

ACADEMIC RESUME

**Robert L. Smith**



*Present Positions:* Altarum/ERIM Russell D. O'Neal Professor of Engineering and Professor of Industrial and Operations Engineering  
The University of Michigan  
Ann Arbor, Michigan 48109

*Home page:* <http://www-personal.umich.edu/~rlsmith/>

*Date Current:* December 2, 2010

*DEGREES:*

Ph.D. in Engineering Science, Department of Industrial Engineering and Operations Research, University of California, Berkeley, June, 1971. PhD Thesis: "Resource-Return Functions in Linear and Convex Programming". Ph.D. Dissertation Advisor: Stuart Dreyfus, Professor Emeritus.

M.S. in Engineering Science, Department of Industrial Engineering and Operations Research, University of California, Berkeley, February, 1971.

M.B.A. in Management Science, Graduate School of Business Administration, University of California, Berkeley, June, 1968. Master's Thesis Advisor: Reinhard Selten, Nobel Laureate in Economics.

B.S. in Physics, Harvey Mudd College, Claremont, California, June, 1966.

*ACADEMIC POSITIONS:*

Altarum/ERIM Russell D. O'Neal Professor of Engineering and Professor of the Department of Industrial and Operations Engineering, The University of Michigan, Ann Arbor, Michigan, 2003-present.

Professor, Department of Industrial and Operations Engineering, The University of Michigan, Ann Arbor, Michigan, 1986-2002.

Associate Professor, Department of Industrial and Operations Engineering, The University of Michigan, Ann Arbor, Michigan. 1980-1986.

Assistant Professor, Graduate School of Business and Department of Mathematics and Statistics, University of Pittsburgh, Pittsburgh, Pennsylvania, 1976–1980.

Visiting Assistant Professor, Department of Applied Mathematics, Twente Institute of Technology, Enschede, The Netherlands, (on leave of absence from Bell Laboratories), 1974–1975.

Lecturer, Graduate School of Business Administration, University of California, Berkeley, 1971–1972.

*PROFESSIONAL POSITIONS:*

Program Director, Operations Research and Cluster Leader, Systems Engineering and Design Cluster, Division of Civil, Mechanical and Manufacturing Innovation, National Science Foundation, Arlington, Virginia

Member of the Technical Staff, Bell Laboratories, Holmdel, New Jersey. Facilities Network Planning, 1972–1976.

Operations Research Analyst, Naval Weapons Center, China Lake, California. Effectiveness evaluation of NWC training program, Summer, 1967. Simulation of bridge damage mechanisms, Summer, 1968.

Systems Engineer, Ratheon, Oxnard, California. Feasibility and design studies of aerospace subsystems, Summer, 1966.

Research Assistant, Operations Research Center, University of California, Berkeley. Administrative Studies Project in Higher Education, 1968–1970.

*COURSES TAUGHT AT THE UNIVERSITY OF MICHIGAN:*

Dynamic Programming (graduate) IOE 512

Stochastic Processes (graduate) IOE 515

Traffic Modeling (graduate) IOE 517

Function Space Methods in System Theory (graduate) IOE 600/EECS 600

Queueing Theory (graduate) IOE 616

Infinite Horizon Optimization (graduate) IOE 712

Stochastic Industrial Processes (undergraduate) IOE 315

Introduction to Markov Processes (undergraduate) IOE 316

Queueing Systems (undergraduate) IOE 416

Production and Inventory Control (undergraduate) IOE 441

*Average Student Evaluation of Instructor* (ten year period average on a scale of 1 through 5 (best)): 4.5

*SERVICE:*

*Professional:*

Associate Editor, Optimization, *Operations Research*, 2005 - present.

Member, INFORMS Speakers Program, 1992–present.

Member, Advisory Board, ClearSight Systems, Inc.

Speaker, Proposal Writing, Future Academic Colloquium (FAC), INFORMS Combined Colloquium, Denver, 2004.

Associate Editor, Mathematical Programming and Networks, *Management Science*, 1986– 2003.

Chair, George B. Dantzig Dissertation Award Committee, 2003 (Member, 2002).

Member, NSF CAREER Review Panels, November, 1999, November, 2002. Chairman, Dynamic Optimization Cluster, INFORMS International, Maui, 2001.

Chairman, Optimization Cluster, INFORMS Conference, Seattle, 2007.

Invited Session Chairman, INFORMS Conference, Detroit, 1982; Chicago, 1983; Orlando, 1983; San Francisco, 1984; Boston, 1985; Los Angeles, 1986 ; St. Louis, 1987; Nashville, 1992. Invited Session Chairman, IFORS Triennial Conference, Hawaii, 2005. Invited Session Chairman, IEEE VNIS Conference, Dearborn, 1991. Invited Session Chairman, Infinite Programming, 15th International Symposium on Mathematical Programming, Ann Arbor, 1994 and 16th International Symposium on Mathematical Programming, Lausanne, 1997.

Chairman, Dynamic Optimization Cluster, INFORMS International, Maui, 2001.

Chairman, ORSA/TIMS Visiting Lecturer Program, 1983–1985, Member, 1985–1991.

Chairman, Invited Speakers, 15th International Symposium on Mathematical Programming, Ann Arbor, MI, August, 1994.

National Contributed Papers Chairman, ORSA/TIMS Conference, Detroit, Michigan 1982.

Referee for *Operations Research*, *Mathematical Programming*, *Mathematics of Operations Research*, *Management Science*, *Journal of the American Statistical Association*, National Science Foundation.

*University:*

Member, Provost's Advisory Committee on Academic Affairs (AAAC), 2001-2004.

