Miriam Heller, Ph.D.
2335 N. Quantico Street • Arlington, VA 22205 • Tel: +1.202.494.5391 • Email: heller@mhitech.com

Nascent Full-Stack Web Developer with proven knack for picking up new technologies seeks position exercising and extending newly acquired full-stack web development skills through team-based, hands-on learning. Future interest in leveraging domain knowledge in backend solutions and learning related cloud-computing technologies.

Value-Added Knowledge and Capabilities

- Languages, etc.: JavaScript, Python, Java, MATLAB, C, HTML/CSS, SQL, MERN stack, mLab, TravisCI, Heroku.
- Knowledge acquisition, software development/testing
- Machine/reinforcement learning; knowledge-based AI; simulation and optimization theory and practice
- Program and project management
- Data sourcing, modeling, management
- Vulnerability, risk, economic, decision and life-cycle analysis; full cost accounting, sustainability metrics
- Continuous and discrete manufacturing systems
- Water, transportation, energy infrastructures
- French: advanced professional proficiency

Selected Professional Experience

Entrepreneurship Consulting at MHITech Systems

- Designed, coded and demonstrated real-time sustainability metrics for DOE/AICHE Smart Manufacturing testbeds.
- Defined new standards-based accurate, embedded virtual training assessment with Naval Post-Graduate School.
- Analyzed and published workshop/survey data as co-PI for NSF-funded Sustainable Engineering Education project.

Innovation Applying AI and other Models to Financial, Environmental and Civil Infrastructures in Academia & Industry

- Generated seminal semiconductor manufacture life-cycle material, energy, water analysis as Fulbright Scholar.
- Built systems dynamics model to reduce sewer overflows as University of Houston Industrial Engineering Professor.
- Devised first: cascade NN to forecast water demand; expert water treatment design & costing systems as Professor.
- Created Citibank's Fraud Early Warning System ($30 M/year loss) precursor to today's identity theft systems.

Leadership in Computer Science and Programming Communities

- Directed NSF $22.5 M program to translate cyberinfrastructure into training, educational and mentoring tools.
- Engage women in IT as Python Lead in Women Who Code DC with monthly lectures and participant analytics.

Education and Training

1986 Ph.D., Environmental Engineering and Systems Analysis, Johns Hopkins University, Baltimore, MD.
Thesis: *Location Optimization and Simulation for the Analysis of Emergency Medical Services*
1978 B.S. Biology and Geology (minor in mathematics), University of Rochester, Rochester, New York

Post-Doctoral Studies and Certifications as a Life-Long Learner

2018 Thinkful, Full-Stack Development Bootcamp, On-Line, Student
2015+ Georgia Institute of Technology, Online Masters in Computer Science - Machine Learning, Student (on hold)
2016 World Bank Group Course: From Climate Science to Action, Certification License 9S2FK7BNZZ67
2012 Online Course Statement of Accomplishment, Machine Learning, Stanford University, Dr. Andrew Ng
2011 Sandia National Lab/SAMSI Summer School on Uncertainty Quantification, Albuquerque, NM
2005 Project Management Associate Certificate (PMI), George Washington University, DC
1989 Knowledge Engineering Certificate, Digital Equipment Corporation, Marlboro, MA
1987 Postdoctoral Studies, Institut de Statistiques de Paris, Université Pierre et Marie Curie, Paris VI, France

Honors and Awards

2013 Distinguished Visiting Scholar, mediaX, Stanford University
2006 National Science Foundation Director's Award: Integrated Activities, Cyberinfrastructure Strategic Planning
2005 National Science Foundation Director's Award in Integrated Programs, Human & Social Dynamics
2002 National Academy of Engineering, 7th Annual Frontiers in Engineering Symposium, named 1 of 16 speakers and 1 of 4 selected to publish Civil Infrastructure System Interdependencies paper in *The Bridge*
2000 US Fulbright Senior Scholar, France: yielded seminal paper on semiconductor life-cycle analysis
1998 Lyndon B. Johnson Space Center, NASA, Group Achievement Award, Lunar-Mars Life Support Team
1996 Artificial Neural Networks in Engineering, Best Engineering Application Paper Nominee
1983 AAAS US Congressional Science & Engineering Fellow, U.S. Congress Office of Technology Assessment

PROFESSIONAL EXPERIENCE

***Principal and Founder*, MHITech Systems,** Arlington, VA 2008-present
Providing expert consulting in sustainability, e-learning and research and development. Sample engagements include:

Institute for Defense Analyses, Alexandria, VA 2009-2018
Consultant, up to 40 hrs/week depending on contract
- Research and estimated differential socio-economic return to STEM education investment in the US.
- Defined a new standards-based e-learning content management model with the Naval Postgraduate School.

National Science Foundation, Arlington, VA 2014-2016
CoPI, grant
- Served as Co-PI on NSF grant with Syracuse University workshop to mobilize a community and define design requirements for sustainable engineering education digital resources.

American Institute of Chemical Engineers, New York, NY 2014-2016
- Devised/implemented real-time sustainability metrics for $70M DOE Smart Manufacturing Leader Coalition.
- Designed an e-learning course on *Engineering Ethics for Sustainable Water*.

The Johns Hopkins University Advanced Academic Program, Washington, DC 2012-2016
- Taught and originated course on *Cities and Climate Change* in MS Energy Policy & Climate program.

United Engineering Foundation, Potomac Falls, VA and ASCE, Reston, VA 2013
- Developed and delivered a webinar, *Bridging the Gap between Climate Change Science and Engineering Practice,* on needs and methods to adapt engineering design, practice, standards and research to climate change.

Water Environment Research Foundation, Alexandria, VA 2012-2013
- Developed five case studies on water utility and community adaptation to extreme climate events.

Morgridge Institute for Research, Madison, WI 2009-2012
- Produced an e-learning project survey; liaison to DC life sciences, cyberinfrastructure, e-learning communities.

Concurrent Technologies Corporation, Johnston, PA 2010-2011
- Analyzed total life-cycle ownership costs in OSD-funded study of standards integration in training systems.

Visiting Senior Fellow, *EMBARQ, World Resources Institute for Sustainable Transport*, Washington, D.C. 2008-2011
- Reviewed, researched, and wrote papers on urban infrastructure, performance metrics and adaptation.
- Collaborated on formulation of project to estimate GHG emissions in developing cities using global data.

Director, Computing Innovation Fellows Program. Computing Research Associates, Washington, DC 2009
- Directed $14.5 million NSF grant subaward program to retain postdoctoral computer scientists in research.
- Devised selection process, oversaw review, awarded 60 subcontracts, created tracking system in 5 months.

Distinguished Visiting Scholar at mediaX, Stanford University, Stanford, CA 2013-2014
Collaborated with mediaX affiliates and providing advisory services as needed.

***Director of Council Affairs*, American Society of Engineering Education (ASEE),** Washington, DC 2013-2014
Supported academic and industry professional society council members to advance engineering technology education and research by devising and planning innovative, revenue-generating services, e.g., council conferences.

