

## BRUCE L. GOLDEN

## Home Address

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## Business Address

Robert H. Smith School of Business  
University of Maryland  
College Park, Maryland 20742  
(301) 405-2232  
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www.rhsmith.umd.edu/faculty/bgolden

**Research Interests**

- \* Network Optimization
- \* Evolutionary Computation
- \* OR/OM in Healthcare
- \* Mathematical Programming
- \* Heuristic Search

- \* Data Mining & Neural Networks
- \* Public Sector Applications
- \* Logistics & Distribution
- \* Applied Operations Research

**Education**

Massachusetts Institute of Technology: Ph.D., Operations Research, 1976

Massachusetts Institute of Technology: S.M., Operations Research, 1974

University of Pennsylvania: B.A., Mathematics (Summa Cum Laude), 1972

**Academic Experience**

University of Maryland:	France-Merrick Chaired Professor, Robert H. Smith School of Business, Spring 1998 to Present
University of Maryland:	Affiliate Professor, Department of Civil Engineering, September 1993 to Present
University of Maryland:	Westinghouse Professor, College of Business and Management, August 1983 to August 1992
University of Maryland:	Full Professor, College of Business and Management, August 1982 to Present
University of Maryland:	Chairman, Faculty of Management Science and Statistics, College of Business and Management, August 1980 to January 1996
University of Maryland:	Tenured Associate Professor, College of Business and Management, August 1979 to August 1982
University of Maryland:	Assistant Professor, College of Business and Management, August 1976 to August 1979
The Johns Hopkins University:	Instructor, Division of Administration and Business, Summer Session, 1980-1983

**Academic Experience - Continued**

Boston University:	Instructor, Mathematics Department, 1974-1975
University of Massachusetts at Boston:	Visiting Lecturer, Economics Department, 1974-1975
Massachusetts Institute of Technology:	Teaching Assistant, Sloan School of Management, 1973

**Consultation Experience (Selected Companies)**

Rohm and Haas Pharmaceutical Company

Blue Bell Inc.

Amerigas Corporation

Mid-Atlantic Toyota

Roadnet Systems Corporation

National Soft Drink Association

Airco Industrial Gases

Alleghany Beverage Corporation

United Parcel Service

Military Airlift Command

METS, Inc.

Mission Research Corporation

American Red Cross

DuPont

U.S. Army

MapAnything

**Board of Directors**

DISTINCT Management Consultants, Inc.

Micro Data Services, Inc.

Bowne Distinct, Ltd.

**Professional Affiliations (Past and Present)**

Operations Research Society of America (ORSA)

The Institute of Management Sciences (TIMS)

Mathematical Association of America (MAA)

Mathematical Programming Society

Large Scale Networks Committee of the IEEE Circuits and Systems Society; Chairman,  
Subcommittee on Operations Research and Network Flows

The American Statistical Association (ASA)

Washington Operations Research/Management Science Council (WORMSC)

American Institute of Industrial Engineers (AIIE)

Transportation Science Section of ORSA

Computer Science Section of ORSA

INFORMS Computing Society

Society for Industrial and Applied Mathematics (SIAM)

International Neural Network Society (INNS)

Institute for Operations Research and the Management Sciences (INFORMS)

American Association for Artificial Intelligence (AAAI)

**Editorial Board Service**

Editor-in-Chief, Networks (began July 1, 1999)

Editor-in-Chief, INFORMS Journal on Computing (1996-1999)

Editor-in-Chief, ORSA Journal on Computing (1992-1995)

Department Editor (Public Sector Applications), Management Science (1991-2003)

Editor (Management Sciences), American Journal of Mathematical and Management Sciences (1987-2007)

Senior Editor (Healthcare Operations Management), Production and Operations Management

### **Editorial Board Service - Continued**

Advisory Editor, Journal of Heuristics

Advisory Editor, International Journal of Smart Engineering System Design (1997-2004)

Advisory Editor, INFORMS Journal on Computing

Associate Editor, Networks (1979-1999)

Associate Editor, Computers & Operations Research

Editor Emeritus, American Journal of Mathematical and Management Sciences

Editorial Advisory Board, Operations Research/Computer Science Interface (Book Series), Kluwer Academic Publishers

Associate Editor, INFOR (1988-1992)

Area Editor (Distribution, Networks, and Facility Planning), Operations Research (1982-1988)

Associate Editor, Decision Sciences (1984-1990)

Associate Editor, Management Science (1987-1991)

Associate Book Review Editor, Journal of the American Statistical Association (1981-1983)

Book Review Editor, American Journal of Mathematical and Management Sciences (1981-1986)

### **Service at Scholarly Meetings**

Session Chairman, Statistical Optimization, ORSA/TIMS National Meeting, Atlanta (1977)

Co-Chairman, Network Design and Reliability Workshop, ORSA/TIMS National Meeting, Atlanta (1977)

Session Chairman, Computer Science and Operations Research, ACM National Meeting, Washington, D.C. (1978)

Session Chairman, Statistical Optimization, ORSA/TIMS National Meeting, Los Angeles (1978)

Session Chairman, Distribution Management, ORSA/TIMS/AIIE Distribution Conference, Hilton Head Island (1978)

**Service at Scholarly Meetings – Continued**

ORSA Delegate to 1978 IFORS Conference in Toronto and Invited Participant

Co-Chairman, NSF-Sponsored Routing and Scheduling Workshop, University of Maryland at College Park (1979)

Session Chairman, Operations Management, N.E. AIDS Meeting, Philadelphia (1980)

Session Co-Chairman, Optimization in Statistics, ORSA/TIMS National Meeting, Washington, D.C. (1980)

Session Co-Chairman, Statistics in Optimization, ORSA/TIMS National Meeting, Washington, D.C. (1980)

