

**Wallace J. Hopp**  
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## Education

- 1978** B.S. Physics, Michigan State University.
- 1979** M.S. Technology and Human Affairs, Washington University.
- 1982** M.S. Industrial and Operations Engineering, University of Michigan.
- 1984** Ph.D. Industrial and Operations Engineering, University of Michigan.

## Employment

- 1978 - 1979** Research Assistant, Department of Technology and Human Affairs, Washington University, St. Louis, MO.
- 1979 - 1981** Research Engineer, Battelle Pacific Northwest Laboratories, Richland, WA.
- 1981 - 1984** Teaching and Research Assistant, Department of Industrial and Operations Engineering, University of Michigan, Ann Arbor, MI.
- Summer 1984** Instructor, School of Business Administration, Eastern Michigan University, Ypsilanti, MI.
- 1984 - 1990** Assistant Professor, Department of Industrial Engineering and Management Science, Northwestern University, Evanston, IL.
- 1990 - 1994** Associate Professor, Department of Industrial Engineering and Management Science, Northwestern University, Evanston, IL.
- 1993 - 1994** Associate Professor (courtesy), Department of Managerial Economics and Decision Sciences, Kellogg School of Management, Northwestern University, Evanston, IL.
- 1993 - 1996** Pentair – D. Eugene and Bonnie L. Nugent Teaching Professor of Business Leadership, Northwestern University, Evanston, IL.
- 1994-1995** Visiting Research Engineer, Corporate Manufacturing Research Center, Motorola, Inc., Schaumburg, IL.
- 1994-2007** Professor (courtesy), Department of Managerial Economics and Decision Sciences, Northwestern University, Evanston, IL.
- 1996-2007** Breed University Professor, Department of Industrial Engineering and Management Sciences, Northwestern University, Evanston, IL.
- 2007-present** Herrick Professor of Manufacturing, Ross School of Business, University of Michigan, Ann Arbor, MI

## Areas of Research Interest

- Production and Supply Chain Systems
  - Assembly Systems
  - Pull Production
  - Supply Chain Risk and Robustness
- Innovation and Product Development
  - Design for Supply Chain Efficiency
  - Product Variety Planning
  - Project Portfolio Management
- Health Care Operations
  - Emergency Department Scheduling
  - Hospital Flow Management
- Workforce Management
  - Workforce Agility Strategies
  - White Collar Work Systems
  - Social Network Models
  - Crisis Management
- Revenue Management
  - Dynamic Pricing
  - Inventory/Pricing Coordination
- Capacity Management
  - Replacement and Maintenance Models
  - Technological Obsolescence
  - Strategic Capacity Decisions

## Awards

- Phi Beta Kappa (1978)
- Tau Beta Pi (1982)
- Distinguished Achievement Award, Department of Industrial and Operations Engineering, University of Michigan (1983)
- ORSA Doctoral Colloquium, Operations Research Society of America (1983)
- Nicholson Prize for best student paper in operations research, Operations Research Society of America (1985)
- Lilly Foundation Post-Doctoral Teaching Award (1985)
- Tech Teaching Honor Roll, Mortar Board Society, Northwestern University (1986)
- McCormick Teaching Award for top engineering professor, Northwestern University (1989)
- Graduate Teaching Award, IE Department, Northwestern University (1990)
- JD Scaife Award for the paper (“CONWIP a Pull Alternative to Kanban” with M. Spearman and D. Woodruff) with the “greatest potential for assisting an advance of manufacturing practice,” Institution of Manufacturing Engineers (1990)
- Pentair–D. Eugene and Bonnie L. Nugent Teaching Professorship in Business Leadership (1993)
- Breed University Professorship in Manufacturing Management (1996)
- IIE Joint Publishers Book-of-the-Year Award, for “Factory Physics: Foundations of Manufacturing Management,” Institute of Industrial Engineers (1998).
- Top Five Kellogg Professors Award for outstanding management teaching, Northwestern University (1998)
- Sargent Americanism Award, for “significant and innovative work which develops a better understanding and appreciation of business skills related to manufacturing,” Society of Manufacturing Engineers (2001)
- IIE Fellow Award (2002)
- INFORMS Fellow Award (2004)
- Award for Technical Innovation in Industrial Engineering, Institute of Industrial Engineers (2005)
- MSOM Fellow Award (2005)
- SME Education Award (2006)
- POMS Fellow Award (2006)
- Alumni Society Merit Award, University of Michigan (2006)

## Administrative Activities

- |                    |   |
|--------------------|---|
| <b>1984 – 1986</b> | Graduate Committee, IE/MS Department. <ul style="list-style-type: none"><li>• Initiated and managed major revision of graduate curriculum.</li><li>• Designed and conducted annual survey of first-year graduate students.</li></ul>                                      |
| <b>1986 – 1994</b> | Undergraduate Committee, IE/MS Department.  |
| <b>1986 – 1988</b> | McCormick Undergraduate Committee.  |
| <b>1992 – 1994</b> | McCormick Lower Division Committee.   |
| <b>1990 – 1994</b> | McCormick Curriculum Committee.   |
| <b>1990 – 1991</b> | Northwestern UCCIP Subcommittee on Teaching and Learning Facilities.  |
| <b>1991 – 1994</b> | Associate Chair for Undergraduate Affairs, IE/MS Department. <ul style="list-style-type: none"><li>• Responsible for all departmental undergraduate affairs.</li><li>• Oversaw ABET reviews in 1990, 1993.</li><li>• Overhauled undergraduate advising process.</li></ul> |
| <b>1991 – 1993</b> | Director, Masters of Manufacturing Engineering Program, Center for Manufacturing Engineering.   |
| <b>1992 – 1996</b> | Director, BS in Manufacturing Engineering Program <ul style="list-style-type: none"><li>• Founded program</li></ul>   |
| <b>1993 – 1994</b> | Acting Director, Masters of Engineering Management Program, IE/MS Department.   |

- Revised marketing strategy.
  - Increased enrollment by over 100%; returned program to profitability.
- 1993 – 1994** McCormick Committee on our Future.
- 1994 – 2007** Director, Master of Management and Manufacturing Program, McCormick School of Engineering and Kellogg Graduate School of Management.
- Oversaw two major curriculum revisions.
  - Introduced many management-oriented technology elective courses.
  - Initiated program of industry-sponsored student integration projects.
  - Founded executive education program.
  - Introduced MMM Entrepreneurship Program in which student teams develop new product business ventures.
  - Founded joint research initiative on Enterprise Networks with Kellogg.
  - Headed fundraising for endowed chairs and other needs.
- 1996** Program Review Committee for Economics Department.
- 1997 – 1999** Northwestern University General Faculty Committee.
- 1998 – 2002** Northwestern University Program Review Council
- Chaired review subcommittees for University Relations (1999), Administrative Units (2000), Physics and Astronomy (2001)
  - Chair (2001-02)
- 1999** McCormick Dean Search Committee
- 2000 – 2003** Director, BS in Manufacturing Engineering Program, McCormick School of Engineering, Northwestern University
- Introduced new capstone design course
  - Initiated “best practices” student research program
  - Expanded design curriculum to transform program into the BS in Manufacturing and Design Engineering
- 2004** Chair, McCormick Dean Search Committee, Northwestern University
- 2007 – present** Member, Tauber Executive Committee, University of Michigan
- 2007 - present** Member, PhD Committee, Operations and Management Sciences, University of Michigan
- 2007 – 2009** Member, Research Committee, Ross School, University of Michigan
- 2009 – present** Member, Executive Committee, Ross School, University of Michigan

## Books and Book Chapters

W.J. Hopp, M.L. Spearman, *Factory Physics: Foundations of Manufacturing Management*, Burr Ridge, IL: Irwin/McGraw-Hill, 1996 (second edition, 2000, third edition, 2007).

W.J. Hopp, M.L. Spearman, “Factory Physics,” *1997 Yearbook of Science and Technology*, New York: McGraw-Hill, 1997.

S. Chayet, W.J. Hopp, X. Xu, “The Marketing-Operations Interface,” in *Handbook of Quantitative Supply Chain Analysis: Modeling in the E-Business Era*, D. Simchi-Levi, D. Wu, Z.M. Shen (eds.), International Series in Operations Research and Management Science, Kluwer Academic Publishers, Norwell, MA, 2004.

D. Diermeier, W.J. Hopp, S. Iravani, “Innovating Under Pressure: Towards a Science of Crisis Management,” in *Innovation Policy and the Economy*, Volume 7, National Bureau of Economic Research, Washington, D.C., 2006.

W.J. Hopp, *Supply Chain Science*, New York: McGraw-Hill, 2008.

W.J. Hopp, “Single Server Queueing Models,” in *Building Intuition: Insights from Operations Management Models and Principles*, D. Chhajed, T. Lowe (eds.), New York: Springer, 2008.