***Director*, IT Research Advancement, University of Southern California** (USC)**,** Washington, D.C. 2007-2008
Created and facilitated research collaborations and contributed content in areas of my domain expertise (sustainability, infrastructure, collaboratories, and education) to more than 50 research proposals.
- Achieved a 26% funding success rate (vs. 5-20% agency average), with over $6 million in research funded.

National Science Foundation (NSF), Arlington, VA 2000-2007

Program Director, Office of Cyberinfrastructure (OCI), Office of the Director 2004-2007

Developed and led all aspects of inaugural $22.5 million NSF-wide program on Cyberinfrastructure Training, Education, Advancement, and Mentoring. Represented OCI internally and at government, professional society, university, and industrial events. Collaborated with Directorates for Social, Behavioral, Economic Sciences; Education and Human Resources; and Engineering to create and oversee $14 million portfolio of crosscutting investments.
- Managed $8 million/year portfolio of middleware projects, e.g., Open Science Grid, nanoHUB, GridChem.
- Received **2006 Director's Award for Integrated Activities for Learning and Workforce Development.**

Competition Coordinator, Directorate for Social, Behavioral, & Economic Sciences (SBE) 2004
Led and coordinated over 30 Ph.D.-level Program Directors, five staff members and one outsourced contract to execute all aspects of the agency's first SBE Priority Area program exploring Human and Social Dynamics.

- Received **2005 Director's Award for Integrated Activities** in Human & Social Dynamics for innovative leadership of new $18 million research NSF-wide program and performing the first full NSF Priority Area analysis.

Program Director, Directorate for Engineering, Division of Civil and Mechanical Systems (CMS) 2000-2003
Directed $4-10 million/year program on Infrastructure and Information Systems, Transportation Systems, Integrated Hazard Management (including 9/11 research). Charted new research directions for NSF's Directorate in Engineering in *Energy, Environment, Sustainable Infrastructure, and Critical Infrastructure Complexity and Protection.*

- Developed new research initiatives across NSF Directorates (e.g., Multidisciplinary Research on Critical Infrastructure) and with other agencies (e.g., with the EPA on Sustainable Construction Processes in Technology for a Sustainable Environment, and with USDOT on Exploratory Research in Intelligent Transport Systems).
- Selected as 1/16 **Invited Speakers at NAE's 2002 Frontiers of Engineering** for civil infrastructure systems work.

Assistant Professor, **University of Houston**, Industrial Engineering Department, Houston, TX 1992-2000
Associated Faculty, **University of Houston**, Environmental Engineering Program, Houston, TX 1997–2000
Built an externally-funded, nationally recognized research program focused on systems engineering methods and new tools for sustainable civil infrastructure systems and manufacturing. Projects included sustainable water supply prediction; life-cycle costing of treatment technology for sustainable potable water and industrial waste-water; reliability-based lifecycle sewer system maintenance; semiconductor lifecycle analysis; climate-neutral carpets; environmental cost accounting methods and applications; contained environment regenerative life support system control for NASA; ISO 14000 environmental management systems and standards.

- Secured over $2.3 million in funding from federal, state, municipal, and industrial sources; supervised twenty-three post-doctoral, graduate, and undergraduate students in my research group; published 40 articles, book chapters, and government reports; and taught seven courses (originated four).
- Prepared archival articles on water demand forecasting as Visiting Researcher at Domaine Universitaire de Saint-Jérome, Département de Recherche en Informatique, Automatique et Mécatronique de l'Institut Universitaire des Sciences Pour l'Ingénieur, Marseille, France, in 1995.
- Consulted industry, government, NGOs (Sematech, Texas Natural Resources Conservation Commission, World Resources Inst., AWWA) on water treatment, environmental performance, costing, information management.
- Conducted research in France as **1999-2000 Fulbright Senior Scholar** that led to the seminal international collaborative paper on life-cycle material and energy flows of semiconductor fabrication.

Software Consultant/Design Engineer**, Digital Equipment Corporation**, Houston, Texas 1989-1992
Consulted clients and designed environmental management systems and gas/liquids pipeline expert schedulers.

Visiting Researcher, **Campus Engineering Center, Digital Equipment Corp.**, Karlsruhe, Germany 1991
Designed and built LISP-based modules for a prototype multimedia courseware authoring system, NESTOR (http://www.springerlink.com/content/772642613n574688).

Assistant Vice President/Business Analyst, **Citicorp Credit Services**, New York, NY 1987-88
Led analysis of bank's $30 million credit card fraud problem; member of $650 million credit debt analysis team.

- Designed and implemented the first Fraud Early Warning System from the first large-scale transaction database (60 million transactions per day), which served as the foundation for fraud detection and identity theft systems used today (e.g., http://www.citigroup.com/greece/consumer/en/cards/cards06.htm).

Informatics Engineer**, Applications Statistiques Scientifiques Informatiques**, Suresnes, France 1986-87
Devised and implemented environmental systems projects, e.g., prediction of tastes and odors of potable water; wetlands use analysis; expert system to interpret water lab tests; and real-time potable water demand forecasting.

AAAS Science & Engineering Fellow/Staff, **U.S. Congress Office of Technology Assessment**, Wash., D.C. 1983-85
Assessed Superfund effectiveness and efficiency to inform Superfund Amendments & Reauthorization Act (SARA).

- Published first technology and financial needs projections for SARA. Proposed risk-based alternative cleanup strategies that influenced adoption of "interim" cleanups in SARA. Analyses of state waste-end tax funding schemes led to recommendation to standardize the toxic waste lists that contributed to the creation of the Toxics Release Inventory.

Consultant, Jack Faucett Associates, Chevy Chase, Maryland 1979
Summer research position entailed energy and environmental modeling to evaluate solar crop grain dying technology cost-effectiveness, transportation demand prediction, noise pollution, etc.

Research Assistant/Lecturer, Johns Hopkins University, Baltimore, MD 1978-85
- Doctoral research on the dynamic effects of location on emergency medical response, testing new capacity-constrained optimizer with pre-COTS discrete event simulator. Advisors: J.L. Cohon & C.S. Revelle.
- Coded multi-objective programming solution to locate storage facilities for spent nuclear fuel assemblies.
- Taught graduate level course in Systems Analysis for Civil and Environmental Engineers in 1981.