Session Chairman, Probabilistic Issues in Deterministic Optimization, ORSA/TIMS National Meeting, Colorado Springs (1980)

Session Chairman, Operations Research and Network Flows, IEEE International Conference on Circuits and Computers for Large Scale Systems, Port Chester, New York (1980)

Track Chairman, Decision Analysis, N.E. AIDS Meeting, Philadelphia (1980)

Session Chairman, Statistics and Optimization -- The Interface, ORSA/TIMS National Meeting, Toronto (1981)

Session Chairman, Statistics and Optimization B- The Interface, ORSA/TIMS National Meeting, Houston (1981)

Session Chairman, Mathematical Programming II, AIDS National Meeting, Boston (1981)

Track Chairman, Quantitative Methods, N.E. AIDS Meeting, Washington, D.C. (1982)

Session Chairman, Quantitative Methods II, N.E. AIDS Meeting, Washington, D.C. (1982)

Session Chairman, Vehicle Fleet Planning, ORSA/TIMS National Meeting, San Diego (1982)

Session Chairman, Math Programming Based Vehicle Routing and Scheduling Algorithms, ORSA/TIMS National Meeting, Chicago (1983)

Session Chairman, Statistical Optimization, ORSA/TIMS National Meeting, Orlando (1983)

Session Chairman, Solving Real-World Vehicle Routing and Scheduling Problems, ORSA/TIMS National Meeting, San Francisco (1984)

Session Chairman, Mathematical Programming & Networks, SE TIMS Conference, Myrtle Beach (1984)

### **Service at Scholarly Meetings - Continued**

Mathematical Programming Society Representative at 1984 IFORS Conference in Washington, D.C. and Invited Participant

Cluster Chairman, Vehicle Routing, ORSA/TIMS National Meeting, Dallas (1984)

Session Chairman, Statistics and Optimization, TIMS XXVI International Meeting, Copenhagen (1984)

Session Chairman, Network Scheduling, ORSA/TIMS National Meeting, Boston (1985)

Session Chairman, Optimization on Networks, ORSA/TIMS National Meeting, Atlanta (1985)

Session Chairman, Vehicle Routing and Scheduling 2, Seventh European Congress on Operations Research, Bologna, Italy (1985)

Session Chairman, Location Problems 3, Seventh European Congress on Operations Research, Bologna, Italy (1985)

Session Chairman, Logistics, Distribution & Inventory I, SE TIMS Conference, Myrtle Beach (1985)

Session Chairman, Vehicle Routing, Mathematical Programming Symposium, Boston (1985)

Session Chairman, Routing Problems, ORSA/TIMS National Meeting, Los Angeles (1986)

Session Chairman, Vehicle Routing: Research and Practice, ORSA/TIMS National Meeting, Miami Beach (1986)

Session Chairman, OR in Fisheries Management, Eighth European Congress on Operations Research, Lisbon, Portugal (1986)

Session Chairman, Routing, ORSA/TIMS National Meeting, New Orleans (1987)

Session Chairman, Microcomputer-Based Decision Modeling, ORSA/TIMS National Meeting, New Orleans (1987)

Session Chairman, Vehicle Routing, ORSA/TIMS National Meeting, Washington, D.C. (1988)

Session Chairman, Urban OR, ORSA/TIMS National Meeting, Denver (1988).

Session Chairman, Lanchester Prize Technical Presentation, ORSA/TIMS National Meeting, Denver (1988)

Session Chairman, Applications of the Analytic Hierarchy Process, ORSA/TIMS National Meeting, Denver (1988)

**Service at Scholarly Meetings - Continued**

Session Chairman, Vehicle Routing over Land, Sea, and Air, ORSA/TIMS National Meeting, Vancouver (1989)

Session Chairman, Network Applications, ORSA/TIMS National Meeting, Las Vegas (1990)

Session Chairman, Network Applications, ORSA/TIMS National Meeting, Philadelphia (1990)

Session Chairman, Network Applications, ORSA/TIMS National Meeting, Nashville (1991)

Session Chairman, New Approaches to Hard Combinatorial Optimization Problems, ORSA/TIMS National Meeting, Anaheim (1991)

Session Chairman, Vehicle Routing Strategies, ORSA/CSTS Conference, Williamsburg (1992)

Session Chairman, Network Applications, ORSA/TIMS National Meeting, Orlando (1992)

Session Chairman, Neural Networks and OR, ORSA/TIMS National Meeting, San Francisco (1992)

Session Chairman, Neural Networks, ORSA/TIMS National Meeting, Chicago (1993)

Session Chairman, Neural Networks, ORSA/TIMS National Meeting, Phoenix (1993)

Session Chairman, Neural Networks, ORSA CSTS Conference, Williamsburg (1994)

Session Chairman, Neuro-Manufacturing II, ANNIE '94 Conference, St. Louis (1994)

Session Chairman, Neuro-Manufacturing V, ANNIE '94 Conference, St. Louis (1994)

Session Chairman, Applications of Neural Networks to Weather Prediction, INFORMS National Meeting, Los Angeles (1995)

Session Chairman, Vehicle Routing, Metaheuristics International Conference, Breckenridge, Colorado (1995)

Session Chairman, Neural Networks 2, INFORMS/CSTS Conference on Computer Science and Operations Research, Dallas (1996)

Session Chairman, Neural Networks 4, INFORMS/CSTS Conference on Computer Science and Operations Research, Dallas (1996)

Session Chairman, Metaheuristics, INFORMS National Meeting, Washington, D.C. (1996)

Session Chairman, Neural Networks & Optimization: Connections, INFORMS National Meeting, Atlanta (1996)

Session Chairman, Neural Networks I, INFORMS National Meeting, San Diego (1997)