## Refereed Papers

1. W.J. Hopp, W.P. Darby, "Household Water Conservation: The Role of Indirect Energy Savings," *Energy* **5** (12), 1980, 1183-1192.
2. W.J. Hopp, W.P. Darby, "In-Home Conservation and Wastewater Management," *ASCE Journal of the Water Resources Planning and Management Division*, October 1981, 401-418.
3. P.N. Petty, W.J. Hopp, "A Comparative Risk Analysis of Fuelwood Use in the Pacific Northwest," *Energy* **7** (4), 1982, 359-365.
4. W.J. Hopp, J.C. Bean, R.L. Smith, "A New Optimality Criterion for Non-Homogeneous Markov Decision Processes," *Operations Research* **35** (6), 1987, 875-883.
5. W.J. Hopp, "A Sequential Model of R&D Investment Over an Unbounded Time Horizon," *Management Science* **33** (4), 1987, 500-508.
6. W.J. Hopp, "Sensitivity Analysis in Discrete Dynamic Programming," *Journal of Optimization Theory and Applications* **56** (2), 1988, 257-269.
7. P.C. Jones, J.L. Zydiak, W.J. Hopp, "Stationary Dual Prices and Depreciation," *Mathematical Programming* **41** (3), 1988, 357-366.
8. W.J. Hopp, S.C. Wu, "Multi-Action Maintenance Under Markovian Deterioration and Incomplete State Information," *Naval Research Logistics Quarterly* **35**, 1988, 447-462.
9. W.J. Hopp, "Identifying Forecast Horizons in Nonhomogeneous Markov Decision Processes," *Operations Research* **37** (2), 1989, 339-343.
10. M.L. Spearman, W.J. Hopp, D.L. Woodruff, "A Hierarchical Control Architecture for CONWIP Production Systems," *Journal of Manufacturing and Operations Management* **2** 1989, 147-171.
11. W.J. Hopp, N. Pati, P.C. Jones, "Optimal Inventory Control in a Production Flow System with Failures," *International Journal of Production Research* **27**, 1989, 1367-1384.
12. W.J. Hopp, J.T. Simon, "Bounds and Heuristics in Assembly-Like Queues," *Queueing Systems* **4**, 1989, 137-156.
13. P.C. Jones, J.L. Zydiak, W.J. Hopp, "Stable Economic Depreciation and Neutral Replacement Decisions," *The Engineering Economist* **34**, 1989, 115-128.
14. W.J. Hopp, S.C. Wu, "Machine Maintenance with Multiple Maintenance Actions," *IIE Transactions* **22** (3), 1990, 226-233.
15. P.C. Jones, J.L. Zydiak, W.J. Hopp, "Generalized Imputed Salvage Values," *The Engineering Economist* **35**, 1990, 215-229.
16. P.C. Jones, J.L. Zydiak, W.J. Hopp, "Stable Economic Depreciation," *Operations Research Letters* **9**, 1990, 325-333.
17. M.L. Spearman, D.L. Woodruff, W.J. Hopp, "CONWIP: A Pull Alternative to Kanban," *International Journal of Production Research* **28**, 1990, 879-894.

18. I. Duenyas, W.J. Hopp, "Estimating Variance of Output from Cyclic Exponential Queueing Systems," *Queueing Systems* **7**, 1990, 337-354.
19. W.J. Hopp, M.L. Spearman, D.L. Woodruff, "Practical Strategies for Lead Time Reduction," *Manufacturing Review* **3**, 1990, 78-84.
20. W.J. Hopp, M.L. Spearman, "Throughput of a Constant WIP Manufacturing Line Subject to Failures," *International Journal of Production Research* **29** 1991, 635-655.
21. J.T. Simon, W.J. Hopp, "Availability and Average Inventory of Balanced Assembly-Like Flow Systems," *IIE Transactions* **23** (2), 1991, 161-168.
22. P.C. Jones, J.L. Zydiak, W.J. Hopp, "Parallel Machine Replacement," *Naval Research Logistics* **38**, 1991, 351-365.
23. W.J. Hopp, S.K. Nair, "Timing Replacement Decisions Under Discontinuous Technological Change," *Naval Research Logistics* **38**, 1991, 203-220.
24. G.B. Hazen, W.J. Hopp, J.M. Pellissier, "Small-Risk Stochastic Assessment in Medical Decision-Making," *Medical Decision Making* **11** (4), 1991, 294-304.
25. J.C. Bean, W.J. Hopp, I. Duenyas, "A Stopping Rule for Forecast Horizons in Nonhomogeneous Markov Decision Processes," *Operations Research* **40** (6), 1992, 1188-1199.
26. S.K. Nair, W.J. Hopp, "A Model for Replacement due to Technological Obsolescence," *European Journal of Operations Research* **63** 1992, 207-221.
27. P.C. Jones, J.L. Zydiak, W.J. Hopp, "Capital Asset Valuation and Depreciation for Stochastically Deteriorating Equipment," *The Engineering Economist* **38**, 1992, 19-30.
28. I. Duenyas, W.J. Hopp, "CONWIP Assembly with Deterministic Processing and Random Outages," *IIE Transactions* **24** (4) 1992, 97-109.
29. M.S. Daskin, W.J. Hopp, B. Medina, "Forecast Horizons and Dynamic Facility Location Planning," *Annals of Operations Research* **40**, 1992, 125-151.
30. W.J. Hopp, J.T. Simon, "Estimating Throughput in an Unbalanced Assembly-Like Flow System," *International Journal of Production Research* **31** (4), 1993, 851-868.
31. W.J. Hopp, M.L. Spearman, "Setting Safety Leadtimes for Purchased Components in Assembly Systems," *IIE Transactions* **25** (2), 1993, 2-11.
32. I. Duenyas, W.J. Hopp, "Estimating the Throughput of an Exponential CONWIP Assembly System," *Queueing Systems* **14**, 1993, 135-157.
33. W.J. Hopp, M.L. Spearman, I. Duenyas, "Economic Production Quotas for Pull Manufacturing Systems," *IIE Transactions* **25** (2), 1993, 71-79.
34. I. Duenyas, W.J. Hopp, M.L. Spearman, "Characterizing the Output Process of a CONWIP Line with Deterministic Processing and Random Outages," *Management Science* **39** (8), 1993, 975-988.
35. W.J. Hopp, P.C. Jones, J.L. Zydiak, "A Further Note on Parallel Replacement," *Naval Research Logistics* **40**, 1993, 575-579.

36. W.J. Hopp, S.K. Nair, "Markovian Deterioration and Technological Change," *IIE Transactions* **26** (6), 1994, 74-82.
37. I. Duenyas, W.J. Hopp, "Quoting Customer Lead Times," *Management Science* **41** (1), 1995, 43-57.
38. J.T. Simon, W.J. Hopp, "Throughput and Average Inventory in Discrete Balanced Assembly Systems," *IIE Transactions* **27** (3), 1995, 368-373.
39. M.L. Spearman, D.L. Woodruff, W.J. Hopp, "CONWIP—Extending the Benefits of Pull Production", *Manufacturing Engineer*, 1995.
40. W.J. Hopp, M.L. Spearman, R.Q. Zhang, "Easily Implementable (Q,r) Inventory Control Policies," *Operations Research* **45** (3), 1997, 327-340.
41. I. Duenyas, W.J. Hopp, Y. Bassok, "Production Quotas as Bounds on Interplant JIT Contracts," *Management Science* **43** (10), 1997, 1372-1386.
42. W.J. Hopp, M.L. Roof, "Setting WIP Levels with Statistical Throughput Control (STC) in CONWIP Production Lines," *International Journal of Production Research* **36** (4), 1998, 867-882.
43. M.L. Spearman, W.J. Hopp, "Teaching Operations Management from a Science of Manufacturing", *Production and Operations Management* **7** (2), 1998, 132-145.
44. W.J. Hopp, Y.L. Kuo, "An Optimal Structured Policy for Maintenance of Partially Observable Aircraft Engine Components," *Naval Research Logistics* **45**, 1998, 335-352.
45. W.J. Hopp, Y.L. Kuo, "Heuristics for Multi-Component Joint Replacement: Applications to Aircraft Engine Maintenance," *Naval Research Logistics*, **45**, 1998, 435-458.
46. W.J. Hopp, R.Q. Zhang, M.L. Spearman, "An Easily Implementable Hierarchical Heuristic for a Two-Echelon Spare Parts Distribution System" *IIE Transactions* **31** (10), 1999, 977-988.
47. W.J. Hopp, M.L. Roof, "Quoting Manufacturing Due Dates Subject to a Service Level Constraint," *IIE Transactions* **32** (9), 2000, 771-784.
48. R.Q. Zhang, W.J. Hopp, "Spreadsheet Implementable Inventory Control Policies," *Journal of Heuristics* **7** (2), 2001, 185-203.
49. M.P. Van Oyen, E.G. Senturk-Gel, W.J. Hopp, "Performance Opportunity of Workforce Agility in Collaborative and Noncollaborative Work Systems," *IIE Transactions* **33** (9), 2001, 761-777.
50. M. Hegedus, W.J. Hopp, "Due Date Setting with Supply Constraints in Systems using MRP," *Computers and Industrial Engineering* **39**, 2001, 293-305.
51. M. Hegedus, W.J. Hopp, "Setting Procurement Safety Lead Times for Assembly Systems," *International Journal of Production Research* **39**, 2001, 3459-3478.
52. W.J. Hopp, M.L. Spearman, S. Chayet, K. Donohue, E. Senturk, "Using an Optimized Queueing Network Model to Support Wafer Fab Design", *IIE Transactions* **34** (2), 2002, 119-130.
53. W.J. Hopp, M.L. Roof, "A Simple Robust Leadtime Quoting Policy," *Manufacturing and Service Operations Management* **3** (4), 2001, 321-336.
54. Y. Bassok, W.J. Hopp, M. Rohatgi, "A Simple Linear Heuristic for the Service Constrained Random Yield Problem," *IIE Transactions* **34** (5), 2002, 479-487.