Member, University General Counsel's Advisory Committee, 2002-2005.

Member, Provost's Advisory Committee on University Budgets (ACUB), 1997–2000.

Member, University Library Council, 1998–2001.

Member, Faculty Perspectives Page, Editorial Board, 1994–1995, 1998–2001.

Member, Senate Advisory Committee on University Affairs (SACUA), 1995–1996.

Member and SACUA Liaison, Senate Assembly Research Policies Committee, 1995–1996.

Member and SACUA Liaison, Senate Assembly Civil Liberties Board, 1995–1996.

Member, Provost's Advisory Committee on Academic Affairs (AAAC), 1996.

Member, SACUA Nominations Committee, 1994.

Member, Senate Assembly, 1992–1996.

Member, Research Council, Office of the Vice President for Research, 1995–present.

Member, Senate Assembly Standing Committee on Tenure, 1993–1995.

Discussion Leader, Senate Assembly Retreat, 1994.

Member, Transportation Studies ITS Program Committee, Rackham Graduate School, 1990–2001.

Member, SACUA Faculty Publications Committee, 1992–1993.

Member, Executive Committee, University of Michigan Transportation Research Institute, 1986–1989.

Member, Administrative Council, Rackham Graduate School, 1983–84.

*College:*

Director, Dynamic Systems Optimization Laboratory, 1992–present.

UM Thrust Leader for Manufacturing Systems, General Motors Collaborative Research Laboratory in Advanced Vehicle Manufacturing, University of Michigan, 2002–2008.

Member, Endowed Chair Advisory Committee, 2007–present.

Chairman, Nominations Committee, College of Engineering, 1986–1987. Member, 1990–1991, 1999–2000, 2005–2007.

Member, Honors and Awards Committee, College of Engineering, 2006–2007.

Member, Faculty Admissions Advisory Committee, 2004.

Member, Strategic Planning Committee on International Programs, College of Engineering, 1996–1997.

Member, Delegation to the Technical University of Delft, College of Engineering, 1996.

Member, Ad Hoc Committee on Transportation Engineering, College of Engineering, 1995.

Member, Engineering Library Advisory Committee, College of Engineering, 1992–1994.

Member, Scholastic Standing Committee, College of Engineering, 1988–1991.

Chairman, IOE Department Review Committee, 1989–90. Member, 1995–1996.

Member, Engineering–Mathematics–Statistics–Physics Committee, 1983–1985.

Lecturer, Engineering Summer Conference, 1983, 1990.

*Department:*

Member, Executive Committee, Department of Industrial and Operations Engineering, 1981–1982, 1984–1985, 1987–1988, 1991–1992, 1993, 1994–1996, 1998–2000, 2005–2007.

Member, Department Chair Search Committee, 1993.

Chairman, Honors and Awards, 1987–88, 1990–1992, 1993, 1994–1997. Member, 2002–2007.

Chairman, Department Curriculum Committee, 1989–90. Member, 2003–2007.

Chairman, Department Admissions and Financial Aid Committee, 1982–86, 1997–1999.

Chairman and Member, Reappointment, Tenure, and Promotion Review Committees, Department of Industrial and Operations Engineering.

Coordinator, DeVlieg Fellowship Program, 1984–87.

*HONORS AND AWARDS:*

Altarum/ERIM Russell D. O’Neal Professorship of Engineering, 2003–present.

Fellow of the Institute for Operations Research and the Management Sciences

Distinguished Faculty Achievement Award, University of Michigan, 2002–2003.

College of Engineering Research Excellence Award for 1999–2000, College of Engineering, 1999–2000.

Department Outstanding Accomplishments Award, Department of Industrial and Operations Engineering, 2004–2005.

Department Research Excellence Award, Department of Industrial and Operations Engineering, 1992–1993, 1993–1994, 1994–1995, 1996–1997.

Outstanding Teacher, Michigan Student Assembly, 1989.

National Science Foundation Fellow, 1970–1971.

California State Fellow, University of California, Berkeley, 1968.

Beta Gamma Sigma Honorary Society, University of California, Berkeley, 1968.

Lockheed Scholar, Harvey Mudd College, 1964–1966

*SCIENTIFIC AND PROFESSIONAL SOCIETIES:*

Institute for Operations Research and Management Sciences

The Mathematical Programming Society

*CONSULTING:*

Altarum (Agent Based Optimization)

Theo Captital (Optimal Portfolio Allocation)

TeleQuest Ltd. (Dynamic Route Guidance)

General Motors (Strategic Planning and Shape Optimization)

Volvo of America, Michigan (Automated Guided Vehicle Routing)

Michigan Consolidated Gas Company (Equipment Replacement)

Crowell & Moring (Statistics in Law)

Environmental Protection Agency, Washington (River Pollution Modeling)

*VISITING POSITIONS:*

Visiting Professor, Faculty of Information Technology and Systems, Delft University of Technology, Delft The Netherlands, January–April, 1999 and September–October, 2000.

Visiting Scholar, Department of Decision Sciences, School of Business Administration, Erasmus University, Rotterdam, The Netherlands, April–May, 1994.

Visiting Scholar, Department of Industrial Engineering and Operations Research, Columbia University, New York, January–February, 1994.

Invitee, Workshop on Operations Research and Complex Adaptive Systems, Santa Fe Institute, Santa Fe, New Mexico, May, 1992.

Visiting Scholar, Statistical Laboratory, University of Cambridge, Cambridge, England, May, 1987.

Visiting Professor, Econometric Institute, Erasmus University, Rotterdam, The Netherlands, March–April, 1987.

Visiting Scholar, Laboratoire d'Automatique et d'Analyse des Systèmes du CNRS, Toulouse, France, January–February, 1987.