### **Service at Scholarly Meetings - Continued**

Session Chairman, Neural Networks, Joint EURO-INFORMS Meeting, Barcelona (1997)

Session Chairman, Panel Discussion: The Future of Vehicle Routing Research, INFORMS National Meeting, Dallas (1997)

Session Chairman, Learning Algorithms V, ANNIE '97 Conference, St. Louis (1997)

Session Chairman, Software for Linear & Integer Programming, INFORMS National Meeting, Montréal (1998)

Session Chairman, Neural Networks, INFORMS National Meeting, Montréal (1998)

Session Chairman, Evolutionary Programming I, ANNIE '98 Conference, St. Louis (1998)

Session Chairman, Statistics & OR: The Interface, INFORMS National Meeting, Seattle (1998)

Session Chairman, Panel Discussion: Metaheuristics - Some New Directions, INFORMS National Meeting, Cincinnati (1999)

Session Chairman, Evolutionary Programming I, ANNIE '99 Conference, St. Louis (1999)

Session Chairman, Diverse Applications of Metaheuristics, INFORMS National Meeting, Salt Lake City (2000)

Session Chairman, Data Mining I, ANNIE '00 Conference, St. Louis (2000)

Session Chairman, Data Mining, INFORMS National Meeting, Miami Beach (2001)

Session Chairman, Data Mining II, ANNIE '02 Conference, St. Louis (2002)

Session Chairman, Heuristics & Algorithms 1, INFORMS Computing Society Conference, Phoenix (2003)

Session Chairman, New Perspectives on Routing and Scheduling, INFORMS National Meeting, Atlanta (2003)

Session Chairman, Morning Session (6/26/05), Route 2005: International Workshop on Vehicle Routing and Intermodal Transportation, Bertinoro, Italy (2005)

Session Chairman, Vehicle Routing Problems 4, The 6<sup>th</sup> Metaheuristics International Conference, Vienna, Austria (2005)

Session Chairman, Genetic Algorithms, INFORMS National Meeting, San Francisco (2005)

Session Chairman, Vehicle Routing, INFORMS National Meeting, San Francisco (2005)



### **Service at Scholarly Meetings - Continued**

Session Chairman, Supply Chain Management, Odysseus Conference, Altea, Spain (2006)

Session Chairman, Opening Session, Network Optimization Workshop, Saint-Rémy de Provence, France (2006)

Session Chairman, Panel Discussion: OR Entrepreneurship #1, INFORMS National Meeting, Pittsburgh (2006)

Session Chairman, The Traveling Salesman Problem, INFORMS Computing Society Conference, Coral Gables (2007)

Session Chairman, New Directions in Vehicle Routing, INFORMS National Meeting, Seattle (2007)

Session Chairman, Network Design III, INFORMS Telecommunications Conference, College Park, MD (2008)

Session Chairman, Tutorial: Some Future Directions in Vehicle Routing Research, INFORMS National Meeting, Washington D.C. (2008)

Session Chairman, Vehicle Routing Variants, INFORMS Computing Society Conference, Charleston (2009)

Session Chairman, Protecting Computer Terminals from Hackers, INFORMS Computing Society Conference, Charleston (2009)

Session Chairman, TSP and VRP, Metaheuristics International Conference, Hamburg (2009)

Session Chairman, Recent Developments in Vehicle Routing, INFORMS National Meeting, San Diego (2009)

Session Chairman, Multi-Period Routing, TRISTAN VII, Tromso, Norway (2010)

Session Chairman, Vehicle Routing I, Network Optimization Workshop, Ajaccio, France (2010)

Co-Chairman, Healthcare Operations Management Workshop, MSOM Annual Conference, Haifa, Israel (2010)

Session Chairman, Applications of Operations Research Models and Methods in Health Care, INFORMS National Meeting, Austin (2010)

Session Chairman, Routing and Scheduling 2, INFORMS Computing Society Conference, Monterey (2011)

Cluster Chairman, MSOM, INFORMS Healthcare Conference, Montreal, Canada (2011)

Session Chairman, Healthcare Operations Management I, INFORMS Healthcare Conference, Montreal, Canada (2011)

**Service at Scholarly Meetings - Continued**

Session Chairman, Healthcare Operations Management II, INFORMS Healthcare Conference, Montreal, Canada (2011)

Session Chairman, Vehicle Routing, INFORMS National Meeting, Charlotte (2011)

Session Chairman, Arc Routing II, ODYSSEUS 2012 Conference, Mykonos (2012)

Session Chairman, Healthcare Analytics, POMS Conference, Chicago (2012)

Session Chairman, Healthcare Analytics, INFORMS National Meeting, Phoenix (2012)

Session Chairman, Session F3, 1<sup>st</sup> Workshop on Arc Routing Problems, Copenhagen (2013)

Session Chairman, Improving Vehicle and Worker Routing, POMS Conference, Denver (2013)

Session Chairman, Prescriptive Healthcare Analytics, INFORMS Healthcare Conference, Chicago (2013)

Session Chairman, Traveling Salesman Problem and Branch-and-Bound, OR2013, Rotterdam (2013)

Session Chairman, In Honor of Saul Gass I, INFORMS National Meeting, Minneapolis (2013)

Session Chairman, Cancer and Chronic Disease Treatment Plans, POMS Conference, Atlanta (2014)

Session Chairman, Vehicle Routing and Scheduling Problems, POMS Conference, Atlanta (2014)

Session Chairman, Applications of Emerging Information Technologies, POMS Conference, Atlanta (2014)

Session Chairman, Session B2, Route 2014 Conference, Snekkersten, Denmark (2014)

Session Chairman, Arc Routing, Verolog Conference, Vienna (2015)