55. E.S. Gel, W.J. Hopp, M.P. Van Oyen, "Factors Affecting Opportunity of Worksharing as a Dynamic Line Balancing Mechanism," *IIE Transactions*, **34** (10), 2002, 847-863.
56. K.L. Donohue, W.J. Hopp, M.L. Spearman, "Optimal Design of Stochastic Production Lines: A Dynamic Programming Approach," *IIE Transactions* **34** (10), 2002, 891-903.
57. J. Boudreau, W. Hopp, J. McClain, L.J. Thomas, "On the Interface Between Operations and Human Resources Management," *Manufacturing and Service Operations Management* **5** (3), 2003, 179-202.
58. W.J. Hopp, "Fifty Years of Management Science," *Management Science* **50** (1), 2004, 1-7.
59. W.J. Hopp, E. Tekin, M.P. Van Oyen, "Benefits of Skill Chaining in Production Lines with Cross-Trained Workers," *Management Science* **50** (1), 2004, 83-98.
60. W.J. Hopp, M.L. Spearman, "To Pull or Not to Pull: What is the Question?" *Manufacturing and Service Operations Management* **6** (2), 2004, 133-148.
61. W.J. Hopp, M.P. Van Oyen, "Agile Workforce Evaluation: A Framework for Cross-Training and Coordination," *IIE Transactions* **36** (10), 2004, 919-940.
62. L. Birnbaum, W. Hopp, S. Iravani, K. Livingston, B. Shou, and T. Tirpak, "Task Aware Information Access For Diagnosis of Manufacturing Problems," *2005 International Conference on Intelligent User Interfaces (IUI'05)*, San Diego, California, USA, January 9-12, 2005, 308-310.
63. W.J. Hopp, S.M.R. Iravani, B. Shou, "Serial Agile Production Systems with Automation," *Operations Research* **53**(5), 2005, 852-866.
64. W.J. Hopp, X. Xu, "Product Line Selection and Pricing with Modularity in Design," *Manufacturing and Service Operations Management* **7**(3), 2005, 172-187.
65. X. Xu, W.J. Hopp, "A Monopolistic and Oligopolistic Stochastic Flow Revenue Management Model," *Operations Research* **54**(6), 2006, 1098-1109.
66. E.S. Gel, W.J. Hopp, M.P. Van Oyen, "Hierarchical Cross-Training in WIP-Constrained Systems," *IIE Transactions* **39**(2), 2007, 125-143.
67. W.J. Hopp, S.M.R. Iravani, G. Yuen, "Operations Systems with Discretionary Task Completion," *Management Science* **53**(1), 2007, 61-77.
68. W.J. Hopp, S.M.R. Iravani, B. Shou, "A Diagnostic Tree for Improving Production Line Performance," *Production and Operations Management* **16**(1), 2007, 77-92.
69. W.J. Hopp, X. Xu, "A Static Approximation for Dynamic Demand Substitution with Applications in a Competitive Market," *Operations Research* **56**(3), 2008, 630-645.
70. S. Chayet, W.J. Hopp, "Risk Sensitive Sizing of Responsive Facilities," *Naval Research Logistics* **55**(3), 2008, 218-233.
71. W.J. Hopp, S.M.R. Iravani, F. Liu, "Managing White Collar Work: An Operations-Oriented Survey," *Production and Operations Management* **18**(1), 2009, 1-32.
72. W.J. Hopp, S.M.R. Iravani, B. Shou, "Design and Control of Agile Automated CONWIP Production Lines," *Naval Research Logistics* **56**(1), 2009, 42-56.

73. E. Tekin, W.J. Hopp, M.P. Van Oyen, "Pooling Strategies for Call Center Agent Cross-training," *IIE Transactions* **41**(6), 2009, 546-561.
74. X. Xu, W.J. Hopp, "Price Trends in a Dynamic Pricing Model with Heterogenous Customers: A Martingale Perspective," *Operations Research*, **57**(5), 2009, 1298-1302.
75. B. Gokpinar, W.J. Hopp, S.M.R. Iravani, "The Impact of Misalignment of Organization Structure and Product Architecture on Quality in Complex Product Development." *Management Science* **56**(3), 2010, 468-484.
76. W.J. Hopp, S. Iravani, W.L. Xu. "Vertical Flexibility in Supply Chains," to appear in *Management Science*.

### **Papers Submitted or In Progress**

77. S. Banerjee, W.J. Hopp, "The Project Portfolio Management Problem," under revision for *Management Science*.
78. W.J. Hopp, S.M.R. Iravani, G. Yuen, "Trust and Information Sharing in Supply Chains," under revision for *Production and Operations Management*.
79. S. Banerjee, W.J. Hopp, "A Dynamic Model of Strategic R&D Budgeting," under revision for *Naval Research Logistics*.
80. W.J. Hopp, S.M.R. Iravani, G. Yuen, "The Impact of Sales Force and Effective Incentive Structure on Supply Chain Performance," under revision for *Management Science*.
81. W.J. Hopp, S. Iravani, Z. Liu. "Strategic Risk from Supply Chain Disruptions," under revision for *Management Science*.
82. W.J. Hopp, S. Iravani, Y. Cheng. "Crisis Management in Knowledge-Based Service Systems," under revision for *Operations Research*.
83. W.L. Xu, W.J. Hopp, B. Nelson, "Integrated Product Portfolio and Plant Assignment in an Automotive Environment," working paper, Dept. Industrial Engineering, Northwestern University.
84. W.J. Hopp, Z. Liu. "Protecting Supply Chain Networks Against Catastrophic Failures," working paper, Dept. Industrial Engineering, Northwestern University.
85. W.J. Hopp, S. Banerjee. "Technology Replacement and the Business Cycle," working paper, Dept. Industrial Engineering, Northwestern University.
86. J. Xu, W.J. Hopp, B. Nelson.. "Joint Product Line and Supply Chain Design," working paper, Dept. Industrial Engineering, Northwestern University.

### **Funded Research**

#### *Government Grants:*

- **Equipment Replacement in a Technologically Dynamic Environment**, National Science Foundation Grant ECS-8619732, (project director and principal investigator), June 1987 - January 1990, \$65,000.

- **Synchronized Production**, National Science Foundation Grant DDM-8905638, (co-project director and co-principal investigator), November 1989 - October 1992, \$160,000.
- **Hierarchical Planning in a Pull Production Environment**, National Science Foundation Grant SES-9119621, (co-project director and co-principal investigator), June 1992 - May 1995, \$100,000.
- **Factory Physics Teaching Software**, National Science Foundation Grant DDM-9308546 (co-project director and co-principal investigator), July 1993 - December 1994, \$20,865.
- **Queueing Network Models for Planning and Design of Semiconductor Fabrication Facilities**, National Science Foundation Grant DMI-9322830 (co-project director and co-principal investigator), April 1994 - October 1997, \$300,000.
- **Workforce Agility: Classification and Modeling**, National Science Foundation Grant DMI-9732868 (co-project director and co-principal investigator), June 1998 – September 2001, \$325,000.
- **Principles-Based Knowledge Management for Cellular Manufacturing**, National Science Foundation Grant DMI-0114598 (project director and co-principal investigator), September 2001– August 2005, \$372,000.
- **Undergraduate Research Supplement, Principles-Based Knowledge Management for Cellular Manufacturing**, National Science Foundation Grant DMI-0114598 (project director and co-principal investigator), September 2001– August 2005, \$12,000.
- **Institute for Design Engineering and Applications: Fostering Creative Synthesis Across the Curriculum**, National Science Foundation Grant EEC-0230547 (co-principal investigator), September 2002 – August 2003, \$100,000.
- **Integrated Product and Supply Chain Design**, National Science Foundation Grant DMI-0243377 (project director and principal investigator), June 2003 – May 2006, \$300,000.
- **Principles of White Collar Workforce Management**, National Science Foundation Grant DMI-0423048 (product director and principle investigator), June 2004 – May 2007, \$350,000.

*Industry Grants:*

- **Location and Transportation Modeling**, Sears Corporation, (research associate), March 1986 – June 1987, \$50,000.
- **Manufacturing Cybernation Study**, DisplayTEK Corporation, (co-project director and co-principal Investigator), June 1988 – October 1989, \$20,400.
- **Synchronized Production in the CFM Large Panel Line**, International Business Machines (IBM), Agreement No. 176, (co-project director and co-principal investigator), 1988, \$119,325.
- **Implementing CFM on the Large Panel Line**, International Business Machines (IBM), (co-project director and co-principal investigator), Agreement No. 192, September 1989 – August 1992, \$158,000.
- **Throughput Enhancement and Cycle Time Reduction at STD Austin**, International Business Machines (IBM), (co-principal investigator), September 1991 – August 1993, \$60,000.