Visiting Scholar, Faculty of Industrial Engineering and Management, Technion, Haifa, Israel, May, 1984.

Research Associate, Mathematical Sciences Research Institute, Berkeley, California, May 1983.

Visiting Scholar, Operations Research Group, Institute of Pure and Applied Mathematics, Rio de Janeiro, Brazil, June–July, 1982; July–August, 1983; July–August, 1985.

Visiting Scholar, Department of Industrial Engineering and Operations Research, University of California, Berkeley, July–August, 1981.

*RESEARCH FUNDS (Project Director or Co-Principal Investigator):*

National Science Foundation, “Approximate Fictitious Play for the Optimization of Complex Systems,” CCF-0830092, \$116,566, 8/4/2008–8/3/2010, Former Co-Principal Investigator (Project Director, Marina Epelman) Program in Numeric, Symbolic & Geometric Computation,

Office of Naval Research MURI Grant, “Optimum Vessel Performance in Evolving Nonlinear Wave Fields,” \$450,000, May 1, 2005–April 30, 2010, Co-Principal Investigator (Project Director, Robert Beck).

National Science Foundation, “Fictitious Play for Complex Systems Optimization” DMI-0422752, Program in Operations Research, \$215,907, 8/15/2004–7/31/2008, Co-Principal Investigator (Project Director, Marina Epelman).

- National Science Foundation, "GOALI: Planning Horizons for Optimal Decision Making Over Time with Applications to Production Systems Optimization," DMI-0322114, Program in Manufacturing Enterprise Systems, \$256,931, 2003-2008, Project Director, Robert L. Smith, Co-Principal Investigator, Dr. Danial Reaume, General Motors R & D Center. Additional support: \$75,000 (direct cost) Matching Funds General Motors R & D.
- National Science Foundation, "Collaborative Research: Adaptive Search for Global Optimization," (collaborative research with Professor Zelda Zabinsky, University of Washington ), DMI-0244291, Program in Operations Research, \$186,596, June 1, 2003-2008, Project Director, Robert L. Smith. Additional support: \$20,000 (direct cost) Matching Funds University of Michigan.
- General Motors Collaborative Research Laboratory, "Joint Optimization of Investment, Production, and Maintenance in Production Systems," (joint with Dr. Daniel Reaume, General Motors R & D Center), \$614,000 (equivalent with indirect costs), 12/2002-12/2008, Project Director.
- National Science Foundation, "Complex Networks Optimization" DMI-0217283, Program in Operations Research, \$106,841, 2002-8/31/2004, Project Director, Robert L. Smith, Co-Principal Investigator, Marina Epelman.
- National Science Foundation GOALI, "Large Scale Dynamic Programming for Optimizing the Design and Operation of Complex Systems with Applications to Production Line Design," (joint with Dr. Jeffrey Alden, General Motors R & D Center ), DMI-9900267, Program in Operations Research and Production Systems, \$205,000, 1999-2003, Project Director.
- National Science Foundation, "Adaptive Search for Global Optimization," (joint with Professor Zelda Zabinsky, University of Washington ), DMI-9820744, Program in Operations Research and Production Systems, \$204,000, 1999-2003, Project Director.
- National Science Foundation, "Infinite Horizon Optimization," DMI-9713723, Program in Operations Research, \$181,000, 1997-2002, Project Director.
- Army Research Office ASSERT Grant, "Optimization Algorithms for Low Energy Mobile Digital Communications Systems," \$120,000, 1998-2002, Co-Principal Investigator, (Project Director, Wayne Stark).
- Army Research Office MURI Grant, "Low Energy Electronics Design for Mobile Platforms," \$250,000, 1998-2001, Co-Principal Investigator, (Project Director, Wayne Stark).
- Mitretek Corp, "Large-scale ITS Modeling Development Task," \$25,000, 1997-98, Project Director.
- Great Lakes Truck Transportation Research Center, "TrafMod: A Mesoscopic Traffic Simulator," \$75,000, 1997-2000, Project Director.
- National Science Foundation, "Infinite Horizon Optimization," DDM-9214894, Program in Operations Research and Production Systems, \$162,614, 1992-1997, Project Director. REU (Research Experience for Undergraduates) Supplement, \$11,170, 1994-1997, Project Director.
- University of Michigan Intelligent Transportation Systems Research Center of Excellence, "Traffic Modeling in Dynamic Route Guidance and Coordinated Signal Control," \$450,000, 1993-2000, Project Director (with Stephane Lafortune).
- AT&T Foundation, Bell Laboratories Technical Special Purpose Grants Program, "Equipment for Research in Global Optimization," \$14,936, 1992, Project Director.

National Science Foundation, “Infinite Horizon Optimization,” ECS-8409682 and ECS-8700836, Program in Systems Theory and Operations Research, \$167,000, 1984–1990, Project Director and Principal Investigator, (with James C. Bean).

IVHS Industrial Advisory Board, “Traffic Modeling, Analysis, and Simulation,” \$325,000 (equivalent with indirect costs), 1989–92, Project Director.

General Motors Systems Engineering Center, “Statistical Applications to Vehicle Design,” \$206,000, 1989–1992, Project Director.

NATO, Collaborative Research Grant, “Random Search in Mathematical Programming,” \$19,329 (equivalent with indirect costs), 1989–1993

US Department of Transportation, “University Transportation Center: Great Lakes Center for Transportation Research,” \$75,000, 1988–1991, Co-Principal Investigator, (with James C. Bean and Jack R. Lohmann).

US Department of Transportation, “IVHS Education,” \$24,000, 1991, Principal Investigator.