OTHER PROFESSIONAL RECOGNITION

Think Green: Energy, Education, Environmental Forum, Nanjing, China, April 8, 2010 *Invited Speaker*
Rueschlikon Roundtable of Experts & Policy Makers: Shaping Public-Private Cooperation to Secure Critical Information Infrastructures, (http://www.cukier.com/writings/CII-r05dc.pdf), March 15, 2006, *Invited Participant*
National Academy of Engineering, Chemical Industry and Sustainability Workshop, 2005, *Invited Participant*
American Water Works Association, IMTech, 2004, *Keynote speaker*
Environmental Protection Agency, Millennium Lecture Series, Information Technology and Infrastructure: Life-Cycle Implications, Washington, DC, February 18, 2004, *Invited Millennium Lecturer*
11th Rinker Int'l Conference on Deconstruction and Materials Reuse, 2003, *Keynote Speaker*
National Academy of Sciences, Natural Disaster Roundtable Steering Committee, 2001, *Ex-Officio Member*
Gordon Research Conference on Industrial Ecology, 1998, 2000, 2004, *Invited Participant*
National Academy of Engineering, International Conference on Industrial Environmental Performance Metrics, Arnold and Mabel Beckman Center, Irvine, CA, November 1-4, 1998, *Invited Participant*
National Science Foundation, Urban Interactions Workshops, 1997 and 1998, *Invited Participant*
Yale's Environmental Reform: The Next Generation Project, 1996 *Invited Contributor*

SELECTED PROFESSIONAL MEMBERSHIPS AND SERVICE (alphabetic order)

American Association for the Advancement of Science, *Member* since 2007
American Association of University Women, *Member* 2008-2018
American Chemical Society, *Member* 2000-2009
  Environmental Science & Technology, *Reviewer*
American Society of Civil Engineers, *Member* since 2001-2018
  Committee on Adaptation to a Changing Climate, *Member* since 2011-2016
  Committee on Sustainability (formerly TAC Subcommittee on Sustainability), *Member* 2000-2013
  Subcommittee on Professional Certification in Sustainable Engineering, *Member* 2009-2013
  American Society of Civil Engineers/Engineers Without Boarders, EPA P3, *Judge* 2009, 2010
  Journal of Infrastructure Systems, Editorial Board, *Member and Reviewer* since 2003
American Society of Engineering Education, *Member* 2007-2009, 2013-14
Environmental Protection Agency, A Research Strategy for Sustainability, Expert Panel, *Member* 2005
Founder Societies, United Engineering Foundation, Greenhouse Gas Measurement Group, *Member* 2010-2016
  Carbon Management Technologies Conference, Adaptation and Sustainable IT Metrics sessions, *Organizer and Moderator* 2011-12, *Chair, Adaptation Theme* 2012-13
Green IT Council, Board of Advisors, *Member* since 2011
Interagency Forum on Climate Change Impacts and Adaptation, *Participant* since 2011
International Society of Industrial Ecology, *Member* 1998-2006
  Journal of Industrial Ecology, *Reviewer*
National Science Foundation
  Graduate Research Fellowship Review Panel, *Member* 2015

Directorate for Engineering, Proposal Review Panel, *Member* 1995, 1998, 2008, 2010, 2013
Large Cyberinfrastructure Project Site Review Team, *Member* 2007, 2011, 2012, 2013
Directorate for Computer & Information Sciences & Engineering, Proposal Review Panel, *Member* 2008
Directorate for Education & Human Resources, Proposal Review Panel, *Member* 2011, 2013, 2014

Statistical and Applied Math Sciences Institute (SAMSI), Research Triangle Park, 2011-12 Program on Uncertainty Quantification and Sustainability, *Co-Organizer* 2010-2011

US Department of Homeland Security, *Critical Infrastructure Protection Decision Support System (CIPDSS)*, *Reviewer* February 28-March 1, 2006

US Government Accountability Office, *Report to the Committee on Public Works, U.S. Senate, Wastewater Facilities: Experts' Views on How Federal Funds Should Be Spent to Improve Security*, GAO-05-165, *Expert Participant* January 2005.

US Department of Homeland Security, *Critical Infrastructure Protection Decision Support System (CIPDSS)*, *Reviewer* February 28-March 1, 2006

US Government Accountability Office, *Report to the Committee on Public Works, U.S. Senate, Wastewater Facilities: Experts' Views on How Federal Funds Should Be Spent to Improve Security*, GAO-05-165, *Expert Participant* January 2005.

FOREIGN LANGUAGES

Fluent in French, Certificat, Cours de Civilisation/langue Française de la Sorbonne, Paris, France, 1985
Conversational in German, Recipient of the Steuben Award, NY, 1974
Spanish, work in progress.

ACADEMIC RESEARCH

Grants and In-Kind Donations

Material and Energy Flow Analysis in the French Semiconductor Industry, 1999-2000 Fulbright Senior Scholar, Fulbright Scholar Commission, Stipend, 12/1999-7/2000.

Global Climate Change, Shell Interdisciplinary Scholars Program, $200,000, 2/1999-3/2001.

Membrane Systems Cost Estimator Expert, American Desalting Association, US Bur. Reclamtn, $40,000, 9/1998-8/1999.

Full Costing of Remediation Alternative to improve Corporate Decisions with Environmental Impacts, University of Houston Environmental Institute/Energy Lab, $9,000, 12/1997-8/1998.

Program for Sustainable Civil Infrastructure and Environmental Systems, Gensym Center of Excellence, Gensym Corporation, $302,200 list value, unlimited software.

Membrane Selection System for the Metal Finishing, EPA Gulf Coast Haz. Sub. Res. Ctr., $80,077, 9/1995-8/1998.

Bioremediation: Scientific, Social and Business Issues, Shell Interdisciplinary Scholars Program, $200,000, 1997-1998.

Life-Cycle Environmental Costing for Managing Pollution Prevention in the Chemical and Refining Industries: A Cross-Border Approach, Texas Hazardous Waste Research Center/Gulf Coast Haz. Sub. Res. Ctr., $42,661, 9/1995-8/1997.

Systemic Change in Urban Infrastructure – Intelligent Renewal of Urban Infrastructure, National Science Foundation, $911,195 and City of Houston, $500,000, 9/1995-8/1999.

A Proposal for Joint US-Mexican Benchmarking of Accounting for Environmental Costs, EPA & Gulf of Mexico Business Council for Sustainable Development, $50,000, 6/1995-5/1996.

Life-Cycle Environment Costing for Managing Pollution Prevention in the Chemical and Petroleum Refining Industries, EPA Gulf Coast Hazardous Substance Research Center, $30,000, 6/1994-5/1995.

Environmental Accounting for Managing Pollution Prevention in the Chemical and Refining Industries, NSF-Management of Technological Innovation, $297,698, 10/1993-9/1995.

Neural Network Prediction of Potable Water Demand, University of Houston, $2,000, 6-8/1993.

Contracts

EMA Services, Inc., St. Paul, MN subcontracted with the following entities on the projects shown:

- American Water Works Association Research Foundation on Creating Effective IT Solutions, contributed to questionnaire design and content and served as QA/QC analyst for overall project, 2002.

- Water Environment Federation on Utility Business Information System for Competitive Performance, conducted and wrote literature review on water industry performance metrics, 1999.

Texas Natural Resource Conservation Commission, Austin, TX subcontract with Gelb Inc., 1997

- Conducted a requirements analysis for a Consolidated Environmental Reporting Project.

Sematech, Inc., Austin, TX under subcontract with Oregon State University, Corvallis, Oregon, 1995

- Developed a cost-of-ownership model for tools in the semiconductor fabrication industry.

World Resources Institute, Washington, DC, 1993-95.

- Studied and published two cases on environmental accounting practices in Fortune 100 firms.