- **Hierarchical Production Planning at IBM Charlotte**, International Business Machines (IBM), (co-project director and co-principal investigator), July 1991 – December 1992, \$65,220.
- **Animated Simulation Software for BS in Manufacturing Engineering Program**, 3M Corporation, (proposal writer and manager of gift), August 1993 – September 1994, \$4,000.
- **QCOOM: Queuing Cost of Ownership Model**, Motorola Corporation, (co-project director and co-principal investigator), April 1994 – April 1997, \$25,000.
- **Strategic Modeling to Support Seeding Division Re-Design**, John Deere, Inc., (project director and principal investigator), January 1997 – March 1997, \$14,586.
- **Cycle Time/Inventory Reduction**, TrusJoist MacMillan, (project director and principal investigator), January 1997 – September 1997, \$13,206.
- **Planning for the Startup of a New Stationary Tool Line**, Black & Decker, (project director and principal investigator), April 1997 – September 1997, \$24,054.
- **Strategic Operations Planning**, SPX, Inc., (project director and principal investigator), June 1997 – December 1997, \$26,725.
- **A Modeling Framework to Support Planning and Design of Back-End Electronics Assembly**, Motorola, (project director and principal investigator), October 1997 – March 1998, \$25,000.
- **Strategic Product/Process Planning at Deere Harvester**, John Deere, Inc., (project director and principal investigator), January 1998 – March 1998, \$16,502.
- **Warehouse Operations Planning**, Anixter International, (project director and principal investigator), January 1998 - March 1998, \$23,500.
- **Principles for Production Line Design**, General Motors Corporation, (project director and principal investigator), May 1998 – May 1999, \$50,855.
- **Business Planning for Solid State Shear Pulverization Technology**, Materials Science Corporation, (project director and principal investigator), September 1998 – August 1999, \$25,000.
- **Manufacturing Processes and Cost Analysis**, Continental Plastic Containers, Inc., (project director and principal investigator), January 1999 – December 1999, \$15,000.
- **Manufacturing Processes Core Competency Study**, Case Corporation, (project director and principal investigator), January 1999 – December 1999, \$25,000.
- **Distribution Strategy Analysis**, Eaton Corporation, (project director), January 1999 – December 1999, \$25,000.
- **Strategic Product Design**, Steelworks Inc., (project director), January 1999 – December 1999, \$15,000.
- **Factory Pharmacist**, Motorola, (project director and principal investigator), September 1999 – August 2000, \$25,000
- **Aftermarket Parts Channel Management Strategy**, Eaton Corporation, (project director and principal investigator), January 2000 – December 2000, \$25,000.

- **Small Company Acquisitions**, Ford Motor Company, (project director and principal investigator), January 2000 – December 2000, \$25,000.
- **Technology Transfer Protocol**, Guidant, (project director and principal investigator), January 2000 – December 2000, \$25,000.
- **Design for Postponement**, Motorola, (project director), January – December 2001, \$25,000.
- **Inventory Stocking at Armstrong Tools**, Danaher (project director and principal investigator), January – December 2001, \$20,000.
- **Applied Lean Manufacturing**, Ford Motor Company, (project director and principal investigator), January – December 2001, \$25,000.
- **Integrated Customer Contact Centers**, Dell, (project director and principal investigator), January - December 2001, \$25,000.
- **Design for Supply Chain**, Motorola (project director), January – December 2002, \$15,000.
- **Integrated Component Sourcing**, Ford Motor Company, (project director and principal investigator), January – December 2002, \$25,000.
- **Lean Assembly Transformation**, Vactor Manufacturing (project director and principal investigator), January – December 2002, \$25,000.
- **Focused Manufacturing for Refurbished Parts**, Axcelis (project director and principal investigator), January – December 2002, \$25,000.
- **Hierarchical Production Planning Tools**, John Deere, Inc. (project director and principal investigator), January – June 2003, \$25,000.
- **Integrated Supply Chain Design**, Materials Science Corporation (project director), January - June 2003, \$25,000.
- **Operational Strategy Review**, Eastman Chemical (project director), January – June 2003, \$25,000.
- **Storage Shelving Product Analysis**, Hirsh (project director), January – June 2003, \$25,000.
- **Product Architecture Strategy Modeling** (project director and principle investigator), Emerson Electric, MicroMotion Division, January – June 2004, \$25,000.
- **One Pass Design to Production**, Motorola (project director), January – June 2003, \$25,000.
- **Global Pharmaceutical Manufacturing Capacity Planning** (project director), Abbott Laboratories, International Division, January – June 2004, \$25,000.
- **Global Supply Chain Organizational Structure** (project director), Abbott Laboratories, Diagnostic Division, January – June 2004, \$25,000.
- **Strategic Sourcing** (project director), John Deere, January – June 2005, \$25,000.

- **Lean Line Transfer** (project director and principal investigator), ITW, January – June 2005, \$25,000.
- **Financial Metrics for Supply Chain** (project director), Abbott Laboratories, January – June 2005, \$25,000.
- **Strategic Assessment of Wireless Market** (project director), PCTEL, January – June 2005, \$25,000.
- **Modeling and Interdiction of Terrorist Supply Chains** (project director and principal investigator), Simulex, Inc., October 2005 – September 2006, \$54,735.
- **Implementation of Item-Level RFID** (project director), Motorola, January – June 2006, \$25,000.
- **Optimization of a Merged Business** (project director), ITW, January – June 2006, \$25,000.
- **Energy Strategy Planning** (project director and principle investigator), Abbott Laboratories, January – June 2006, \$25,000.
- **Generic Drug Strategy** (project director), Abbott Laboratories, January – June 2006, \$25,000.
- **Strategic Decision Making Support over the Product Life Cycle** (project director and co-principle investigator), General Motors, June 2006 – June 2008, \$156,690.
- **Total Acquisition Cost Model** (project director), Harley-Davidson, January – June 2007, \$25,000.
- **Optimization of a Newly Created Business** (project director), ITW, January – June 2007, \$25,000.
- **Logistics Study** (project director), ITW, January – June 2007, \$25,000.
- **Linking Strategy and Execution** (project director), Abbott Laboratories, January – June 2007, \$25,000.
- **Lean Implementation** (project director and principle investigator), Emerson Electric, January – June 2007, \$25,000.
- **Local Area Connectivity Product Strategy** (project director), Motorola, January – June 2007, \$25,000.
- **Identification of New Market Opportunities for an Existing Product** (project director), Delphon Industries, January – June 2007, \$25,000.
- **A Follow the Sun Approach to Engineering Development** (project director), IBM, January – June 2007, \$25,000.
- **Improving Manufacturing Performance** (project director), Waterford Bicycles, January – June 2007, \$5,000.
- **Diagnosis and Prognosis Benchmarking Study for Complex Electromechanical Products** (project director), General Motors, January – June 2007, \$25,000.

## Teaching

### *University of Michigan*

- IOE 441 Production and Inventory Control

### *Eastern Michigan University*

- ORI 265 Business Statistics

### *Northwestern University*

- IEMS 211 Linear Algebra for Operations Research
- IEMS 433 Systems Engineering and Analysis
- IEMS 336-1,2 Industrial Engineering Design Project I, II (developed senior capstone sequence)
- IEMS 382 Production Planning and Scheduling
- IEMS 407 Quantitative Methods for Decision Making (developed course for MMM Program)
- IEMS 430 Systems Analysis
- IEMS 460-1,2 Stochastic Models I, II (restructured sequence)
- IEMS 468 Stochastic Control (developed course)
- IEMS 471-1,2 Factory Physics I, II (developed sequence for MMM Program)
- IEMS 480-1,2 Production and Economics I, II
- IEMS 485 Stochastic Models of Production Systems (developed course)
- IEMS 490 New Product Innovation (developed course)
- IEMS 490 Integration Project (developed industry project course for MMM Program)
- OPNS 453 Inventory Management (developed course)
- OPNS 475 Advanced Operations (developed course)

### *University of Michigan*

- OMS 552 Operations and Management (MBA core course)

## Student Supervision

### *Undergraduate Students*

- Supervisor of over 30 student projects with industry involving more than 120 students.
- Kelly Corrigan, Independent Study Project Title: “Simulation Experiments Comparing of CONWIP and Drum-Buffer-Rope” winner of the 1991 Harold B. Gotaas Undergraduate Research Award.

### *Master's Students*

- Jeffrey R. Lefebvre, M.S. June 1986, Thesis Title: “The Kukla Perpetual Inventory System.”
- Suresh Nair, M.S. August 1986, Thesis Title: “Replacement Decisions Due to Technological Obsolescence Under Uncertainty.”
- Niranjana Pati, M.S. December 1987, Thesis Title: “Computing Optimal Buffer Size in a Flow Process with Failures.”