Session Chairman, Rich VRPs, Verolog Conference, Nantes (2016)

Session Chairman, Healthcare Analytics: Collaborations with Practitioners, INFORMS National Meeting, Nashville (2016)

Session Chairman, Statistical Data Analytics for Routing and Location, INFORMS TSL Conference, Chicago (2017)

Session Chairman, Brainstorming: How Appealing is an Optimum? Verolog Conference, Seville (2019)

Session Chairman, Keynote by Michal Tzur, TSL Workshop, Vienna (2019)

## **Service to Professional Organizations**

On Board of Directors, Northeast AIDS (1978-1981)

Member, Long Range Planning Committee of ORSA (1980-1983)

Member, Transportation Science Dissertation Prize Committee of ORSA (1980-1982)

Chairman, Transportation Science Dissertation Prize Committee of ORSA (1982)

Council Member, Transportation Science Section of ORSA (1982-1985)

Council Member, Computer Science Section of ORSA (1982-1985)

TIMS Representative, Conference Board of the Mathematical Sciences (1984-1985)

Member, Program Committee, NATO Advanced Study Institute on OR in Fishing (1987-1989)

Tutorials Chairman, Washington, D.C. ORSA/TIMS Conference (1987-1988)

Chairman, 1987 Lanchester Prize Committee (1987-1988)

Technical Co-Chairman, ORSA Conference on Impact of Recent Computer Advances on Operations Research (1987-1989)

Member, IFIP Working Group on Discrete Mathematics (1988-1989)

Member, Program Committee, 2nd International Symposium on the Analytic Hierarchy Process (1990-1991)

Member, Program Committee, ORSA/CSTS Conference on New Developments in their Interfaces (1990-1992)

Member, 1991 Committee for the ORSA Prize for Ongoing Exemplary Use of Operations Research (1990-1991)

Member, ORSA/CSTS Long Range Planning Committee (1990-1991)

Member, Program Coordinating Committee, 15th International Symposium on Mathematical Programming (1992-1994)

Member, Program Committee, ORSA/CSTS Conference on Computer Science and Operations Research (1992-1994)

Member, Organizing Committee, ANNIE '94 Conference (1993-1994)

Member, Organizing Committee, ANNIE '95 Conference (1994-1995)

Member, International Advisory Committee, Metaheuristics International Conference (1994-1995)

Member, Program Committee, INFORMS/CSTS Conference on Computer Science and Operations Research (1995-1996)

**Service to Professional Organizations – Continued**

Member, Organizing Committee, ANNIE '96 Conference (1995-1996)

Member, International Program Committee, 4th International Symposium on the Analytic Hierarchy Process (1996)

Member, Program Committee, International Conference on Information Systems in Logistics and Transportation (1996-1997)

Member, Organizing Committee, ANNIE '97 Conference (1996-1997)

Member, International Advisory Committee, Metaheuristics International Conference (1996-1997)

Member, Program Committee, INFORMS/CSTS Conference on Computer Science and Operations Research (1997-1998)

Member, Organizing Committee, ANNIE '98 Conference (1997-1998)

Member, Advisory Committee, INFORMS/ICS Conference on Computer Science and Operations Research (1999-2000)

Member, Program Committee, Metaheuristics International Conference '99 (1998-1999)

Member, Organizing Committee, ANNIE '99 Conference (1998-1999)

Council Member, INFORMS Computing Society (1998-2001)

Judge, Third OR/MS Knowledge Bowl, INFORMS National Meeting, Cincinnati (1999)

Member, Organizing Committee, ANNIE 2000 Conference (1999-2000)

Member, Best Theory Paper Committee for ANNIE '99 Conference (1999)

Member, Search Committee for Editor of Interactive Transactions of OR/MS (1999-2000)

Member, Organizing Committee, ANNIE 2001 Conference (2000-2001)

Member, Organizing Committee, ANNIE 2002 Conference (2001-2002)

Member, Search Committee for Editor of Transportation Science (2001-2002)

Member, Best Application Paper Committee for ANNIE '02 Conference (2002)

Member, Organizing Committee, ANNIE 2003 Conference (2002-2003)

Member, Organizing Committee, ANNIE 2004 Conference (2003-2004)

Co-Chair, INFORMS Computing Society Conference held in Annapolis, Maryland in January 2005

Member, Selection Committee, INFORMS Prize for the Teaching of OR/MS Practice, 2004

**Service to Professional Organizations – Continued**

Chair, Selection Committee, INFORMS Prize for the Teaching of OR/MS Practice, 2005

Member, Organizing Committee, ANNIE 2005 Conference (2004-2005)

Member, INFORMS Fellows Selection Committee, 2005

Member, Organizing Committee, ANNIE 2006 Conference (2005-2006)

Member, Advisory Board, INFORMS Computing Society Conference to be held in Coral Gables, Florida, 2007

Chair, OR Entrepreneurship Cluster, INFORMS National Meeting in Pittsburgh, 2006

Member, Editor Search Committee for the INFORMS Journal on Computing, 2005, 2006, 2007

Member, INFORMS Fellows Selection Committee, 2006

Member, Program Committee, Metaheuristics International Conference in Montreal (2006-2007)

Member, INFORMS Fellows Selection Committee, 2007

Member, Organizing Committee, ANNIE 2007 Conference (2006-2007)

Co-Chair, INFORMS Telecommunications Conference held in College Park, Maryland in March 2008

Member, International Program Committee, Metaheuristics International Conference in Hamburg, Germany (2008-2009)

Member, Program Committee, INFORMS Computing Society Conference to be held in Charleston, SC, 2009

Member, Organizing Committee, ANNIE 2008 Conference

Member, Program Committee, Stochastic Local Search (SLS) Workshop, Brussels, Belgium, September 2009