General Motors, “Manufacturing Replacement Economy Studies”, \$112,500, 1986–1989, Co-Principal Investigator, (with James C. Bean and Jack R. Lohmann).

AT&T Foundation, Bell Laboratories Technical Special Purpose Grants Program, “Equipment for High Technology Replacement Economy,” \$40,500, 1985–1986, Co-Principal Investigator, (with James C. Bean and Jack R. Lohmann).

IBM, Kingston, New York, “A Dynamic Replacement Economy Methodology,” \$58,000, 1984–1985, Co-Principal Investigator, (with James C. Bean and Jack R. Lohmann).

Urban Mass Transit Administration, Washington, “Optimal Equipment Replacement Strategies,” \$51,000, 1983–1985, Principal Investigator, (with James C. Bean and Jack R. Lohmann).

Rackham Faculty Grant, “Conditions for the Existence of Planning Horizons,” \$10,000, 1981–82, Project Director, (with James C. Bean).

Bethlehem Steel Corporation, Michigan, “Capacity Expansion for Coke Production,” \$10,000, 1981–1982, Project Director, (with James C. Bean).

*Ph.D. STUDENTS (Chairman or Co-Chairman):*

1. Irina Dolinskaya, “Optimal Path Finding in Direction, Location and Time Dependent Environments,” 2009, Chair, Assistant Professor, Northwestern University.
2. Esra Sisikoglu, “Distributed Algorithms Based on Fictitious Play for Near Optimal Sequential Decision Making,” Co-Chair (with Marina Epelman), Assistant Professor, University of Missouri.
3. Blake Nicholson, “Scheduling Shutdowns for Manufacturing Systems with Application to Automotive Production Lines: Optimization Models and Computation,” 2008, (Co-chair with Marina Epelman), Northwest Airlines, Minneapolis.
4. Timothy Lortz, “Solvability in Discrete, Nonstationary, Infinite Horizon Optimization,” 2008, Co-Chairman (with Archis Ghatge), Booz Allen, Maryland.

5. Ghate, Archis, "Markov Chains, Game Theory, and Infinite Programming: Three Paradigms for Optimization of Complex Systems," 2006, Chairman. Assistant Professor, University of Washington, Seattle.
6. Cheng, Shih-Fen, "Game-Theoretic Approachs for Complex Systems Optimization," 2006, Co-Chairman (with Mike Wellman). Assistant Professor, Singapore Management University, Singapore.
7. Baumert, Stephen, "Stochastic Search Methods for Large-Scale Optimization," 2004, Chairman. Assistant Professor, Air Force Institute of Technology, Dayton, Ohio (first position after PhD.)
8. Lambert, Theodore, "Fictitious Play for Optimizing Large Scale Complex Systems," 2002, Co-Chairman (with Marina Epelman). Assistant Professor, Truckee Meadows Community College, Reno, Nevada
9. Bailey, Matthew, "State Aggregation for Large Scale Acyclic Deterministic Dynamic Programming Problems," 2001, Co-Chairman (with Jeffrey Alden). Assistant Professor, Bucknell University.
10. Torpong Cheevaprawatdomrong, "Monotonicity in Infinite Horizon Optimization," 2001. Deputy Managing Director, Jong Stit Co., Ltd, Bangkok, Thailand.
11. Seksan Kiatsupaibul, "Markov Chain Monte Carlo Methods for Global Optimization," 2000, Chairman. Assistant Professor, Department of Statistics, Faculty of Commerce and Accountancy, Chulalongkorn University, Thailand.
12. Allise Wachs, "Average Cost Optimality in Stochastic Infinite Horizon Optimization," 1998, Co-Chairman (with Irwin Schochetman). President, Integral Concepts, West Bloomfield, MI.
13. Dan Reaume, "Efficient Random Search for Constrained Global and Convex Optimization," 1997, Co-Chairman (with Edwin Romeijn). Research Engineer, General Motors Research Laboratories, Warren, Michigan.
14. Alfredo Garcia, "Approximating Equilibria in Infinite Horizon Games," 1997. Associate Professor, University of Virginia, Charlottesville.
15. Julie Chou, "Accelerating the Solution of Dynamic Programs through State Aggregation," 1995, Co-Chairman (with Edwin Romeijn). Executive Vice-President, Wolverine Decision Technology, Irvine, CA
16. William Cross, "Approximating Solutions in Infinite Horizon Optimization," 1995, Chairman. Senior Underwriter, Plymouth Rock Assurance Corporation, Boston.
17. Karl Wunderlich, "Dynamic Link Time Prediction in Vehicular Traffic Networks," 1994, Chairman. Noblis Fellow, Noblis.
18. David Kaufman, "Optimal Direction Choice for Hit-and-Run Acceleration," 1992, Chairman. Formerly Consultant, AT&T Laboratories, Holmdel, NJ.
19. Edwin Romeijn, "Global Optimization by Random Walk Sampling Methods," 1992, Co-Chairman (with Alexander Rinnooy Kan). Professor, Department of Industrial and Operations Engineering, University of Michigan, Ann Arbor. Finalist in the 1993 ORSA Nicholson Prize Competition.
20. Yunsun Park, "Average Optimality in Infinite Horizon Optimization," 1990, Co-Chairman (with James C. Bean). Professor, Myong-Ji University, Korea.