### *Doctoral Students*

- Sung-Chi Wu, Ph.D. December 1986, Dissertation Title: “A Model of Markovian Deterioration with Multi-Maintenance Levels.” (Position on Graduation: Department Chair, Graduate School of Resource Management, National Defense Management College, Taipei, Taiwan.)

- Suresh K. Nair, Ph.D August 1988, Dissertation Title: “Equipment Replacement Decisions due to Technological Obsolescence Under Uncertainty.” (Position On Graduation: Assistant Professor, Information Management Department, University of Connecticut.)
- John T. Simon, Ph.D. June 1989, Dissertation Title: “Models of Assembly Systems.” (Position on Graduation: Assistant Professor, Department of Management, Notre Dame University.)
- James M. Pellissier, Ph.D June 1991 Dissertation Title: “Utility Models and Stochastic Assessment for Medical Decision Making,” joint with G. Hazen. (Position on Graduation: Assistant Professor, Management Science Department, Loyola University.)
- Izak Duenyas, Ph.D. June 1991, Dissertation Title: Analysis and Control of Pull Manufacturing Systems Using Closed Queueing Networks (dissertation won 1992 Best Dissertation Award from Production and Operations Management Society and runner up in 1992 Nicholson Prize Competition of Operations Research Society of America). (Position on Graduation: Assistant Professor, Industrial and Operations Engineering Department, University of Michigan.)
- Quan Zhang, Ph.D. June 1994, Dissertation Title: Easily Implementable Spare Parts Inventory Policies, joint with M. Spearman. (Position on Graduation: Assistant Professor, Industrial and Operations Engineering Department, University of Michigan.)
- Yar-Lin Kuo, Ph.D. June 1995, Dissertation Title: Scheduling Aircraft Maintenance: Modeling and Optimization. (Position on Graduation: Research Engineer, Aerospace Development Corporation.)
- Manisha Rohatgi, Ph.D. June 1997, Dissertation Title: Supply Chain Management of Two-Stage Multi-Product Manufacturing Systems. (Position on Graduation: Assistant Professor, Industrial Engineering, Iowa State University.)
- Melanie Roof, Ph.D. June 1999, Dissertation Title: Control Chart Methods for Setting WIP Levels and Due Date Quotes to Meet Target Throughput Rates and Customer Service Levels. (Position on Graduation: Research Analyst for Allegiance Corporation.)
- Sergio Chayet, Ph.D. December 1999, Dissertation Title: Strategic Capacity Planning: Analyzing Risk and Competition. (Position on Graduation: Assistant Professor, Graduate School of Business, University of Chicago).
- Esma Senturk-Gel, Ph.D. December 1999, Dissertation Title: Stochastic Models of Workforce Agility in Production Systems. (Position on Graduation: Assistant Professor, Industrial Engineering, Arizona State University.)
- Michael Hegedus, Ph.D. June 2000, Dissertation Title: Setting Lead Times and Due Dates in Stochastic Assembly Systems Using MRP. (Position on Graduation: Research Engineer, IBM Research Laboratories.)
- Eylem Tekin, Ph.D. December 2002, Dissertation Title: Performance Opportunity for Workforce Agility. (Position on Graduation: Assistant Professor, Operations Research, University of North Carolina.)
- Biying Shou, Ph.D. December 2004, Dissertation Title: Modeling and Knowledge Management for Agile Production Systems with Automation. (Position on Graduation: Assistant Professor, City University of Hong Kong.)
- Xiaowei Xu, Ph.D. June 2005, Dissertation Title: Strategic Product Line Selection and Pricing.. (Position on Graduation: Assistant Professor, Management Science and Information Systems,

Rutgers University.)

- Gigi Yuen, Ph.D. August 2006, Dissertation Title: White Collar Workforce Agility. (Position on Graduation: Consultant, IBM Corporation.)
- Fang Liu, Ph.D. June 2007, Dissertation Title: Impact of Collaboration Networks on Organizational Performance. (Position on Graduation: Analyst, Merrill Lynch).
- Souvik Banerjee, Ph.D. June 2008, Dissertation Title: Strategic R&D and Capital Budgeting under Uncertainty.
- Bilal Gokpinar, Ph.D. August 2008 Dissertation Topic: Organizational Structure for New Vehicle Design. (Position on Graduation: Lecturer, University College London).
- Zigeng Yin, Ph.D. May 2009, Dissertation Title: Risk Mitigation of Supply Chain Disruptions. (Position on Graduation: Assistant Professor, School of Business, University of Wisconsin.)
- Jie Xu, Ph.D. December 2009 (expected), Dissertation Topic: Design for Supply Chain in Platform Product Environments.
- Wendy Lu Xu, Ph.D. December 2009 (expected), Dissertation Topic: Flexibility and Reliability in Supply Chains.
- Yao Cheng, Ph.D. June 2010 (expected), Dissertation Topic: Crisis Management and Emergency Health Care Modeling and Analysis

### **Examination Committees (other than as chairman)**

10 Master's Committees

30 Ph.D. Committees

### **Professional and Editorial Activities**

- Fellow, Institute for Operations Research and Management Science
  - Editor-in-Chief, *Management Science*, 2003-2008.
  - Department Editor, Mfg., Dist. and Service Operations, *Management Science*, 1997-2002
  - Academic/Practitioner Interface Committee, 2001-2003
  - Chair, many invited paper sessions at INFORMS national meetings
  - Chairman, 1988 ORSA Doctoral Colloquium, Denver
  - Judge, Nicholson Student Paper Competition, 1986-1988
  - Chair, ORSA Education Committee, 1989-1991
  - Cluster Chair, Manufacturing, Orlando ORSA/TIMS Meeting, 1992
  - Co-Program Chair, Chicago ORSA/TIMS Meeting, 1993
  - Lachester Prize Committee, 1994, 2009.
  - Speaker, INFORMS Doctoral Colloquium, 1999, 2000, 2003, 2004
- Fellow, Manufacturing and Service Operations Society
  - co-Chair, MSOM Conference, 2005
  - Editorial Board, *Manufacturing and Service Operations Management*, 1998-2000
  - Senior Editor, *Manufacturing and Service Operations Management*, 2000-2004
  - Chair, MSOM Student Paper Competition, 1995-1996
  - Chair, *M&SOM* Review Panel, 1999
  - Chair, *M&SOM* Editor Search Committee, 2002

- Fellow, Institute of Industrial Engineers
  - Associate Editor, *IIE Transactions*, 1993-2005
  - IIE Transactions Editorial Board, 1996-2005
  - Judge, IIE OR Division Application Award, 1993
  - Judge, Pritsker Dissertation Award, 1998
  - Judge, IIE Outstanding Publication Award, 2001
  - Guest Editor (with M. Van Oyen and S. Iravani) of special issue of *IIE Transactions* on workforce agility, 2004
- Member, Production and Operations Management Society
  - President, Production and Operations Management Society, 2009.
  - Publications Committee, 2001-2003
  - Senior Editor, *Production and Operations Management*, 2003-present
- Member, Society of Manufacturing Engineers
  - Production Systems and Management Techniques Technical Committee, 2001-2003
  - Lean Oversight Committee, 2001-2003
- Editorial Board, *Foundations and Trends in Technology, Information and Operations Management*, 2004 - present.
- Editorial Board, *Technology and Operations Review*, 1995-1997
- Referee: *Operations Research, Management Science, IIE Transactions, Production and Operations Management, Manufacturing and Service Operations Management, Transportation Science, Information Systems and Operational Research, Computers and Operations Research, International Journal of Production Research, International Journal of Operations and Production Management, Journal of Manufacturing and Operations Management, Mathematics of Operations Research, European Journal of Operations Research, Naval Research Logistics, Queueing Systems*, National Science Foundation

## Consulting

- |                                  |   |
|----------------------------------|---|
| • Abbott Laboratories            | • IBM   |
| • American Pfauter               | • Institute for Interconnecting and Packaging Electronic Circuits |
| • Anixter International          | • Intel   |
| • Bell & Howell                  | • ITW   |
| • Beloit                         | • Materials Science Corporation                                   |
| • Black & Decker                 | • McClier   |
| • Case                           | • Motorola  |
| • Cisco                          | • Owens Corning   |
| • Continental Plastic Containers | • Pentair   |
| • Danaher                        | • S&C Electric  |
| • Deere                          | • Schlumberger  |
| • Dell                           | • SPX   |
| • DisplayTEK                     | • Texas Instruments   |
| • Emerson Electric               | • TrusJoist MacMillan   |
| • Ernst & Young                  | • Union Special   |
| • Eli Lilly                      | • Whirlpool   |
| • Ford                           | • Zenith  |
| • General Motors                 |   |
| • Harman/Becker                  |   |

## Presentations

W.J. Hopp, W.P. Darby, "Household Water Conservation: A Cost-Effective Component of Municipal Wastewater Treatment," Proceedings-ASCE National Convention, Portland, OR, Preprint 80-098, April 14-18, 1980.