Supervision of Research

Neelima Nimmagadda, System Dynamics Modeling: an Application to Sewer Infrastructure, M.S. 2000.
Neelima Jain, Environmental Accounting for Bioremediation Costs, M.S. 1999.
Kiran Aithala, ExSTrEME: Expert System for Treating Effluent from Metal Finishing and Electroplating, M.S. 1998.
Hong Qin, Reliability-Based Life-Cycle Costing System for Sewer Rehabilitation, M.S. 1998.
Thomas R. Hatfield, Modeling NASA's Regenerative Life Support System to Validate Its Control Software, M.S. 1998.
Qin Wang, Hybrid Box-Jenkins & Neural Network Method: An Application in Forecasting Daily Water Demand, MS 1996.
Richard Saudale, Activity Based Environmental Cost Analysis System, M.S. 1996.
Srinivas Garlapati, MEMFES: Membranes for Electroplating and Metal Finishing Expert System, M.S. 1996.
Hardeep S. Thind, Forecasting Nonlinear Time Series Using Artificial Neural Networks: an Application to Daily Municipal Water Demand, M.S. 1994.
Jaideep Mukherjee, Ph.D. Post-Doctoral Research, Infrastructure System Dynamics Modeling, 1996-1997.

Supervised 13 Part-Time Undergraduate Researchers from Industrial, Chemical, Civil, and Electrical and Computers Systems Engineering, and Computer Science.

Served on 8 Ph.D. and 8 M.S. Committees in the Departments of Mathematics and Industrial, Electrical and Computer, and Civil and Environmental Engineering.

TEACHING

THE JOHNS HOPKINS UNIVERSITY

Cities and Climate Change† – Adjunct Lecturer: Arts & Sciences Advanced Academic Program

- Graduate course in the MS Energy Policy and Climate Change Program examined urban energy demands and potential for alternative energy production and adaptation needs in four infrastructure sectors. Local level government climate policies are also examined, including land use policies, building practices, green infrastructure, city-owned power facilities, local level offsets, and urban-based Clean Development Mechanisms. (Spring 2014; 2012).

Computer Science for Engineers – Teaching Assistant: Applied Physics Laboratory

- Graduate course surveyed predicate logic/calculus, network and graph theory, parsing theory, queueing theory and stochastic processes, etc. (Spring 1985).

Systems Analysis for Civil Engineers (Lecturer: Dept. of Geography and Environmental Engineering)

- Graduate course Civil Engineering students on linear and multi-objective programming (Fall 1982).

Dynamic Programming – Teaching Assistant: Department of Mathematics Sciences

- Graduate course focused on dynamic programming, solution methods and introduction to control (Fall 1981).

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS

Engineering, Ethics for Sustainable Water† – Consultant/Developer

- Professional Engineering e-Learning course (in development) with a potential audience of the full 45,000 members internationally. Topics include traditional ethics, ethical reasoning, added dimensions of sustainable, case studies.

UNITED ENGINEERING FOUNDATION / AMERICAN SOCIETY OF CIVIL ENGINEERS

Bridging the Gap between Climate Change Science and Engineering Practice†

- Developed content and delivered webinar (12/2013) with colleagues (R. Olsen, PhD, R. Wright, PhD, B. Ayyub, PhD to define needs and methods to adapt engineering design, practice, standards and research to climate change.

UNIVERSITY OF HOUSTON – All taught as faculty in the Department of Industry Engineering

Environmental Perspectives in Management and Engineering†

- Graduate course with lectures by Texas Natural Resource Conservation Commission (TNRCC), Architecture, Law and Business Schools. Topics include sustainable development and environment, economics, law, and regulations; industrial ecology, life-cycle analysis, total environmental quality management, environmental accounting, ISO 14000, TNRCC's Pollution Prevention Program Training; Site Assistance Visits term project (Spring 1998; Fall 1998).

Industrial Ecology†

- Graduate course on optimizing industrial activities in the context of environmental issues using systems approaches. Topics include industrial waste streams, environmental impacts and regulations, environmental economics and accounting, decision analysis, design for environment, life-cycle analysis, risk assessment, case studies, industrial plant visits, term projects (Fall 1995; Fall 1999; Spring 1997).

Building Knowledge-Based Systems†

- Graduate level course in knowledge-based systems, including knowledge representation, logic, (LISP and OPS5 until Spring 1995) CLIPS and EXSYS programming, practical problem solving, advanced topics and real-world project prototype (Springs 1993;1994;1995;1998 (ITV); Fall 1996).

Design of Artificial Intelligence Systems†

- Graduate course on artificial intelligence methods, knowledge-based systems, logic, LISP, EXSYS, risk and uncertainty management, neural nets, genetic algorithms (Spring 1995;1996;1999, Fall 1997).

Stochastic Operations Research

- Junior/Senior course on stochastic operations research techniques incl. Game Theory, Decision Analysis, Markov Chains, Queueing Theory, Dynamic Programming (Fall 1993;1994;1995;1998;1999).

Deterministic Operations Research

- Junior/Senior course on deterministic operations research techniques including simplex algorithm, primal-dual methods, sensitivity analysis, network optimization, integer programming and industrial applications of linear programming (Spring 1994;1996;1997).

Operations Research and Analysis of Systems

- Graduate course on stochastic and deterministic operations research techniques for non-operations research engineering majors (Fall 1994;1996).

Industrial /Mechanical Engineering Systems Design

- Senior design capstone course. Taught classes on operations research and ISO 14000* (Fall 1995;1996;1997;1999; Spring 1996;1997;1999).

† instructor-originated course

PUBLICATIONS

Peer-reviewed papers

1. Davidson, C. I., Allenby, B. R., Haselbach, L. M., Heller, M., & Kelly, W. E. (2016). Educational materials on sustainable engineering: Do we need a repository? *Elementa: Science of the Anthropocene*, *4*(1), 000089.
2. Davidson, C.I. and **Heller, M.** (2014). Introducing Sustainability into the Engineering Curriculum*, Proceedings of the International Conference on Sustainable Infrastructure*, Long Beach, CA, Nov. 8, 2014.
3. Kim, S. and **Heller, M.** (2006). Emerging Cyberinfrastructure: Challenges for the Chemical Process Control Community, *Computers and Chemical Engineering*, 30 (10-12):1497-1501.
4. **Heller, M.** (2003). Infrastructure Security, Dependencies, and Asset Management. *Proceedings of the ASCE Pipeline 2003 International Conference*, Baltimore, MD, July 13-16, 2003, ASCE: Reston, VA.
5. Williams, E.D., Ayres, R.U., and **Heller, M.** (2002). The 1.7 Kilogram Microchip: Material Use and Emissions in Semiconductor Fabrication. ACS' *Environmental Science & Technology*, 36:5504-5510, http://stuff.mit.edu/afs/athena/course/2/2.813/OldFiles/www/readings/WilliamsMicrochip.pdf.
6. **Heller, M**. (2002). Interdependencies in Civil Infrastructure Systems. *Frontiers of Engineering Reports on Leading-edge Engineering from the March 2002 NAE Symposium on Frontiers of Engineering,* National Academy of Engineering, 2002, pp. 47-55.
7. Williams, E.D., Ayres, R.U., and **Heller, M.** (2002). Energy and Chemical Use in the Production Chain for Microchips. *Proceedings of the 2002 IEEE International Symposium for Electronics and the Environment*, 3/2002.