21. Peter Benson, "A Calculus for Infinite Horizon Optimization," 1990, Co-Chairman (with James C. Bean). Staff Member, Risk Metrics, Ann Arbor, MI.
22. David Kim, "Aggregation in Large Scale Markov Chains," 1990, Chairman. Associate Professor, Department of Industrial and Manufacturing Engineering, Oregon State University, Corvallis, Oregon. Recipient of the 2005 Franz Edelman Award for Achievement in Operations Research and the Management Sciences and the GMR McCuen Award.
23. Sarah McAllister Ryan, "Degeneracy in Discrete Infinite Horizon Optimization," 1988, Co-Chairman (with James C. Bean). Professor, Iowa State University, Ames, Iowa. Recipient of NSF CAREER Award.
24. Jeffrey M. Alden, "Error Bounds for Rolling Horizon Procedures," 1987, Co-Chairman (with Stephen M. Pollock). GM Fellow, General Motors Research Laboratories, Warren, Michigan. Honorable Mention in the 1988 ORSA Nicholson Prize Competition. Recipient of the 2005 Franz Edelman Award for Achievement in Operations Research and the Management Sciences, GMR McCuen Award.
25. Zeld Zabinsky, "Computational Complexity of Adaptive Algorithms in Monte Carlo Optimization," 1985, Chairman. Professor, University of Washington, Seattle.
26. Julia L. Hagle, "Deterministic Equivalence in Stochastic Infinite Horizon Problems," 1985, Co-Chairman (with James C. Bean). Professor and Chair, Industrial, Welding, and Systems Engineering Department, Ohio State University, Columbus, Ohio. Second Place in the 1986 ORSA Nicholson Prize Competition.
27. Donald E. Brown, "A Bayesian Justification for Cross-Entropy Minimization in Decision Analysis," 1985, Chairman. W.S. Calcott Professor, Department of Systems and Information Engineering, University of Virginia, Charlottesville.
28. Wallace J. Hopp, "Non-homogeneous Markov Decision Processes with Applications to R and D Planning," 1984. Herrick Professor of Manufacturing, University of Michigan, Ann Arbor, Co-Chairman (with James C. Bean). Recipient of the 1985 ORSA Nicholson Prize.

#### *PUBLICATIONS:*

1. "A Shadow Simplex Method for Infinite Linear Programs," with Archis Ghate and Dushyant Sharma, **Operations Research**, Vol. 58, No. 4, 865877, 2010.
2. "An Analysis of a Variation of Hit-and-Run for Uniform Sampling from General Regions," with Seksan Kiatsupaibul and Zeld Zabinsky, **ACM Transactions on Modeling and Computer Simulation**, forthcoming, 2010.
3. "Pattern discrete and mixed Hit-and-Run for global optimization," with Huseyin Onur Mete, Yanfang Shen, Zeld Zabinsky, and Seksan Kiatsupaibul, **Journal of Global Optimization**, forthcoming 2010.
4. "Characterizing Extreme Points as Basic Feasible Solutions in Infinite Linear Programs," with Archis Ghate, **Operations Research Letters**, Vol 37, Issue 1, pp 7-10, January 2009.
5. "A Dynamic Programming Approach to Efficient Sampling from Boltzmann Distributions," with Archis Ghate, **Operations Research Letters**, Vol. 36, Issue 6, pp 665-668, November 2008.

6. "A Hit-and-Run Approach for Generating Scale Invariant Small World Networks," with Archis Ghate, **Networks**, Vol 53, Issue 1, pp 67-78, January 2009.
7. "Optimal Backlogging Over an Infinite Horizon Under Time Varying Convex Production and Inventory Costs," with Archis Ghate, **Manufacturing and Service Operations Management (MSOM)**, Vol. 11, No. 2, pp 362-368, 2009.
8. "Optimal Short-Range Routing of Vessels in a Seaway, with Dolinskaya, I. S., Kotinis, M., and Parsons, M. G., **Journal of Ship Research**, Volume 53, Number 3, pp. 121-129, September 2009.
9. "Adaptive Search with Stochastic Acceptance Probabilities for Global Optimization," with Archis Ghate, **Operations Research Letters**, Volume 36, Issue 3, pp 285-290 May 2008.
10. "Discrete Hit-and-Run for Sampling Points from Arbitrary Distributions over Subsets of Integer Hyperrectangles" with Stephen Baumert, Archis Ghate, Seksan Kiatsupaibul, Yanfang Shen, and Zelda B. Zabinsky, **Operations Research**, Vol. 57, No. 3, pp. 727-739, May-June 2009.
11. "A Reach and Bound Algorithm for Acyclic Dynamic Programming Networks," with Matthew D. Bailey and Jeffrey M. Alden, **Networks**, Volume 52, Issue 1, pp 1-7, August 2008.
12. "CoSIGN: A Fictitious Play Algorithm for Coordinated Traffic Signal Control" with Shih-Fen Cheng and Marina A. Epelman, **IEEE Transaction on Intelligent Transportation Systems**, Vol 7, Issue 4, pages 551-564, Dec. 2006.
13. "Infinite Horizon Optimality Criteria for Equipment Replacement under Technological Change," with I. E. Schochetman, **Operations Research Letters**, forthcoming, 2007.
14. "Convergence of Minimum Norm Elements of Projections and Intersections of Nested Affine Spaces in Hilbert Space," with Ernie Schochetman and J. Tsui, **Journal of Mathematical Analysis and Applications**, forthcoming, 2007.
15. "Solution and Forecast Horizons for Infinite Horizon Nonhomogeneous Markov Decision Processes," with T. Cheevaprawatdomrong, I.E. Schochetman, and A. Garcia, **Mathematics of Operations Research**, forthcoming, 2006.
16. "An Analytically Derived Cooling Schedule for Simulated Annealing" with Yanfang Shen, Seksan Kiatsupaibul, and Zelda Zabinsky, **Journal of Global Optimization**, forthcoming, 2006.
17. "Extreme Point Characterizations for Infinite Network Flow Problems," with Dushyant Sharma and Edwin Romeijn, **Networks**, Volume 48, Issue 4, pp 209-222, 2006.
18. "Optimality Criteria for Deterministic Discrete Time Infinite Horizon Optimization," with I.E. Schochetman, **International Journal of Mathematics and Mathematical Sciences**, 2005:1, pp 57-80, 2005.
19. "A Fictitious Play Approach to Large-Scale Optimization" with Theodore J. Lambert III and Marina A. Epelman, **Operations Research**, Vol. 53, No. 3, pp. 477-489, May-June 2005.
20. "Existence of Efficient Solutions in Infinite Horizon Optimization under Continuous and Discrete Controls," with I.E. Schochetman, **Operations Research Letters** 33, 97-104, 2005.
21. "Infinite Horizon Production Scheduling in Time-varying Systems under Stochastic Demand," with T. Cheevaprawatdomrong, **Operations Research**, Volume 52, Number 1, January-February 2004.