T.L. Willke, W.B. Ashton, W.J. Hopp, G.J. Hane, A. Liberman, G. Strasser, "New Priorities in Energy Conservation Research and Development," presented at 4th Miami International Conference on Alternative Energy Sources, Miami Beach, FL, December 15, 1981.

W.J. Hopp, R.P. Mazzucchi, "Economics of Residential Energy Efficiency," Solwest 80 Conference Proceedings, Vancouver, British Columbia, August 6-10, 1980, pp. 443-447.

J.R. Birge, S.M. Pollock, W.J. Hopp, "SWAP: A Model of Wide-Area Police Patrol," presented at TIMS/ORSA Joint National Meeting, Chicago, IL, April 25-27, 1983.

S.M. Pollock, J.R. Birge, W.J. Hopp, "Iterative Myopic Analysis of Multiple Server Queues," presented at TIMS/ORSA Joint National Meeting, Chicago, IL, April 25-27, 1983.

W.J. Hopp, "Sequential R&D Investment Over and Unbounded Time Horizon," presented at TIMS/ORSA Joint National Meeting, Boston, MA, April 29-May 1, 1985.

W.J. Hopp, "Identifying Forecast Horizons in Nonhomogeneous Markov Decision Processes," invited presentation at TIMS/ORSA Joint National Meeting, Los Angeles, CA, April 14-16, 1986.

P.C. Jones, J.L. Zydiak, W.J. Hopp, "A Complementarity Technique for Depreciation Schedules," invited presentation at TIMS/ORSA Joint National Meeting, New Orleans, LA, May 4-6, 1987.

W.J. Hopp, "Sensitivity Analysis in Discrete Dynamic Programming," invited presentation at TIMS/ORSA Joint National Meeting, New Orleans, LA, May 4-6, 1987.

W.J. Hopp, "Equipment Replacement Under Technological Change," invited presentation at TIMS/ORSA Joint National Meeting, New Orleans, LA, May 4-6, 1987.

W.J. Hopp, "Convergence and Forecast Horizons in Nonhomogeneous Semi-Markov Decision Processes," invited presentation at TIMS/ORSA Joint National Meeting, St. Louis, October 25-28, 1987.

J.T. Simon, W.J. Hopp, "Bounds and Heuristics for Assembly-Like Queues," presented at TIMS/ORSA Joint National Meeting, Washington, April 25-27, 1988.

P.C. Jones, J.L. Zydiak, W.J. Hopp, "Infinite-Horizon Programming for Machine Replacement and Capacity Expansion," invited presentation at TIMS/ORSA Joint National Meeting, Washington, April 25-27, 1988.

W.J. Hopp, S.K. Nair "Replacement Decisions Due to Technological Obsolescence," presented at TIMS/ORSA Joint National Meeting, Washington, April 25-27, 1988.

S.K. Nair, W.J. Hopp, "Equipment Replacement under Technical Change and Markovian Deterioration," presented at TIMS/ORSA Joint National Meeting, Denver, October 24-26, 1988.

N. Pati, W.J. Hopp, P.C. Jones, "Optimal Inventory Control in a Production Flow System with Failures," presented at TIMS/ORSA Joint National Meeting, Denver, October 24-26, 1988.

M.L. Spearman, W.J. Hopp, "Synchronized Production," invited presentation at TIMS/ORSA Joint National Meeting, Denver, October 24-26, 1988.

W.J. Hopp, M.L. Spearman, M.A. Zazanis "Weakly Regenerative Processes," invited presentation at TIMS/ORSA Joint National Meeting, Denver, October 24-26, 1988.

M.L. Spearman, W.J. Hopp, "CIM Implementation: A Pay as You Go Approach," Reprint - AUTOFACT Meeting, Chicago, IL, November 1988.

W.J. Hopp, M.L. Spearman, "Hierarchical Objectives in Systems Analysis," Proceedings - IIE Integrated Systems Conference, November 1988.

W.J. Hopp, M.L. Spearman, D.L. Woodruff, "Hierarchical Production Planning in a Pull-Environment," invited paper in seminar series in Industrial and Operations Research Department, The University of Michigan, Ann Arbor, MI, March 1989.

W.J. Hopp, J.C. Bean, I. Duenyas, "Forecast Horizon Identification in Markov Decision Processes," invited presentation at CORS/TIMS/ORSA Joint National Meeting, Vancouver, B.C., April 1989.

D.L. Woodruff, M.L. Spearman, W.J. Hopp, "Sequencing Jobs in a Generalized Pull System," presented at CORS/TIMS/ORSA Joint National Meeting, Vancouver, B.C., April 1989.

W.J. Hopp, S.K. Nair, "Markovian Deterioration and Technical Change," invited presentation at CORS/TIMS/ORSA Joint National Meeting, Vancouver, B.C., April 1989.

W.J. Hopp, M.L. Spearman, D.L. Spearman, "HYPER-JIT: Hierarchical Production for Extended-Range JIT," invited talk at Operating Sciences Department, GM Research Laboratories, September 1989.

W.J. Hopp, M.L. Spearman, D.L. Woodruff, "Hierarchical Production Planning in a Pull Environment," invited tutorial at ORSA/TIMS National Meeting, New York, October 1989.

J.T. Simon, W.J. Hopp, "A Flow-Type Assembly System with Unreliable Machines Having Different Processing Rates," ORSA/TIMS National Meeting, New York, October 1989.

D.L. Woodruff, M.L. Spearman, W.J. Hopp, "Synchronization of JIT Production," invited presentation at ORSA/TIMS National Meeting, New York, October 1989.

S.K. Nair, W.J. Hopp, "A Model for Equipment Replacement Problems Due to Technological Obsolescence," invited presentation at ORSA/TIMS National Meeting, New York, October 1989.

M.L. Spearman, W.J. Hopp, "HYPER-JIT: Hierarchical Production for Extended-Range JIT," Proceedings - Midwest Tech III, East-West Corporate Corridor Association, November 1989.

W.J. Hopp, M.S. Daskin, and B. Medina, "Forecast Horizons and Dynamic Facility Location Planning," ISOLDE Conference, Fullerton, CA, June 7-12, 1990.

I. Duenyas, W.J. Hopp, M.L. Spearman, "Setting Economic Production Quotas for Pull Manufacturing Systems," ORSA/TIMS National Meeting, Philadelphia, October 1990.

M.L. Spearman, D.L. Woodruff, W.J. Hopp, "Implementing CONWIP in a Circuit Board Plant," invited presentation at ORSA/TIMS National Meeting, Philadelphia, October 1990.

M.L. Spearman, W.J. Hopp, D.L. Woodruff, "HYPER-JIT Hierarchical Production for Extended Range Just In Time," Proceedings of NSF Design and Manufacturing Systems Conference, Austin, TX, January 1991.

W.J. Hopp, I. Duenyas, M.L. Spearman, "Setting Production Quotas in Pull Manufacturing Systems," invited presentation at TIMS/ORSA National Meeting, Nashville, May 1991.

M.L. Spearman, W.J. Hopp, "Setting Safety Lead Times for Purchased Components in Assembly Systems," invited presentation at TIMS/ORSA National Meeting, Nashville, May 1991.

I. Duenyas, W.J. Hopp, "Estimating the Throughput of a Cyclic Assembly System," ORSA/TIMS National Meeting, Anaheim, November 1991.

J. Pellissier, G. Hazen, W.J. Hopp, "Continuous-Risk Utility Assessment in Medical Decision-Making," invited presentation at ORSA/TIMS National Meeting, Anaheim, November 1991.

J. Pellissier, G. Hazen, W.J. Hopp, "Application of Continuous Risk Utility Assessment to the Total Hip Replacement Decision," TIMS/ORSA National Meeting, Orlando, April 1992.

I. Duenyas, W.J. Hopp, "Quoting Customer Lead Times," invited presentation at TIMS/ORSA National Meeting, Orlando, April 1992.

W.J. Hopp, I. Duenyas, "Queueing Models of Assembly Systems," invited presentation at Industrial Engineering Research Conference, Chicago, May 1992.

M.L. Spearman, V. Tardif, W.J. Hopp, "Finite Scheduling in a Pull Production Environment," invited presentation at Multi-Echelon Inventory Systems Conference, Evanston, IL, June 1992.

W.J. Hopp, M.L. Spearman, "Factory Physics: Teaching Manufacturing Basics," invited presentation at ORSA/TIMS National Meeting, San Francisco, November 1992.

W.J. Hopp, M.L. Spearman, "Linking Finite Scheduling with a CONWIP Release System," invited presentation at 1993 NSF Design and Manufacturing Grantees Conference, January 1993, Charlotte, North Carolina.

W.J. Hopp, "Nonlinear Optimization as a Basis for Decision Support Systems in Operations Management," invited presentation at University of Chicago School of Business, February 1993.

W.J. Hopp, M.L. Spearman, Q. Zhang, "Optimization of a Multi-Echelon Spare Parts Inventory System," invited presentation at ORSA/TIMS National Meeting, Chicago, May 1993.

W.J. Hopp, "Plant Scheduling and Inventory Management," invited presentation at Computer Automated Manufacturing in the Steel Industry Workshop, Pittsburgh, May 1993.