8. **Heller, M.** (2001). Interdependencies in Civil Infrastructure Systems. *The Bridge,* Wash., DC: National Academy of Engineering, 31(4):9-15, http://www.nae.edu/cms/Publications/TheBridge/Archives/7320/7487.aspx.
9. **Heller, M.** and Saudale, R. (2000). Information Architecture Plays Key Role in Corporate Environmental Cost Analysis. *Journal of Engineering Valuation & Cost Analysis*, 3:403-418.
10. **Heller, M.**, von Sacken, E.W. and Gerstberger, R.L. (1999). The Integrated Water Utility Business of the Future. *Journal American Water Works Association*, 91(11): 72-83.
11. **Heller, M.**, Garlapati, S., and Aithala, K. (1998). Expert Membrane System Design and Selection For Metal Finishing Waste Water Treatment. *Expert Systems with Applications*, 14:341-353.
12. Qin, H., and **Heller, M.** (1997). Integrating Reliability Modeling into an Activity-Based Life Cycle Costing Framework for Sewer Systems. In J.G. Chen and A. Mital (Ed.), *Advances in Industrial Engineering Applications and Practice*, 2:1027-1032, San Diego,CA: IJIE.
13. Wang, Q., and **Heller, M.** (1996). Hybrid Box-Jenkins and Neural Network Forecasting Potable Water Demand. In C. Dagli, M. Akay, C. L. P. Chen, B. Fernández, and J. Ghosh (Ed.), *Intelligent Engineering Systems Through Artificial Neural Networks*, 6: 801-807, New York: ASME Press.
14. **Heller, M.** (1996). Adding Environmental Dimension to Life-Cycle Costs. *Journal of the Society of Logistics Engineers*, 30(2):5-12.
15. Garlapati, S., and **Heller, M.** (1995). MEMFES: Membranes for Electroplating and Metal Finishing-Expert Selection for Materials Recovery. In J. Chen, F. Attia, and D. Crabtree (Ed.), *EXPERSYS-95*, (pp. 433-438), San Francisco, CA: IITT.
16. **Heller, M.** (1994). Knowledge-Based Solutions for Environmentally Conscious Manufacturing. In J. G. Chen, F. Attia, and D. Crabtree (Ed.), *EXPERSYS-94* (pp. 213-218), Houston, TX: IITT.
17. **Heller, M.**, and Thind, H. (1994). Forecasting with Cascade Correlation: An Application to Potable Water Demand. In C. Dagli, B. Fernández, J. Ghosh, and R. Kumara (Ed.), *Intelligent Engineering Systems Through Artificial Neural Networks*, 4 (pp. 1155-1160), New York: ASME Press.
18. **Heller, M.**, Cohon, J.L. and ReVelle, C.S. (1989). The Use of Simulation in Validating a Multiobjective EMS Location Model. *Annals of Operations Research*, 18:303-322.
19. Byrd, R.H., Goldman, A.J., and **Heller, M.** (1987). Recognizing Unbounded Integer Programs. *Operations Research*, 35(1):140-142.
20. **Heller, M.**, ReVelle, C., and Cohon, J. (1983). Modeling Emergency Ambulance Systems. In *IASTED International Symposium: ASM'83-Applied Simulation and Modeling*, (pp. 165-168), San Francisco, CA: ACTA Press.
21. **Heller, M.**, Hogan, K.B., Appino, P.A., Cohon, J.L., and Revelle, C.S. (1982). An emergency medical services simulation model for Baltimore city: an overview. *In Proceedings of the 14th conference on Winter Simulation - Volume 2 (WSC '82), 6-8 December,* 2:413-418, San Diego: Winter Simulation Conference.

Book Chapters

1. Gafford, W. and **Heller**, **M.** (2010). ADL and Enterprise Content Management. In R. A. Wisher, P. Jesukiewicz and B.H. Khan (Eds.). *Learning on Demand: ADL and the Future of e-Learning*.
2. Committee on Science and Technology for Countering Terrorism, National Research Council. (2002). Making the nation safer: the role of science and technology in countering terrorism. National Academies Press: Washington, DC. (Contributor).
3. **Heller, M.**, von Sacken, E.W. and Gerstberger, R.L. (2001). Water Utilities as Integrated Businesses. In W.C. Lauer (ed.), *Excellence in Action: Water Utility Management in the 21st Century*. American Water Works Association: Denver, CO, pp. 275-300.
4. Shields, D., Beloff, B., and **Heller, M**. (1998). Environmental Cost Accounting for Chemical and Oil Companies: A Benchmarking Study. In M. Bennett and P. James (ed.), *The Green Bottom Line.* Greenleaf Publishing: Sheffield, UK, pp. 188-211, http://www.greenleaf-publishing.com/productdetail.kmod?productid=12.
5. **Heller, M.**, Bernazeau, F., and Wiesner, M. R. (1998). New Trends and Technologies. In J.B. McEwen, (ed.), *Treatment Process Selection for Particle Removal.* American Water Works Association Research Foundation (ISBN 0-89867-887-0), Denver, CO, pp. 321-342.

6. **Heller, M.**, Shields, P.D., and Beloff, B. (1995). Environmental Accounting Case Study: Amoco Yorktown Refinery. In D. Ditz, J. Ranganathan, & D. Banks, (eds.), *Green Ledgers: Case Studies in Corporate Environmental Accounting*. World Resources Institute (ISBN 1-56973-032-6), Washington, DC, pp. 47-81.
7. Shields, P.D., **Heller, M.**, Kite, D., and Beloff, B. (1995). Environmental Accounting Case Study: Du Pont. In D. Ditz, J. Ranganathan, & D. Banks, (eds.), *Green Ledgers: Case Studies in Corporate Environmental Accounting. World Resources Institute* (ISBN 1-56973-032-6), Washington, DC, pp. 123-138.
8. **Heller, M.** (1995). Chapter 18: Drinking Water Quality Houston Region. In *Developing Environmental Foresight: Report of the Socioeconomic Subpanel*, Houston Environmental Foresight, J.D. Wilson, S. Strawn, D. Hitchcock, Houston Advanced Research Center, Mitchell Center For Sustainable Development, The Woodlands, Texas, pp. 423-432.
9. Anselme, C., Bordet, J. P., and **Heller, M**. (1987). Statistical Data Analysis and Modeling. In J. Mallevialle & I. H. Suffet, (eds.), *Identification and Treatment of Tastes and Odors in Drinking Water*, American Water Works Association Research Foundation (ISBN 0-89867-392-5), Denver, CO, pp. 123-210.