Member, Advisory Board of "MetaNet" -- a consortium of four European Universities dedicated to training Ph.D. students in metaheuristics and optimization, 2009

Member, Organizing Committee, ANNIE 2009 Conference

Member, Program Committee, INFORMS Computing Society Conference, Monterey, CA, 2011

Member, Organizing Committee, ANNIE 2010 Conference

Member, Board of Directors, INFORMS Computing Society, 2010-2012

### Service to Professional Organizations – Continued

Co-Chair, MSOM International Workshop on Healthcare Operations Management, Haifa, Israel, June 2010

Member, International Program Committee, Metaheuristics International Conference in Udine, Italy (2010-2011)

Member, Program Committee, Stochastic Local Search (SLS) Workshop, Brussels, Belgium, September 2011

Cluster Chairman, MSOM, INFORMS Healthcare Conference, Montreal, Canada, June 2011

Member, Advisory Committee, 2012 INFORMS Optimization Society Conference

Member, Scientific Committee, ODYSSEUS 2012 Conference, Mykonos, Greece

Member, Steering Committee, Health GIS 2012 Conference, Redondo Beach, November 2012

Member, Organizing Committee, 1<sup>st</sup> International Workshop on Arc Routing, Copenhagen, May 2013

Chair, Selection Committee, 2013 Harvey J. Greenberg Service Award, INFORMS Computing Society

Program Committee, Metaheuristics International Conference, Singapore, August 2013

Member, Interfaces Editorial Review Committee, Summer 2013

Scientific Committee, 3<sup>rd</sup> INFORMS Transportation Science and Logistics Society Workshop, Chicago, June/July 2014

Member, International Advisory Committee, VEROLOG 2014, Oslo, June 2014

Judge, 2014 POMS Healthcare Operations Management Paper Competition, POMS Conference, Atlanta, May 2014

Scientific Committee, ODYSSEUS 2015 Conference, Ajaccio, France, June 2015

International Advisory Committee, VEROLOG 2015, Vienna, June 2015

Program Committee, Metaheuristics International Conference, Agadir, Morocco, June 2015

Scientific Committee, 2015 INFORMS TSL Workshop: Recent Advances in Urban Transportation through Optimization and Analytics, Berlin, Germany, July 2015

Organizing Committee, 2<sup>nd</sup> Workshop on Arc Routing Problems, Lisbon, Portugal, May 2016

International Program Committee, 4<sup>th</sup> International Symposium on Combinatorial Optimization, Vietri sul Mare, Italy, May 2016

Scientific Committee, 2017 INFORMS TSL Conference, Chicago, July 2017

### Service to Professional Organizations – Continued

Program Committee, ECCOMAS 2017 Conference, Brussels, May 2017

Program Committee, International Conference on Optimization and Decision Science, Sorrento, September 2017

Scientific Committee, ODYSSEUS 2018 Conference, Sardinia, Italy

Scientific Committee, INFORMS TSL Workshop (2019), Vienna, Austria

Organizing Committee, 3<sup>rd</sup> Workshop on Arc Routing Problems, Pizzo (Calabria), Italy, May 2019

Member, International Program Committee, Metaheuristics International Conference in Cartagena, Colombia (2018 -2019)

Scientific Committee, INFORMS TSL Workshop (2020), Washington, D.C.

Selection Committee, INFORMS JOC Test of Time Paper Award, 2019

### Other Professional Activities

External Reviewer, Ph.D. Dissertation, Hoon-Liong Ong, University of Waterloo (1981)

Sponsor, Ph.D. Student, Filip Gheysens, University of Ghent (1982)

Reviewer, ORSA Publications in Operations Research Series (PORS)

Reviewer, Kent Publishing Company and Duxbury Press

Reviewer, National Science Foundation Research Proposals

Referee, Wide variety of journals

Seminars given at Johns Hopkins, the University of Miami, the Ecole Polytechnique (Montreal), the National Bureau of Standards, M.I.T., the Exxon Applied Math Round Table, the University of Pennsylvania, the University of Virginia, the University of Pittsburgh, Carnegie-Mellon University, the Ohio State University, the University of Colorado, the Pennsylvania State University, AT&T Laboratories, The Imperial College of London, Coventry University, the University of Iowa, and elsewhere

### Honors and Awards

- \* Phi Beta Kappa, 1972
- \* Erdos number = 2, since 1975
- \* University of Maryland General Research Board Award, 1977
- \* Transportation Science Section of ORSA 1976 Dissertation Competition, Honorable Mention, 1977
- \* University of Maryland Alumni Association International -- College of Business and Management Alumni Chapter Outstanding Faculty Award, 1981

### Honors and Awards – Continued

- \* 1981 National Meeting of the American Institute for Decision Sciences Best Theoretical/Empirical Research Paper Award for the paper "A Curve-Fitting Experiment in Estimating Optimal Solution Values to Traveling Salesman Problems" (more than 625 papers were submitted)
- \* Provost Award for Curriculum Development Work Involving the Micro-computer, 1984
- \* University of Maryland General Research Board Semester Research Award, 1985
- \* Innovative Teaching Grant from the Division of Behavioral and Social Sciences, 1985
- \* University of Maryland General Research Board Award, 1991
- \* The 1994 Thomas L. Saaty Prize for Applied Advances in the Mathematical and Management Sciences (this prize was established in 1981 and has been awarded each year since to contributions of exceptional merit appearing in the American Journal of Mathematical and Management Sciences)
- \* Plenary Lecture, Optimization Days, Montreal, May 1995
- \* Outstanding Service Award from the College of Business and Management, 1995
- \* Plenary Lecture, Symposium on Combinatorial Optimization, London, March 1996
- \* Selected as one of five University of Maryland Distinguished Faculty Research Fellows, Inaugural Class, 1996-1998
- \* Selected as a Lilly-Center for Teaching Excellence Teaching Fellow, 1998-1999
- \* Named the France-Merrick Chaired Professor of Management Science, Spring 1998
- \* Invited Tutorial, INFORMS International Conference, Tel Aviv, June 1998
- \* Invited by the Royal Swedish Academy of Sciences to nominate candidates for the 1999 Nobel Prize in Economics, 1998-1999
- \* Invited to present IMC Corporate Knowledge Seminar, R.H. Smith School of Business, College Park, April 1999
- \* Invited to represent the University of Maryland (along with seven others) at the American Association for Higher Education 1999 Summer Academy at Snowmass Village, Colorado, July 1999
- \* Invited by the Royal Swedish Academy of Sciences to nominate candidates for the 2000 Nobel Prize in Economics, 1999-2000
- \* Received an INFORMS Service Award for eight years of valued editorial service
- \* Selected as one of six University of Maryland Distinguished Scholar-Teacher Award Recipients, 2000-2001