22. “Optimal Estimation of Univariate Black Box Lipschitz Functions with Upper and Lower Error Bounds with Zelda Zabinsky and Birna P. Kristinsdottir, **International Journal of Computers & Operations Research**, Volume 30, Issue 10, Pages 1539-1553, September 2003.
23. “A Paradox in Equipment Replacement under Technological Improvement” with Torpong Cheevaprawatdomrong, **Operations Research Letters**, 31, pages 77 - 82, 2003.
24. “Implementing pure adaptive search for global optimization using Markov chain sampling” with Daniel Reaume and Edwin Romeijn, **Journal of Global Optimization**, Vol. 20, No. 1, pages 33-47, 2001.
25. “On the Closure of the Sum of Closed Subspaces,” with I.E. Schochetman and S-K. Tsui, **International Journal of Mathematics and Mathematical Sciences**, v. 26, no. 5, 1-11 (2001).
26. “A Finite Algorithm for Solving Infinite Dimensional Optimization Problems,” with I.E. Schochetman, **Annals of Operations Research**, special volume dedicated to A. V. Fiacco’s 70th birthday, v. 101, 119-142 (2001).
27. “Solving Nonstationary Infinite Horizon Stochastic Production Planning Problems,” with Alfredo Garcia, **Operations Research Letters**, Volume 27, Number 3, pp 135–141, 2000.
28. “Link Travel Time Prediction for Decentralized Route Guidance Architectures,” with Karl Wunderlich and David Kaufman, **IEEE Transactions on Intelligent Transportation Systems**, Volume 1, Number 1, pp 4–14, March 2000.
29. “Markov Perfect Equilibrium Existence for a Class of Undiscounted Infinite Horizon Dynamic Games,” with Alfredo Garcia, **Journal of Optimization Theory and Applications**, Volume 106, Number 2, pp 433–441, August 2000.
30. “Solving Nonstationary Infinite Horizon Dynamic Optimization Problems,” with Alfredo Garcia, **Journal of Mathematical Analysis and Applications**, Vol. 244, No. 2, pp. 304–317, April 2000.
31. “Fictitious Play for Finding System Optimal Routings in Dynamic Traffic Networks ” with Alfredo Garcia and Dan Reaume, **Transportation Research B**, Vol. 34, pp. 147–156, 2000.
32. “Parallel Algorithms for Solving Aggregated Shortest Path Problems,” with Edwin Romeijn, **Computers and Operations Research**, Special Issue on Aggregation, Volume 26, Issue 10–11, pp 941–953, 1999.
33. “A Mixed Integer Linear Programming Model for Dynamic Route Guidance,” with David Kaufman and Jason Nonis, **Transportation Research Part B: Methodological**, vol. 32, no. 6, pp. 431–440, 1998.
34. “Approximating Shortest Paths in Large Scale Networks with Application to Intelligent Transportation Systems,” with Julie Chou and Edwin Romeijn, **INFORMS Journal on Computing**, 10 , no. 2, 163–179, 1998.
35. “Infinite Horizon Production Planning in Time Varying Systems with Convex Production and Inventory Costs,” with Rachel Zhang, **Management Science**, Vol. 44 no9:1313–20, 1998.
36. “Shadow Prices in Infinite Dimensional Linear Programming,” with Edwin Romeijn, **Mathematics of Operations Research**, Vol. 23, No. 1, 239–256, Feb 1998.