Reviewed Government Reports and Other Publications

1. Beller-Simms, N., E. Brown, L. Fillmore, K. Metchis, K. Ozekin, C. Ternieden, and K. Lackey. 2014. *Water/Wastewater Utilities and Extreme Climate and Weather Events: Case Studies on Community Response, Lessons Learned, Adaptation, and Planning Needs for the Future*. Project No. CC7C11 by the Water Environment Research Foundation: Alexandria, VA (**M. Heller** as contributing author).
2. *Responding to Extreme Weather and Climate Events: Adaptation Strategies and Information Needs* (Russian River, Upper Apalachicola-Chattahoochee-Flint River, Tidewater, National Capital Area, Lower Missouri River. (2013). with WERF, NOAA, EPA, WaterRF, CTC, Noblis, Hemenway, Inc.: http://www.werf.org/c/KnowledgeAreas/ClimateChange/docs/Extreme_Weather_Compendium.aspx.
3. **Heller, M.**, Humphrey, T., Jones W., Nelson, P., and J. Paniati. (2002). Exciting Opportunity for ITS Work. *Public Roads,* May/June 2002, Washington, DC: FHWA, http://www.tfhrc.gov/pubrds/02may/05.htm.
4. **Heller, M.** (2002). Life-Cycle Infrastructure Risk Management : R&D Needs. Discussion paper presented at the *Columbia-Wharton/Penn Roundtable on Risk Management Strategies in an Uncertain World*, April 12-13, 2002 IBM Palisades Executive Conference Center, Palisades, New York, http://www.ldeo.columbia.edu/chrr/documents/meetings/roundtable/pdf/notes/heller_miriam_note.pdf.
5. **Heller, M.** (2002). Part II. Civil Infrastructure Complexity: Theory, Practice, and Restructuring for Education and Research. In DeMarco, C. (ed.), *A Workshop on Critical Infrastructure: Needs in Interdisciplinary Research and Graduate Training*, co-sponsored by the White House Office of Science and Technology Policy and The National Science Foundation, White House Conference Center, Washington, DC., June 14-15, 2001.
6. Roberts, D. J., Davis, J.L., Cleveland, T., and **M. Heller.** (1999). Modeling Microbially-Induced Concrete Corrosion. *Proceedings of the Water Environment Federation Collection System Rehabilitation and O&M Specialty Conference* (pp.1-10), Salt Lake City, Utah, August 1999.
7. **Heller, M.** and Aithala, K. (1998). An Object-Oriented Architecture for Designing Wastewater Treatment Trains with Emphasis on Membrane Processes. *Proceedings of the American Desalting Association Conference & Exposition*, Williamsburg, VA: American Desalting Association, pp. 114-131.
8. Shields, D., Beloff, B., and **Heller, M.** (1997). Environmental Cost Accounting for Chemical and Oil Companies: A Benchmarking Study. US EPA-Office of Pollution Prevention and Toxics. EPA-742-R-97-004, June 1997.
9. **Heller, M.**, and Garlapati, S. (1996). An Expert System for Determining Membrane System Performance and Cost. In *Proceedings of the American Desalting Association Conference and Exposition*, pp. 328-347. Monterey, CA: American Desalting Association.
10. **Heller, M.**, and Wang, Q. (1996). Improving Potable Water Demand Forecasts with Neural Networks: A Core Technology for Integrated Resource Management. In *Universities Council on Water Resources Annual Meeting* 1996, 6:250-260. San Antonio, TX:UCOWR.
11. Shields, D., **Heller, M.**, and Beloff, B. (1995). Environmental Accounting for Managing Pollution Prevention in the Refining Industry: The Case of Amoco Yorktown. In the *1995 Third International Conference of the Decision Sciences Institute*, pp.172-174, June 12-14, Puebla, Mexico: DSI.

12. U.S. Congress, Office of Technology Assessment. (1985). Superfund Strategy. OTA-ITE-252, http://www.fas.org/ota/reports/8526.pdf (primary author on Chapter 3: A Systems Analysis of Superfund).
13. **Heller, M.**, and Hirschhorn, J. (1984). Update on Hazardous Waste-End Tax Option. *U.S. Congress Office of Technology Assessment* presented to the Subcommittee on Commerce, Transportation and Tourism of the House Committee on Energy and Commerce, 98th Congress, Jan. 25, 1984.
14. **Heller, M.**, Hogan, K. B., Appino, P., Cohon, J., and Revelle, C. S. (1983). An Emergency Medical Services Simulation Model for Baltimore City. In W. Vogt & M. Mickle (Ed.), *14th Annual Pittsburgh Conference on Modeling & Simulation*, 14 (3):977-981. Pittsburgh, PA: Instrument Society of America.

INVITED SEMINARS AND PRESENTATIONS

Heller, M. (2014). OpenSEER - Open Sustainable Engineering Education Resources: Context and Vision, Presented at the NSF Sustainable Engineering Education Community Workshop, August 5, 2014, Arlington, VA.

Wright, R.N., Vinson, T.S., Heller, M., Ayub, B.M., and Olsen, J.R. (Authors). (2013). Bridging the Gap Between Climate Change Science and Engineering Practice (Webinar). Produced by the American Society of Civil Engineer and the United Engineering Foundation, recorded December 19, 2013, 12:00 pm, ASCE: Reston, VA.

Bridging the Gap Between Climate Change Science and Engineering Practice: Review of Climate Change. 2013 Carbon Management Technology Conference, Alexandria, VA, October 22, 2013.

Water Utilities' Extreme Events Response and Adaptation. Presenter, 143th Annual Civil Engineering Conference, Charlotte, NC, October 10, 2013.

Water Utility Responses to Extreme Events: Who's Adapting to Climate Change? Why? How? Invited Speaker, 10th International Symposium on Cold Regions Development, Anchorage, Alaska, June 3, 2013.

Sustainable Information and Communication Technologies. Session Moderator and Speaker, Carbon Management Technologies Conference, Orlando FL, February 8, 2012.

Adaptation Policy in Government and Industry. Session Moderator Remarks, Carbon Management Technologies Conference, Orlando FL, February 7, 2012.

Climate Change Adaptation Challenges to Infrastructure Engineering. Invited Speaker, George Mason University, Fairfax, VA, April 27, 2011.

Innovations in Cyberlearning for Sustainable Science and Engineering. Invited Speaker, International Conference on Sustainable Science and Engineering, University of Arizona, Tucson, AZ, January 12, 2011.

ASCE and NSF: Leadership and Innovation Platforms for Civil Engineers, Invited Speaker, George Mason University Department of Civil, Environmental, and Infrastructure Engineering, CEIE 673, November 11, 2010.

Innovations in Cyberlearning for Sustainability. Invited Speaker, Think Green Global Forum, New York Institute of Technology/Nanjing University of Telecommunications and Poste, Nanjing, China, April 8, 2010.

Carbon Legislation and Cap and Trade Update. Invited Speaker, United Engineering Foundation Founder Societies Carbon Measurement Initiative, Greenhouse Gas Measurement Workshop, Hyatt Regency Scottsdale Resort and Spa at Gainey Ranch, Scottsdale, AZ, December 7, 2009.

The Future of Urban and Regional ~~Mobility~~ Livability: Systems Engineering for People. Invited Plenary Panel Speaker, Union Panamericana De Asociaciones De Ingenieros (UPADI), Brasilia, Brasil, December 1, 2008.

A Few Uses of Mathematics in Earthquake Engineering. Presented to Mrs. Haynes' 4th Grade Math Class, Zachary Taylor Elementary School, Arlington, VA, February, 13, 2002.

Building a National Cyberinfrastructure: Exploring the Landscape. Presentation via videoconference to the DoD Minority Serving Institution Computer Science and Engineering-High Performance Computing Faculty Training Workshop, North Carolina A&T State University, Greensboro, NC, July 14 2006..

Building a National Cyberinfrastructure for a Flat World. Presentation to the NSF Committee on Equal Opportunity in Science and Engineering, Arlington, VA, May 31, 2006.