W.J. Hopp, M.L. Spearman, Q. Zhang, "Spare Parts Stocking in a Distributed Inventory System," invited presentation at Fourth Annual Meeting of the Production and Operations Management Society, Boston, October 1993.

M.L. Spearman, W.J. Hopp, "Diagnosis and Improvement of Production Lines Using Factory Physics," invited presentation at Fourth Annual Meeting of the Production and Operations Management Society, Boston, October 1993.

W.J. Hopp, M.L. Spearman, "MRP-C: A Finite Capacity Scheduler," invited paper at 1994 NSF Design and Manufacturing Grantees Conference, January 1994, Cambridge, Massachusetts.

M. Roof, W. Hopp, "Dynamic WIP and Due Date Control of CONWIP Lines," invited presentation at ORSA/TIMS National Meeting, Detroit, October 1994.

K. Donohue, W. Hopp, M. Spearman, "Improving the Design of Stochastic Production Lines: An Approach Using Dynamic Programming," invited presentation at ORSA/TIMS National Meeting, Detroit, October 1994.

W. Hopp, M. Spearman, "Factory Physics—A Tool for Teaching Operations Management," invited tutorial at ORSA/TIMS National Meeting, Detroit, October 1994.

M. Spearman, W. Hopp, K. Donohue, "Incorporating Cycle Time Considerations in Wafer Fab Design," invited presentation at ORSA/TIMS National Meeting, Detroit, October 1994.

- W. Hopp, "QCOOM: Queueing Cost of Ownership Model," invited presentation at International Symposium on Factory Integration and Modeling, Austin, TX, March 1995.
- M. Spearman, K. Donohue, W. Hopp, "Factory Physics Applications in the Design of Wafer Fabs," invited presentation at INFORMS Los Angeles, April, 1995.
- Q. Zhang, W. Hopp, M. Spearman, "Easily Implementable Policies for 2-Echelon Spare Parts Inventory Systems," invited presentation at INFORMS Los Angeles, April 1995.
- W. Hopp, "Hierarchical Planning for Pull Production Systems," invited presentation at Northwestern University Manufacturing Management Symposium Series, Evanston, IL, May 1995.
- V. Tardif, M.L. Spearman, C. Coullard, W.J. Hopp, "Detecting Scheduling Infeasibilities in Finite Capacity Production Environments," *Proceedings of the International Conference on Improving Manufacturing Performance in a Distributed Enterprise: Advanced Systems and Tools*, July 1995, Edinburgh.
- M. Hegedus, W. Hopp, "Due-Date Setting in a Time Fenced Environment," invited presentation at INFORMS New Orleans, October 1995.
- R. Zhang, W. Hopp, M. Spearman, "An Easily Implementable Heuristic for a Two-Echelon Spare Parts Distribution System," invited presentation at INFORMS New Orleans, October 1995.
- S. Chayet, K. Donohue, W. Hopp, M. Spearman, "Performance Evaluation of Semiconductor Fabrication Facilities," invited paper at 1996 NSF Design and Manufacturing Grantees Conference, January 1996, Albuquerque, New Mexico.
- W. Hopp, "Factory Physics and Short Cycle Manufacturing," invited presentation at Chicago Chapter of INFORMS, February 1996.
- M. Spearman, W. Hopp, "Factory Physics," invited presentation and workshop at Seventh Annual Meeting of the Production and Operations Management Society, Indianapolis, April 1996.
- W. Hopp, "Factory Physics: A Paradigm for Continual Improvement," invited presentation at meeting of The Institute for Interconnecting and Packaging Electronic Circuits, Chicago, June 1996.
- W. Hopp, "Factory Physics: Overview and Applications," invited talk at General Motors, Warren, MI, August 1996.
- S. Chayet, W. Hopp, "Facility Sizing and Equipment Selection for New Wafer Fabs," Industrial Engineering Research Conference, Miami Beach, May 1997.
- W. Hopp, M. Spearman, "Teaching Intuition Using Factory Physics," invited presentation at INFORMS Atlanta, November 1996.
- S. Chayet, W. Hopp, "Fluid Models for Semiconductor Facility Design," invited presentation at INFORMS Atlanta, November 1996.
- M. Van Oyen, W. Hopp, E. Senturk, "Performance Opportunity for Flexible Workers," *35th Annual Allerton Conference on Communication, Control, and Computing*, September 1997, 553-562.
- S. Chayet, W. Hopp, "Strategic Semiconductor Capacity Planning," invited presentation at INFORMS Dallas, October 1997.
- M. Van Oyen, W. Hopp, E. Senturk, "Limits of Performance for Production Systems with Flexible Workers," invited presentation at INFORMS Dallas, October 1997.

W. Hopp, "Factory Physics: Management Insights from Simple Models", invited presentation at Department of Mechanical Engineering, University of Minnesota, March 1998.

M. Van Oyen, W. Hopp, E. Senturk, "Organization of Flexible Labor in Stochastic Production Systems," invited presentation at INFORMS Montreal, April 1998.

W. Hopp, "Publishing in Manufacturing & Operations Management," invited presentation at INFORMS Montreal, April 1998.

W. Hopp, "Factory Physics: Toward a Science of Design," invited presentation at Gordon Research Conference on Theoretical Foundations for Product Design and Manufacturing, New England College, June 1998.

M. Van Oyen, W. Hopp, E. Senturk, "Analysis of Flowline Worksharing Systems," invited presentation at INFORMS Seattle, October 1998.

S. Chayet, W. Hopp, "Price vs. Lead Time Competition Under Demand Uncertainty," invited presentation at INFORMS Seattle, October 1998.

W. Hopp, M. Van Oyen, "Workforce Agility: Classification and Modeling," invited paper at NSF Design and Manufacturing Grantees Conference, January 1999, Long Beach, CA.

W. Hopp, "Factory Physics: The Science of Lean Manufacturing," invited presentation at Amsted Industries Group President's meeting, June 1999.

M. Van Oyen, W. Hopp, E. Senturk, "Queueing Models of Production with Multi-skilled Workers," 10<sup>th</sup> INFORMS Applied Probability Conference, University of Ulm, Germany, July 1999.

M. Van Oyen, W. Hopp, "Partially Cross-Trained Workers & Skill Chaining," invited presentation at INFORMS Philadelphia, November 1999.

W. Hopp, "Came for the Tools, Stayed for the Problems," invited presentation at INFORMS Doctoral Colloquium, Philadelphia, November 1999.

W. Hopp, M. Van Oyen, "Toward a Taxonomy of Agile Worksystems," invited paper at NSF Design and Manufacturing Grantees Conference, Vancouver, Canada, January 2000.

W. Hopp, S. Chayet, "Modeling to Support Strategic Capacity Planning," invited talk at Simon School of Business, University of Rochester, January 2000.

W. Hopp, "Factory Physics: The Science of Lean Manufacturing," invited talk in Manufacturing Leadership Program, Ford Motor Company, Dearborn, MI, April 2000.

E. Gel, W. Hopp, M. Van Oyen, "Stochastic Control of Worksharing Systems," invited presentation at INFORMS Salt Lake City, May 2000.

M. Van Oyen, W. Hopp, "Classification & Modeling of Production Systems using Cross-Trained Workers," invited presentation at INFORMS Salt Lake City, May 2000.

W. Hopp, "Publishing: Why, Where, How?" gave invited presentation and chaired panel discussion at INFORMS Doctoral Colloquium, San Antonio, November 2000.

W. Hopp, M. Van Oyen, "Queueing Analysis of the Robustness of Skill Chaining Strategies for Cross-Trained Workers", invited presentation at INFORMS San Antonio, November 2000.

S. Chayet, W. Hopp, "Strategic Capacity Planning under Price & Lead-Time Competition," invited presentation at INFORMS San Antonio, November 2000.

E. Gel, W. Hopp, M. Van Oyen, "Optimal Work Sharing in Systems with Hierarchical Cross-Training," invited presentation at INFORMS San Antonio, November 2000.

W. Hopp, M. Van Oyen, E. Tekin, "Cross Training Strategies for Dynamic Line Balancing," invited paper at NSF Design and Manufacturing Grantees Conference, Tampa, January 2001.

W. Hopp, E. Tekin, M. Van Oyen, "Workforce Agility: The Power of Chaining Training" invited talk at in Distinguished Speaker Series, Industrial Engineering Department, Lehigh University, April 2001.

W. Hopp, E. Tekin, M. Van Oyen, "Workforce Agility: The Power of Chaining Training" invited talk in Distinguished Speaker Series, Wharton School, University of Pennsylvania, April 2001.

S. Banerjee, W. Hopp, "Index Policies for Project Portfolio Management," POMS Meeting, Orlando, April 2001.

W. Hopp, E. Tekin, M. Van Oyen, "Workforce Agility," invited talk at Carlson School of Management, University of Minnesota, September 2001.

E. Tekin, W. Hopp, M. Van Oyen, "Dynamic Line Balancing & Variability Buffering via Cross-Training," invited presentation at INFORMS Miami, November 2001.