## Honors and Awards – Continued

- \* Invited by the Royal Swedish Academy of Sciences to nominate candidates for the 2001 Nobel Prize in Economics, 2000-2001
- \* Invited Tutorial, CORS Conference, Toronto, June 2002
- \* Invited to be the first Mid-American Energy Speaker in Transportation at the University of Iowa, March 2003
- \* Received the 2003 INFORMS Prize for the Teaching of OR/MS Practice
- \* Plenary Lecture, INFORMS/M.I.T. Conference, Boston, April 2004
- \* Invited Tutorial, INFORMS/CORS Conference, Banff, May 2004
- \* Selected as an INFORMS Fellow, September 2004
- \* Invited Tutorial, INFORMS National Meeting, Denver, October 2004
- \* Elected to the INFORMS Fellows Selection Committee, December 2004
- \* Invited to be the ConocoPhillips Distinguished Speaker at Oklahoma State University, October 2005
- \* Invited as Distinguished Speaker to present two lectures at the 31<sup>st</sup> Lunteren Conference on the Mathematics of Operations Research, Lunteren, The Netherlands, January 2006
- \* Received the 2005 INFORMS Computing Society Prize
- \* Received the INFORMS Computing Society Certificate of Appreciation for organizing the 2005 ICS Annapolis Conference, 2005
- \* Received the 2005 Thomas L. Saaty Prize for the best applied paper published in the American Journal of Mathematical and Management Sciences
- \* Invited to be a Plenary Speaker at the Metaheuristics International Conference, held in Montreal in June 2007
- \* Invited to be a Distinguished Speaker at BAE Systems Advanced Information Technologies (in Boston) in March 2006
- \* Invited to present a lecture in the University of Maryland Civil Engineering Department Distinguished Speaker Series, April 2006
- \* Invited to be a Plenary Speaker at EUROGEN 2007, held in Jyväskylä, Finland in June 2007
- \* Invited to be a Plenary Speaker at the School on Graph Theory, Algorithms, and Applications, held in Erice, Sicily in September 2008
- \* Invited Tutorial, INFORMS National Meeting, Washington, D.C., October 2008

## Honors and Awards – Continued

- \* The article "Measuring the Research Contribution of Management Academics using the Hirsch-index" by J. Mingers appeared in the Journal of the Operational Research Society in 2008. In it, the author argues that the h-index is a good measure of publication quality and quantity. He goes on to compare 30 INFORMS Fellows with respect to h-index and other measures. There are many familiar names on the list, but, Bruce Golden is ranked first.
- \* Invited to present a Plenary Lecture at the Vehicle Routing Workshop in Molde, Norway in September 2009
- \* Invited to present a Plenary Lecture at the Workshop on Transportation and Logistics in Santiago, Chile in December 2009
- \* Invited to present a Keynote Lecture at a special conference on Methods and Applications of Metaheuristics in Guangzhou, China in December 2009
- \* Philip Merrill Presidential Scholars Program: Selected as one of 25 Outstanding Undergraduate Mentors on campus, October 2009
- \* Invited to present a Plenary Lecture in celebration of the 10<sup>th</sup> anniversary of the Department of Management Science and Technology at the Athens University of Economics and Business in Athens, Greece in November 2010
- \* Finalist for the 2010 Pierskalla Award for the best paper in healthcare management science
- \* Received the 2011 Harvey J. Greenberg Award for lifetime contributions to the INFORMS Computing Society
- \* Invited to be a Plenary Speaker at the School on Graph Theory, Algorithms, and Applications, held in Erice, Sicily in September 2011
- \* Invited to be a Plenary Speaker at the Annual Meeting of the Italian Association of Operations Research, held in Vietri sul Mare in September 2012
- \* Invited to present a paper at Wilfrid Laurier University as part of the Distinguished Speaker Series in the Centre of Supply Chain Management, April 2012
- \* Mentor to a team of five students in the QUEST Program: Twelve teams presented their work at the 2011 Senior Conference and our team received the award for Project of the Year, December 2011
- \* Finalist for the 2012 College of Healthcare Operations Management Best Paper Award
- \* M&SOM Best Paper Award Finalist for 2012
- \* Invited to be a Plenary Speaker at VEROLOG 2013, held in Southampton, U.K. in July 2013
- \* Invited to be a Plenary Speaker at the School on Graph Theory, Algorithms, and Applications, held in Erice, Sicily in September 2014