37. "Existence and Discovery of Average Cost Optimal Solutions in Deterministic Infinite Horizon Optimization," with I.E. Schochetman, **Mathematics of Operations Research**, 23, no. 2, 416–432, 1998.
38. "Approximating Extreme Points in Infinite Dimensional Convex Sets," with William Cross and Edwin Romeijn, **Mathematics of Operations Research**, Vol. 23, No. 1, May, 1998.
39. "User Equilibrium Properties of Fixed Points in Iterative Dynamic Routing/Assignment Models" with David Kaufman and Karl Wunderlich, **Transportation Research C**, Vol. 6, Issue 1, 1998.
40. "Direction Choice For Accelerated Convergence In Hit-and-Run Sampling," with David Kaufman, **Operations Research**, Jan–Feb, 1998.
41. "Solution Existence for Infinite Quadratic Programming," with I.E. Schochetman and S-K. Tsui, **Mathematical Programming with Data Perturbations**, A. Fiacco, Editor, Marcel Dekker, NY, 363–385, 1997.
42. "The Hit-and-Run Sampler: A Globally Reaching Markov Chain Sampler for Generating Arbitrary Probability Distributions," **Proceedings of the Winter Simulation Conference**, San Diego, 1996.
43. "An Exact Aggregation/Disaggregation Algorithm for Large Scale Markov Chains," with David S. Kim, **Naval Research Logistics**, Vol. 42, pp. 1115–1128, 1995.
44. "Solution Existence for Time-Varying Infinite Horizon Optimal Control," with I.E. Schochetman, and S.-K. Tsui, **Journal of Mathematical Analysis and Applications**, 195, 135–147, 1995.
45. "Optimal Solution Approximation for Infinite Positive-definite Quadratic Programming," with Peter Benson, I.E. Schochetman, and James C. Bean, **Journal of Optimization Theory and Applications**, 85, 235–248, 1995.
46. "Simulated Annealing and Adaptive Search in Global Optimization," with Edwin Romeijn, **Probability in the Engineering and Informational Sciences**, Vol. 8, pp. 571–590, 1994.
47. "Optimal Solution Characterization for Infinite Positive Semi-definite Quadratic Programming," with Peter Benson, I.E. Schochetman, and James C. Bean, **Applied Mathematics Letters**, Vol. 7, pp. 65–67, 1994.
48. "Simulated Annealing for Constrained Global Optimization," with Edwin Romeijn, **Journal of Global Optimization**, Vol. 5, pp. 101–126, 1994.
49. "Equipment Replacement Under Technological Change," with James C. Bean and Jack R. Lohmann, **Naval Research Logistics**, Vol. 41, pp. 117–128, 1994.
50. "Solution Approximation in Infinite Horizon Linear Quadratic Control," with I.E. Schochetman, **IEEE Transactions on Automatic Control**, Vol. 39, No. 3, 596–601, 1994.
51. "Dynamic System-Optimal Traffic Assignment using a State Space Model," with Stephane Lafortune, Raja Sengupta, and David Kaufman, **Transportation Research. Part B**, Vol. 27B, No. 6, 451–472, 1993.
52. "Optimal Average Value Convergence in Nonhomogeneous Markov Decision Processes," with Yun Sun Park and James C. Bean, **Journal of Mathematical Analysis and Applications**, Vol. 179, No. 2, 525–536, 1993.

53. "Improving Hit-and-Run for Global Optimization," with Z. Zabinsky, J. F. McDonald, H. E. Romeijn, and D. E. Kaufman, **Journal of Global Optimization**, Vol. 3, 171–192, 1993.
54. "Hit-and-Run Algorithms for Generating Multivariate Distributions," with Claude Belisle and Edwin Romeijn, **Mathematics of Operations Research**, Vol 18, No. 2, 255–266, May 1993.
55. "Conditions for the Discovery of Solution Horizons," with James C. Bean, **Mathematical Programming**, Vol 59, No. 2, 215–229, 1993.
56. "Fastest Paths in Time-Dependent Networks for IVHS Applications," with David E. Kaufman, **ITS Journal**, Vol. 1, No. 1, 1993.
57. "Posterior Convergence under Incomplete Information," with Aharon Ben-Tal and Donald E. Brown, **Systems and Management Science by Extremal Methods**, Editors: F. Y. Phillips and J. J. Rousseau, Kluwer Academic Publishers, 1992, pp 245–254.
58. "Convergence of Best Approximations from Unbounded Sets," with I.E. Schochetman, **Journal of Mathematical Analysis and Applications**, Vol. 166, No. 1, pp. 112–128, 1992.
59. "Capacity Expansion Under Stochastic Demands," with James C. Bean and Julia Higle, **Operations Research**, Vol 40, Suppl 2, May-June 1992.
60. "Rolling Horizon Procedures in Nonhomogeneous Markov Decision Processes," with Jeffrey M. Alden, **Operations Research**, Vol. 40, Suppl. 2, S183–194 May–June 1992.
61. "Finite Dimensional Approximation in Infinite Dimensional Mathematical Programming," with I.E. Schochetman, **Mathematical Programming**, Vol. 54, No. 3, pp. 307–333, 1992.
62. "A Tie-breaking Algorithm for Discrete Infinite Horizon Optimization," with Sarah M. Ryan and James C. Bean, **Operations Research**, Vol. 40, pp. S117–S126, Jan–Feb 1992.
63. "Duality in Infinite Dimensional Linear Programming," with H. Edwin Romeijn and James C. Bean, **Mathematical Programming**, Vol. 53, pp. 79–97, 1992.
64. "Pure Adaptive Search in Global Optimization" with Zelda Zabinsky, **Mathematical Programming**, Vol. 53, pp. 323–338, 1992.
65. "Shake-and-Bake Algorithms for Generating Uniform Points on the Boundary of Bounded Polyhedra," with C.G.E. Boender, R.J. Caron, A.H.G. Rinnooy Kan, J.F. McDonald, H. Edwin Romeijn, J. Telgen, and A.C.F. Vorst, **Operations Research**, Vol. 39, No. 6, pp. 935–953, November–December 1991.
66. "An Iterative Routing/Assignment Method for Anticipatory Real-time Route Guidance," with D. Kaufman and K. Wunderlich, **IEEE VNIS Conference Proceedings**, Dearborn, MI, Oct. 20–23, pp. 693–700, 1991.
67. "Convergence of Selections with Applications in Optimization," with I.E. Schochetman, **Journal of Mathematical Analysis and Applications**, Vol. 155, pp. 278–292, 1991.
68. "Denumerable State Nonhomogeneous Markov Decision Processes" with James C. Bean and Jean B. Lasserre, **Journal of Mathematical Analysis and Applications**, Vol. 153, pp. 64–77, 1990.
69. "Deterministic Equivalence in Stochastic Infinite Horizon Problems" with Julia L. Higle and James C. Bean, **Mathematics of Operations Research**, Vol. 15, pp. 396–407, 1990.