Building a National Cyberinfrastructure: Exploring the Landscape. Presentation at the NSF EPSCoR National Workshop on Cyberinfrastructure. Nashville, TN, March 11, 2006.

Cyberinfrastructure Training, Education, Advancement, and Mentoring for our 21st Century Workforce (CI-TEAM) NSF 06-548. Presentation to National Science Foundation's Directorate for Engineering, Arlington, VA, April 27, 2006.

Cyber-enabled Combustion Science and Engineering Education. Presentation to National Science Foundation's Directorate for Engineering, Arlington, VA, April 20, 2006.

Building a National Cyberinfrastructure: Exploring the Landscape. Presentation to the Institute for Complex Engineering Systems, Carnegie Mellon University, Pittsburgh, PA, April 14, 2006.

Cyberinfrastructure Training, Education, Advancement, and Mentoring for our 21st Century Workforce (CI-TEAM) NSF 06-548. Presentation to National Science Foundation's Directorate for Social, Behavioral, and Economic Sciences, Arlington, VA, March 28, 2006.

Preparing a Cyberinfrastructure-savvy Workforce. Presentation at the National Science Foundation's Division of Human Resource Development Joint Annual PI Meeting Joint Annual PI Meeting, Washington, DC, March 17, 2006.

NSF's CyberInfrastructure Vision for 21st Century Discovery, Innovation, and Learning. Keynote speech at the GridChem Workshop: Distributed Computational Chemistry, Austin, TX, March 8-10, 2006.

The National View of CyberInfrastructure. Presentation by co-author, Sangtae Kim, at the Session on Emerging Cyber Infrastructure Trends and Capabilities at The 2005 Annual Meeting of the American Institute of Chemical Engineers, Cincinnati, OH, November 2, 2005.

Cyber Infrastructure from a National Perspective: Any Room Left in the Middle? Presentation by co-author, Sangtae Kim, Session on CAST Plenary Session (Invited Papers) at the 2005 Annual Meeting of the American Institute of Chemical Engineers, Cincinnati, OH, November 1, 2005.

Cyber-Infrastructure: Enabling Science and Engineering Research. Presentation at the International Conference for Science & Business Information, Nîmes, France, October 18, 2005.

NSF's Evolving Cyberinfrastructure Program: Enabling 21st Century Science & Engineering Research & Education. Presentation at the University of Delaware's Department of Civil and Environmental Engineering, Newark, September 2, 2005.

Water and Wastewater Infrastructure CyberSecurity: Research for the Pipeline. Presentation at the WERF Workshop on Security Measures for Computerized and Automated Systems at Water and Wastewater Facilities, Water and Sewer Authority, Washington DC, April 20, 2005.

Information Technology and Infrastructure Interdependencies : Life-Cycle Implications. Poster Session at the 2004 Gordon Research Conference on Industrial Ecology, Queen's College, Oxford, UK, August 1-6, 2004.

New Directions in Digital Government. Panel presentation at the dg.o2004 (Digital Government Research Program) Conference in Seattle, WA, May 25, 2004.

Information Technology and Infrastructure Interdependencies: Life-Cycle Implications. Invited participant/poster at the Seventh German-American Frontiers of Engineering Symposium, National Academy of Engineering, April 29 - May 1, 2004 Washington, DC.

Water Infrastructure in an Interconnected World. Invited Keynote Speech at the American Water Works Association's IMTech 2004, Baltimore Marriott, April 19, 2004.

The Events of September 11: From the Eyes of the Research Community. Invited presentation on Beyond September 11th: An Account of Post-Disaster Research at NSF for Engineers Week, National Science Foundation, Arlington, VA, February 23, 2004, http://www.colorado.edu/hazards/publications/sp/sp39/sept11book_frontmatter.pdf.

Major Education Funding Opportunities at the National Science Foundation. Panelist at the Thirteenth Annual National Conference on Quality Education for Minorities, Mathematics, Science, and Engineering Network, Washington Marriott Hotel, Washington, DC, February 21, 2004.

Information Technology and Infrastructure: Life-Cycle Implications. Invited Millennium Lecturer at the EPA Millennium Lecture Series, EPA, Washington, DC, February 18, 2004.

Frontiers of Global Sustainable Industries: Tools for the Trade. Presentation to Purdue University Cluster on Global Sustainable Industrial Systems, West Lafayette, IN, November 18, 2003.

Infrastructure Security, Dependencies, and Asset Management. Invited presentation to RAND Santa Monica, California, September 15, 2003.

Information Technology and Infrastructure: Benefits, Costs, and Dependencies. Presentation at the ADVANCED RESEARCH WORKSHOP on Life Cycle Analysis for Assessing Energy and Environmental Implications of Information Technology, NATO Science Programme in conjunction with the Carnegie Bosch Institute, Budapest, Hungary, September 2, 2003, http://www.ce.cmu.edu/~hsm/NATO-ARW/pres/MiriamHeller.ppt.

A Brief Overview of NSF Research and Thinking on Water Infrastructure Security. Presentation at the WERF Security Symposium on Enhancing Security in the Wastewater Sector: A Research Agenda, Washington, DC, August 7, 2003.

Infrastructure Security, Dependencies, and Asset Management. Presentation at the ASCE 2003 International Pipeline Conference, Baltimore, MD, July 16, 2003.

Material and Economic Flows in the Global Production Chain for High-purity Silicon: Implications of a 1.7 kg Microchip. Presentation at the International Society for Industrial Ecology 2003, Ann Arbor, MI, June 30, 2003.

Business Analysis of a Climate Neutral Product. Presentation at the World Congress on Risk, Mini-Symposium on Supporting Sustainable Business Practice, Society of Risk Analysis, Brussels, Belgium, June 25, 2003.

Building a Home for the Deconstruction and Materials Reuse Research Community: Closing the Loop. Keynote presentation at the 11th Rinker International conference, Gainesville, Florida, May 8, 2003.

Hidden Life-Cycle Costs from Infrastructure Interdependencies. Presented at the 3rd International workshop on Life Cycle Costing and the International Association for Bridge Maintenance and Safety, EPFL, Lausanne, Switzerland, March 24, 2003.

NSF Update. Presented at the 3rd International workshop on Life Cycle Costing and the International Association for Bridge Maintenance and Safety, EPFL, Lausanne, Switzerland, March 24, 2003.

Construction Engineering and Management Research and Education: Reflections. Presented at the 2003 ASCE Construction Research Congress, Honolulu, Hawaii, March 20, 2003.

An Integrated View of NSF and Infrastructure Systems Research. Presented at the 2002 Capital Projects Integrated Technology Workshop, Lansdowne, VA, November 15, 2002.

Industrial Ecology: Me, My Factory, and My Earth. Invited Seminar at the Department of Geography and Environmental Engineering, The Johns Hopkins University, Baltimore, MD, November, 12, 2002.

Critical Infrastructure Interdependencies: Basic Research Needs. Presentation distributed only at the NSF/OSTP Technical Workshop on Information Technology Research for Critical Infrastructure Protection Workshop, National Conference Center, Lansdowne, VA, September 19, 2002.