E. Gel, W. Hopp, M. Van Oyen, "Optimal Work Sharing in Systems with Hierarchical Cross-Training," invited presentation at INFORMS Miami, November 2001.

W. Hopp, E. Tekin, M. Van Oyen, "Workforce Agility: The Power of Chaining Training" invited talk at Johnson School of Management, Cornell University, December 2001.

W. Hopp, E. Tekin, M. Van Oyen, "Workforce Agility via Skill Chaining in Production Lines," paper and poster presentation, NSF Design and Manufacturing Grantees Conference, San Juan, Puerto Rico, January 2002.

K. Ehmann, W. Hopp, "Manufacturing Education: A Unified Approach," 30th NAMRC, Purdue University, May 21-24, 2002.

W. Hopp, "Workforce Agility: Models for Gaining Insight into When and How to Use Cross-Training," workshop in honor of John Buzacott, Cornell University, June 2002.

E. Tekin, W. Hopp, M. Van Oyen, "Opportunities for Worker Cross-Training in Service Operations," invited presentation at INFORMS San Jose, November 2002.

B. Shou, W. Hopp, S. Iravani, "Serial Agile Production Systems with Automation," INFORMS San Jose, November 2002.

W. Hopp, S. Iravani, B. Shou, "One Worker Cells with Automation," paper and poster presentation, NSF Design and Manufacturing Grantees Conference, Birmingham, AL, January 2003.

W. Hopp, "Why and What to Publish?" invited presentation at INFORMS Doctoral Colloquium, Atlanta, November 2003.

W. Hopp, M. Van Oyen, "A Framework for Workforce Evaluation," invited talk at INFORMS Atlanta, November 2003.

J. Boudreau, W. Hopp, J. McClain, L.J. Thomas, "On the Interface between Operations and Human Resources Management," invited talk at INFORMS Atlanta, November 2003.

M. Van Oyen, W. Hopp, "A Framework Guiding the Use of Cross-Training in Call Centers," invited talk at INFORMS Atlanta, November 2003.

W. Hopp, X. Xu, "A Joint Marketing/Operations Model of Differentiated Product Decisions", INFORMS Atlanta, November 2003.

W. Hopp, S. Iravani, B. Shou, "Design and Control of Cellular Production Systems with Automation," INFORMS Atlanta, November 2003.

S. Banerjee, W. Hopp, "Resource Allocation between the Research and Development Phases of Product Development," INFORMS Atlanta, November 2003.

W. Hopp, "Integrated Product and Supply Chain Design," paper and poster presentation, NSF Design and Manufacturing Grantees Conference, Dallas, January 2004.

L. Birnbaum, W. Hopp, S. Iravani, K. Livingston, B. Shou "Pinpoint: A Diagnostic Tree Based Knowledge Management System," paper and poster presentation, NSF Design and Manufacturing Grantees Conference, Dallas, January 2004.

W. Hopp, "Factory Physics: An Evolving Science of Manufacturing," keynote address at the 46th Annual Conference of the Operational Research Society, York, England, September 2004.

W. Hopp, X. Xu, "Dynamic Pricing and Inventory Control with Demand Substitution: The Value of Pricing Flexibility," INFORMS Denver, October 2004.

W. Hopp, S. Iravani, B. Shou, "Push and Pull Strategies in Automated Agile Workforce Environments," INFORMS Denver, October 2004.

L. Birnbaum, W. Hopp, S. Iravani, K. Livingston, B. Shou, and T. Tirpak, "Task Aware Information Access For Diagnosis of Manufacturing Problems," 2005 International Conference on Intelligent User Interfaces (IUI'05), San Diego, January, 2005, pp. 308-310.

W. Hopp, "Working Toward a Science of White Collar Workforce Management," invited talk at Penn State University, April 2005.

W. Hopp, "Thinking for a Living," graduation address at INSEAD, July 2005.

W. Hopp, "Procedures, Processes, Products, People," MSOM Fellow Address, INFORMS San Francisco, November 2005.

W. Hopp, "Management Science: The Journal and the Vision," invited talk, INFORMS San Francisco, November 2005.

W. Hopp, S. Iravani, B. Shou, "Agile Automated Production Systems: to Push or to Pull?" invited talk, INFORMS San Francisco, November 2005.

E. Gel, W. Hopp, M. Van Oyen, "Hierarchical Worksharing in WIP Constrained Systems" invited talk, INFORMS San Francisco, November 2005.

W. Hopp, S. Iravani, G. Yuen, "Impact of Sales Force and Effective Incentive Structure on Supply Chain Performance" invited talk, INFORMS San Francisco, November 2005.

W. Hopp, S. Iravani, G. F. Liu, "Discretionary Task Completion: A Key Difference between White-Collar and Blue-Collar Work System," invited talk, INFORMS San Francisco, November 2005.

W. Hopp, X. Xu, "A Static Approximation for Dynamic Demand Substitution with Applications in a Competitive Market" invited talk, INFORMS San Francisco, November 2005.

W. Hopp, S. Iravani, G. Yuen, "Impact of Sales Force and Effective Incentive Structure on Supply Chain Performance" invited talk, INFORMS San Francisco, November 2005.

W. Hopp, "Variety and Pricing of Horizontally Differentiated Products," invited talk at Columbia University Business School, March 2006.

W. Hopp, "Variety and Pricing of Horizontally Differentiated Products," invited talk at Wharton School, University of Pennsylvania, April 2006.

W. Hopp, "A Management Science Perspective on Information Systems Research," keynote address at International Conference on Information Systems and Technology, Xi'an Jiaotong University, June 2006.

W. Hopp, S. Iravani, F. Liu. "Managing Collaboration in Knowledge-Intensive Environments" invited talk, INFORMS Pittsburgh, November 2006.

W. Hopp, S. Iravani, Z. Yin. "Strategic and Tactical Risks of Supply Chain Disruption," invited talk, INFORMS Pittsburgh, November 2006.

W. Hopp, "Complex Systems in Management," presentation to Exxon-Mobile executive planning group, Evanston, IL, January 2007.

W. Hopp, "Toward a Science of White Collar Workforce Management," invited talk at Stanford University, Department of Management Science and Engineering, February 2007.

W. Hopp, "The Science of White Collar Workforce Management," invited tutorial at INFORMS International Meeting, Puerto Rico, July 2007.

W. Hopp, "Toward a Science of White Collar Workforce Management," keynote address at Behavioral Operations Conference, Minneapolis, July 2007.

W. Hopp, "Toward a Science of Innovation," invited talk at Harvard Business School, October 2007.

W. Hopp, E. Tekin, M. Van Oyen, "Design Issues in Service Systems with a Mix of Dedicated and Cross-trained Servers," invited talk at INFORMS Seattle, November 2007.

W. Hopp, Z. Yin, S. Iravani, "Strategic Risk Mitigation of Supply Chain Disruptions," invited talk at INFORMS Seattle, November 2007.

W. Hopp, B. Gokpinar, S. Iravani, "The Impact of Product Architecture and Organization Structure on Complex Product Development," invited talk at INFORMS Seattle, November 2007.

W. Hopp, "Tactical and Strategic Risks from Disruption of Global Supply Chains," keynote address at MIT Risk Management Conference, Massachusetts Institute of Technology, March 2008.

B. Gokpinar, W. Hopp, B. Gokpinar, S. Iravani, "Coordination and Performance of Engineers in New Product Innovation," invited talk at INFORMS Washington, D.C., October 2008.

Y. Cheng, W. Hopp, Y. Cheng, S. Iravani, "Crisis Management Operations for Workload Crises," invited talk at INFORMS Washington, D.C., October 2008.

W. Hopp, B. Nelson, J. Xu, “Joint Product Line and Supply Chain Design,” invited talk at INFORMS Washington, D.C., October 2008.

W.Hopp, S. Iravani, Z. Yin, “Strategic Risk from Supply Chain Disruptions,” invited talk at INFORMS Washington, D.C., October 2008.

B. Gokpinar, W.Hopp, B. Gokpinar, S. Iravani, “The Impact of Misalignment of Organization Structure and Product Architecture on Quality,” invited talk at INFORMS Washington, D.C., October 2008.

W. Hopp, “Toward a Science of Innovation,” invited talk at Olin School of Business, Washington University, April 2009.

W. Hopp, “Toward a Science of Innovation,” invited talk at Tepper School of Business, Carnegie Mellon University, April 2009.

B. Gokpinar, W. Hopp, S. Iravani, “Complexity and Efficiency of Globally Distributed Vehicle Design,” invited talk at INFORMS San Diego, October 2009.

W. Xu, W. Hopp, B. Nelson, “Product Portfolio Cadence Optimization,” INFORMS San Diego, October 2009.

W. Hopp, B. Gokpinar, S. Iravani, “Using Networks to Evaluate Misalignment Between a Design Organization and its Product Architecture,” invited talk at INFORMS San Diego, October 2009.

W. Hopp, “Network Principles: Insights into Superior Execution and Innovation,” keynote address at Figyelő Top 200 Konferencia, Budapest, Hungary, October 2009.

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