## Honors and Awards – Continued

- \* We presented a paper at the 2013 IIE Annual Conference in Puerto Rico. The paper considers a network model for the spread of an epidemic. We won the Modeling and Simulation Track Best Paper Award (out of 18 papers)
- \* In a 2014 book by Corberán and Laporte entitled Arc Routing: Problems, Methods, and Applications, a handful of recent legends of arc routing (the routing of vehicles over a street network) are mentioned and their photos are included. Larry Bodin and Bruce Golden (both from the Smith School) are two of them.
- \* Sean Barnes won Honorable Mention (2<sup>nd</sup> Place) for the 2013 Decision Sciences Institute Elwood Buffa Dissertation Award. There were 23 submissions and four finalists. Bruce Golden was Sean’s advisor.
- \* Invited to present the Keynote Lecture at the Serbian Operations Research Society Conference in Divcibare in September 2014.
- \* Invited to be the Distinguished Colloquium Speaker at the 2015 Summer Mathematics Institute for gifted pre-college students at Oakland University in Michigan. The program theme was Linear Programming.
- \* Invited to attend the First Amazon Supply Chain Optimization Summit in Seattle in October 2015. Amazon covered all expenses.
- \* Selected as the second VeRoLog Fellow in July 2017. The VeRoLog Fellow title is awarded by the board of the European Working Group on Vehicle Routing and Logistics Optimization to an individual who throughout his or her professional career has made fundamental and sustained contributions to vehicle routing and logistics optimization, and has influenced the field through his or her writings, teaching, service, and nurturing of younger professionals.
- \* Nominated and selected as the recipient of the 2018 George E. Kimball Medal. This Medal is awarded for recognition of distinguished service to INFORMS and to the profession of operations research and the management sciences.
- \* Invited to be a Plenary Speaker at the International Conference on Optimization and Decision Science, held in Genova, Italy in September 2019.
- \* The journal Optimization Letters is a general optimization journal which publishes articles that are short (typically less than 15 journal pages). Each year, they select the best papers published in the journal. For 2017, the paper by Wang, Poikonen, and Golden was selected as the 3<sup>rd</sup> best paper (out of 129 published papers).
- \* Nominated and selected as the recipient of the 2019 Robert Herman Lifetime Achievement Award in Transportation Science. This award is given to an individual who throughout his or her professional career has made fundamental and sustained contributions to transportation science through his or her writings, teaching service, and nurturing of younger professionals.

## Theses

1. "A Minimum-Cost Multicommodity Network Flow Problem Concerning Imports and Exports," M.I.T. Masters Thesis, February 1974.
2. "Large-Scale Vehicle Routing and Related Combinatorial Problems," M.I.T. Ph.D. Thesis, June 1976.

## Publications (See Appendices)

### Presentations at Scholarly Meetings (A Partial Listing)

1. "A Minimum-Cost Multicommodity Network Flow Problem Concerning Imports and Exports," presented at ORSA/TIMS Joint National Meeting, San Juan, Puerto Rico, Fall 1974.
2. "Vehicle Routing Problems: Formulations and Heuristic Solution Techniques," presented at ORSA/TIMS Joint National Meeting, Chicago, Spring 1975.
3. "Approaches to the Cutting Stock Problem," presented at ORSA/TIMS Joint National Meeting, Las Vegas, Fall 1975.
4. "Implementing Vehicle Routing Algorithms" (with T.L. Magnanti and H.Q. Nguyen), presented at ORSA/TIMS Joint National Meeting, Las Vegas, Fall 1975.
5. "Shortest Path Algorithms: A Comparison," presented at ORSA/TIMS Joint National Meeting, Philadelphia, Spring 1976.
6. "Large-Scale Vehicle Routing and Related Combinatorial Problems" (with T.L. Magnanti), presented at ORSA/TIMS Joint National Meeting, Miami, Fall 1976.
7. "Traveling Salesman Algorithms," presented at ORSA/TIMS Joint National Meeting, San Francisco, Spring 1977.
8. "Statistical Evaluation of Heuristic Algorithms," presented at ORSA/TIMS Joint National Meeting, Atlanta, Fall 1977.
9. "Algorithms for Vehicle Routing When Demands are Probabilistic" (with W. Stewart), presented at ORSA/TIMS Joint National Meeting, Atlanta, Fall 1977.
10. "Shortest Paths Via Heuristic Search" (with M. Ball), presented at ORSA/TIMS Joint National Meeting, Atlanta, Fall 1977.
11. "Approximating  $e$  Via Cayley's Formula," presented at the Mathematical Association of America (Maryland-DC-Virginia Section), Spring Meeting, University of Maryland at College Park, April 1977.
12. "A Model for the Blocking of Trains" (with L. Bodin, A. Schuster, and W. Romig), presented at the International Symposium on Travel Supply Models, Montreal, Canada, November 1977.
13. "Estimation and Approximation of the Length of the Optimal Traveling Salesman Tour" (with L. Bodin), presented at ORSA/TIMS Joint National Meeting, New York, Spring 1978.

