Pittsburgh, PA, April 14, 2013
- High, P, "Carnegie Mellon's Integrated Innovation Institute's Vision To Build Innovators Of Tomorrow," Forbes.com, May 27, 2014

Significant Articles About Work

- Petroski, H., "Everyday Design", *American Scientist*, Vol. 89, No. 6, 2002, pp. 495-499.
- Sharke, P., "Seeing Eye to Eye", *Mechanical Engineering Design*, ASME, March, 2002, pp.6-10.
- Hammonds, K., "Chalk Talk, How to Design the Perfect Product", Fast Company, July, 2002, pp. 122-127.
- Yeomans, M., "Product Developers are Being Born at CMU", Pittsburgh Tribune Review, December 9, 2003, Business Page.
- Advanced Elastomer Systems, *The Inn Road*, Ray Lambert, Producer, 2004 – featured in documentary on innovation.
- Shropshire, C., "Speed {They Hope} Sells", *Pittsburgh Post-Gazette*, April 29, 2004, Business Page.
- Durr, K., and L. Sullivan, *International Harvester, McCormack, International – Milestones in the Company that Helped Build America*, Graphic Arts Center Publishing Company, 2007 – analysis of International Truck form language featured.
- Ivanoff, R. N., Interview in ETF Business Review, FinancialProductsResearch.com, Vol. 1, issue 47, Dec. 13, 2010
- Postrel, V., "Love and Money", *Entrepreneur*, February, 2011, p. 18