70. "An Exact Aggregation/Disaggregation Algorithm for Mandatory Set Decomposable Markov Chains," David S. Kim, In **Numerical Solution of Markov Chains**, W.J.Stewart (eds.), Marcel Dekker Inc., New York, 1990.
71. "A Correspondance Principle for Relative Entropy Minimization" with Donald E. Brown, **Naval Research Logistics**, Vol. 37, pp. 191–202, 1990.
72. "Infinite Horizon Optimization," with I.E. Schochetman, **Mathematics of Operations Research**, Vol. 14, pp. 559–574, 1989.
73. "Pure Adaptive Search in Monte Carlo Optimization," with Nitin R. Patel and Zelda Zabinsky, **Mathematical Programming**, Vol. 43, pp. 317–328, 1988.
74. "A New Optimality Criterion for Non-homogeneous Markov Decision Processes," with Wallace J Hopp and James C. Bean, **Operations Research** Vol. 35, pp. 875–883, 1987.
75. "Forecast Horizons for the Discounted Dynamic Lot Size Problem Allowing Speculative Motive," with James C. Bean and Candace Y. Yano, **Naval Research Logistics** Vol. 34, pp. 761–774, 1987.
76. "Aggregation in Dynamic Programming," with James C. Bean and John R. Birge, **Operations Research**, Vol. 35, pp. 215–220, 1987.
77. "Hit-and-Run Algorithms for the Identification of Nonredundant Constraints," with H.C.P. Berbee, C.G.E. Boender, A.H.G. Rinnooy Kan, C.L. Scheffer, and J. Telgen, **Mathematical Programming** Vol. 37, pp.184–207, 1987.
78. "The Expected Number of Extreme Points of a Random Linear Program," with Sancho E. Berenguer, **Mathematical Programming** 35, pp. 129–134, 1986.
79. "Optimal Capacity Expansion Over an Infinite Horizon," with James C. Bean, **Management Science**, Vol. 31, No. 12, pp. 1523–1532, 1985.
80. "A Dynamic Infinite Horizon Replacement Economy Decision Model," with James C. Bean and Jack R. Lohmann, **The Engineering Economist**, Vol. 30, No. 2, pp. 99–120, 1985.
81. "An Information Theory Model for the Evaluation of Circumstantial Evidence," with Allan R. Sampson, **IEEE Transactions on Systems, Man, and Cybernetics**, Vol. SMC–15, No. 1, pp. 9–16, 1985.
82. "Random Procedures for Nonredundant Constraint Identification in Stochastic Linear Programs," with John R. Birge, **American Journal of Mathematics and Management Sciences**, (Special Issue on Statistics in Optimization), Vol. 4, Nos. 1 and 2, pp. 41–70, 1984.
83. "Efficient Monte Carlo Procedures for Generating Points Uniformly Distributed Over Bounded Regions," **Operations Research**, Vol. 32, pp. 1296–1308, 1984.
84. "Conditions for the Existence of Planning Horizons," with James C. Bean, **Mathematics of Operations Research**, Vol. 9, No. 3, pp. 391–401, August, 1984.
85. "The Asymptotic Extreme Value Distribution of the Sample Minimum of a Concave Function Under Linear Constraints," with Nitin R. Patel, **Operations Research**, Vol. 3, No. 4, pp. 789–794, 1983.
86. "Assessing Risks Through the Determination of Rare Event Probabilities," with Allan R. Sampson, **Operations Research**, Vol. 8, No. 5, pp. 839–866, 1982.

87. "Random Polytopes: Their Definition, Generation, and Aggregate Properties," with Jerrold H. May, **Mathematical Programming**, Vol. 24, pp. 39–54, September, 1982.
88. "The Definition and Generation of Geometrically Random Linear Constraint Sets," with Jerrold H. May, in Mulvey, J. M., Ed., **Evaluating Mathematical Programming Techniques**, Springer-Verlag, 1982.
89. "Planning Horizons for the Deterministic Capacity Problem," **Computers and Operations Research**, (Special Issue on Recent Developments in Inventory Theory), Vol. 8, No. 3, pp. 209–220, 1981.
90. "Optimal Expansion Policies for the Deterministic Capacity Problem," **The Engineering Economist**, Vol. 24, Spring, 1980.
91. "Turnpike Results for Single Location Capacity Expansion," **Management Science**, Vol. 25, May 1979.
92. "Deferral Strategies for a Dynamic Communications Network," **Networks**, Vol. 9, No. 1, 1979.
93. "Comment on 'Probabilities Based on Circumstantial Evidence'," with Robert P. Charrow, **Journal of the American Statistical Association** Vol. 72, June, 1977.
94. "General Horizon Results for the Deterministic Capacity Problem," **IEEE International Conference on Communications: Conference Record**, June 1976.
95. "A Conversation on Collins," with Robert P. Charrow, **Georgetown Law Journal**, Vol. 64, No. 3, February, 1976.
96. "Upper and Lower Bounds for Probability of Guilt Based on Circumstantial Evidence," with Robert P. Charrow, **Journal of the American Statistical Association**, Vol. 70, pp. 555–560, 1975.
97. "A Review of 'Systems Analysis and Design'," **Operations Research**, Vol. 22, July–August, 1974.
98. "An Elementary Proof of the Duality Theorem of Linear Programming," **Journal of Optimization Theory and Applications**, Vol. 12, pp. 129–135, 1973.
99. "Accommodating Student Demand for Courses by Varying the Classroom-size Mix," **Operations Research**, Vol. 19, pp. 862–874, 1971.