Educating the Transportation Professional of the Future: a Systems Challenge. Presented at ASCE 7th Int'l Conference: Applications of Advanced Technology in Transportation, Cambridge, MA, August 5-7, 2002.

Interdisciplinary Research and Education Challenges: NSF's Approach. Presented at the Second Annual conference on Infrastructure Priorities Advancing Innovation: Educating Infrastructure Professionals to Make a Difference, Glen Cove, NY, July 17-19, 2002.

Some Research Needs in Identifying, Predicting from, and Managing Precursors. Presented to the National Academy of Engineers, Panel on Precursors to Catastrophes, Washington, DC, February 21, 2002.

Civil Infrastructure Interdependencies: A System Approach to Research Needs. Invited presentation to the National Academies Committee on Science and Technology for Countering Terrorism: Panel on Systems Analysis and Systems Engineering, Washington, DC, February 14, 2002, http://www.nap.edu/books/0309084814/html/301.html (pages 301, 397).

Research Opportunities in Risk Assessment for Infrastructure and Information Systems. Invited Presentation to the NATO/Russia Advanced Research Workshop, Moscow, Russia, February 1, 2002.

Civil Infrastructure Interdependencies: A System Approach to Research Needs. Invited presentation to the National Academies Committee on Science and Technology for Countering Terrorism: Panel on Energy Systems, Cities, and

Fixed Infrastructure, Washington, DC, January 10, 2002 http://www.nap.edu/books/0309084814/html/397.html (pages 397).

An Overview of Programs at the National Science Foundation: Foundations for Building the National Infrastructure Research Agenda, First Annual Conference on Infrastructure Priorities. AED Conference Center, Washington, DC, October 24, 2001.

Mitigating Catastrophic Risk in the Electric Power Industry, Moderator and co-Sponsor with the Office of Science and Technology Policy, Alexandria, VA, September 10-11, 2001.

Workshop on Critical Infrastructure: Needs in Interdisciplinary Research and Graduate Training. Moderator and co-Sponsor with the White House Office of Science and Technology Policy, White House Conference Center, Washington, DC, June 14-15, 2001.

Life Cycle Costing of Underground Technologies. Presented at the American Underground Construction Association Conference, Seattle, WA, March 12, 2001.

Water Treatment Cost Estimation. Full day symposium with Wilbert, M.C., and Lejeune, J. at the 1999 International Desalting Association Conference, San Diego, California, August 29,1999.

Accounting For Environmental Costs. Invited presentation to the American Association of Cost Engineers , Houston, TX, April 20, 1999.

Life Cycle Assessment. Seminar at Rice University, Houston, Texas, February 25, 1999.

Industrial Ecology: State-of-the-Art and Future Needs of Systems Engineering Tools. Invited presentation to the Dept. of Environmental Science and Engineering, Rice University, Houston, TX, December 2, 1998.

Environmental Accounting Information Architectures for Life-Cycle/Value Chain Decision-Making. Poster session at the 1998 Gordon Research Conference on Industrial Ecology, Colby-Sawyer College, New London, NH, USA, June 7-12, 1998.

The Integrated Water Utility Business of the Future. Presented with von Sacken, E. & Gerstberger, R.L. at the American Water Works Association (AWWA) Annual Conference, Dallas, TX June 21-25, 1998.

The Integrated Water Utility Business of the Future. Presented with von Sacken, E. and Gerstberger, R.L. at the AWWA Information Management & Technology Conference, April 6, 1998.

Information Architecture Needs for Sustainable Corporate Decision-Making. Presented at the World Resources Institute's BELL Workshop at the University of Houston, Houston, TX, February 20,1998.

Overview of Life-Cycle Assessment. Seminar at the Department of Environmental Science and Engineering, Environmental Science and Engineering 490, Rice University, Houston, TX, February 6, 1998.

Expert System for the Treatment of Metal Finishing Wastewater. Poster Session with Aithala, K. at the Pollution Prevention - Green Chemistry for Chemical and Petroleum Refining Industries Symposium, Sponsored by the US EPA, GCHSRC, and EESI, Rice University, Houston, TX, October, 29, 1997.

A Resource Guide to Forecasting Water Demand with Neural Networks. Presented at the American Water Works Association Computer Conference, Austin, TX, April 13-16, 1997.

Corporate Environmental Costs: A Cross Border Approach, Pollution Prevention - Green Chemistry for Chemical and Petroleum Refining Industries Symposium. Presentation with Beloff, B. at EPA, GCHSRC, and EESI Sponsored Symposium at Rice University, Houston, TX, October, 29, 1997.

ABECAS©: Activity-Based Environmental Cost Analysis: A Tool For Sustainable Corporate Decision-Making. Poster Session with Saudale, R. at the DeLange Woodlands Conference on Sustainability, Rice University, Houston, TX, March 4, 1997.

Benchmarking for Corporate Environmental Costs, Poster Session with Beloff, B. at the DeLange Woodlands Conference on Sustainability, Rice University, Houston, TX March 4, 1997.

ABECAS©: A Stochastic Life-Cycle Activity-Based Environmental Cost Analysis System. Invited presentation to the KPMG Peat Marwick/University of Texas: EH&S Activity-based Cost Accounting Conference, Austin, TX, 1/30-31/97.

Benchmarking Environmental Accounting Practice. Invited presentation with Beloff, B. to the KPMG Peat Marwick/University of Texas: EH&S Activity-based Cost Accounting Conference, Austin, TX, 1/30-31/97.

Corporate Environmental Cost Accounting: A Decision Tool for Sustainability. November 8, 1996, Dept. of Environmental Science and Engineering, School of Public Health, University of North Carolina, Chapel Hill, N. Carolina.

Integrating Internal Feedback Loops: Decision Relevant Architectures for Reverse Logistics Management Systems. Invited presentation to the 1st Annual International Reverse Logistics Management Conference, The Society of Logistical Engineers, New Orleans, LA, Sept. 18, 1996.

Environmentally Conscious Accounting. Presented to the Olin School of Business, Washington University, St. Louis, MO, February 16, 1996.

Corporate Environmental Life-Cycle Cost Modeling Requirements. Invited presentation to 30th Annual Int'l Logistics Conference & Exposition, The Society of Logistical Engineers, San Antonio, Texas, August, 1995.

MEMPreSS: Materials Recovery Expert Membrane Process Selection System for the Electroplating Industry. June 23, 1995, School of Engineering & Applied Science, Washington University, St. Louis, MO.

Cascade Correlation Forecasting : Application to Potable Water Demand. Presentation to the School of Engineering and Applied Science, Washington University, St. Louis, MO, May 15, 1995.

Neural Facility Location. Presented at the 4th Annual North American Regional Science Association International Meeting in Houston, Texas, November, 1994.

Operations Research Primer. Presented at the 1990 Fall DECUS Symposium, Las Vegas, NV, Dec., 1990.

Artificial Intelligence Applications in the Chemical and Process Industries. Presented at the 1990 Fall DECUS Symposium in Las Vegas, NV, December, 1990.

An Evaluation of Backup Coverage Models Using Simulation. Presented with Hogan, K. at the Regional Science Association Meeting in Toronto, Canada, November, 1988.