**Presentations at Scholarly Meetings (A Partial Listing) – Continued**

14. "A Network Application in Finance" (with M. Liberatore and C. Lieberman), presented at ORSA/TIMS Joint National Meeting, New York, Spring 1978.
15. "A Decomposition Algorithm for Stochastic Vehicle Routing" (with W. Stewart), presented at ORSA/TIMS Joint National Meeting, Los Angeles, Fall 1978.
16. "On How a Team Can Beat Two Possibly Better Teams" (with J.R. Yee), presented at ORSA/TIMS Joint National Meeting, Los Angeles, Fall 1978.
17. "Vehicle Routing and Scheduling: Theory and Practice" (with L. Bodin), presented at the American Association for the Advancement of Science Annual Meeting, Washington, D.C., February 1978.
18. "Solving Large Traveling Salesman Problems Approximately by Exploiting Sparsity" (with L. Bodin), presented at the ORSA/TIMS/AIIE Distribution Conference, Hilton Head Island, February 1978.
19. "Integer and Heuristic Programming," presented at the IFORS (International Federation of Operations Research Societies) Conference, Toronto, Canada, June 1978.
20. "The Traveling Salesman Problem and Some Variants" presented at the Mathematical Association of America (Maryland-DC-Virginia Section) Fall Meeting, United States Naval Academy, November 1978.
21. "A Survey of Dynamic Routing Models" (with L. Bodin), presented at IEEE Workshop on Communication and Transportation Networks, New York City, May 1978.
22. "Capacitated Arc Routing Problems" (with R. Wong), presented at ORSA/TIMS Joint National Meeting, New Orleans, Spring 1979.
23. "A Statistical Analysis of Suicide Factors for the Washington, D.C. Population" (with S. Gottlieb, F. Alt, and J. Kleinman), presented at ORSA/TIMS Joint National Meeting, New Orleans, Spring 1979.
24. "A Fleet Acquisition-Routing Problem" (with L. Bodin, M. Ball, and A. Assad) presented at the Annual CORS Conference, Montebello, Quebec, May 1979.
25. "Some Unsolved Variants of the Traveling Salesman Problem" (with A. Assad), presented at the Mathematical Association of America (Maryland-DC-Virginia Section) Spring Meeting, George Mason University, April 1979.
26. "A Report on Future Directions in Routing and Scheduling of Vehicles and Crews" (with M. Ball, L. Bodin, and S. Gass), presented at the Tenth International Symposium on Mathematical Programming, Montreal, Canada, August 1979.
27. "A General Approach to Stochastic Vehicle Routing" (with W. Stewart), presented at ORSA/TIMS Joint National Meeting, Milwaukee, October 1979.
28. "The Railroad Blocking Problem" (with L. Bodin and L. Berman), presented at TIMS XXIV International Meeting, Hawaii, June 1979.

**Presentations at Scholarly Meetings (A Partial Listing) – Continued**

29. "Vehicle Routing and Scheduling" (with L. Bodin and C. Orloff), presented at International Workshop on Routing and Scheduling of Vehicles and Crews, University of Maryland at College Park, June 1979.
30. "Large Scale Network Optimization" (with M. Ball and L. Bodin), presented at Workshop on Large-Scale Systems--The Commonality and Diversity, Texas Tech University, Lubbock, Texas, April 1979.
31. "Current and Future Directions in Network Optimization" (with L. Bodin and M. Ball), presented at the NSF Workshop on Research Directions in Operational Science, Washington, D.C., July 1979.
32. "The Subscriber Bus Routing Problem" (with W. Stewart), presented at ORSA/TIMS Joint National Meeting, Washington, D.C., Spring 1980.
33. "Scheduling Players in Team Competitions: A Computational Study" (with A. Assad and J. Yee), presented at ORSA/TIMS Joint National Meeting, Washington, D.C., Spring 1980.
34. "A General Approach to Stochastic Vehicle Routing" (with W. Stewart), presented at the Mathematical Association of America (Maryland-DC-Virginia Section) Spring Meeting, University of Richmond, April 1980.
35. "Determining Optimal Fleet Size and Mix in Distribution-Routing Problems" (with A. Assad and L. Levy), presented at ORSA/TIMS Joint National Meeting, Colorado Springs, Fall 1980.
36. "Multi-Fleet Node Routing" (with T. Magnanti), presented at Joint US/USSR Seminar on Large-Scale Network, Distribution, and Production Problems of Industry and Enterprises, University of Maryland at College Park, October 1980.
37. "Stochastic Vehicle Routing: A Comprehensive Approach" (with W. Stewart), presented at ORSA/TIMS Joint National Meeting, Toronto, Spring 1981.
38. "Tutorial on Routing and Scheduling of Vehicles and Crews" (with L. Bodin, M. Ball, and A. Assad), presented at ORSA/TIMS Joint National Meeting, Toronto, Spring 1981.
39. "Some Network Analysis Techniques in Finance" (with K. Keating), presented at Symposium on Network Flows, Johns Hopkins University, August 1981.
40. "New Directions in Routing and Scheduling Problems" (with L. Bodin, M. Ball, and A. Assad), presented at WORMSC Symposium on Operations Research/Management Science in the 1980s, Washington, D.C., November 1981.
41. "Garage Location for an Urban Mass Transit System" (with M. Ball, A. Assad, L. Bodin, and F. Spielberg), presented at Symposium on Frontiers in Transportation Equilibrium and Supply Models, Montreal, Canada, November 1981.
42. "Using Statistics in the Analysis of TSP Heuristics" (with W. Stewart and A. Assad), presented at ORSA/TIMS Joint National Meeting, Detroit, Spring 1982.

**Presentations at Scholarly Meetings (A Partial Listing) – Continued**

43. "On the Analysis of Network Algorithms" (with E. Baker), presented at Thirteenth Southeastern Conference on Combinatorics, Graph Theory, and Computing, Boca Raton, Florida, February 1982.
44. "An Expected Utility Approach to the Ranking of Heuristics" (with A. Assad and E. Wasil), presented at ORSA/TIMS Joint National Meeting, San Diego, Fall 1982.
45. "Planning a Distribution System in the Presence of Routing and Inventory Subproblems" (A. Assad, M. Dror, and R. Dahl), presented at ORSA/TIMS Joint National Meeting, San Diego, Fall 1982.
46. "Comparing Approximate Algorithms for the Traveling Salesman Problem" (with W. Stewart), presented at the International Symposium on Mathematical Programming, Bonn, West Germany, August 1982.
47. "Location of Garages in Urban Mass Transit Planning" (with M. Ball, A. Assad, and L. Bodin), presented at the Fifth European Congress on Operations Research, Lausanne, Switzerland, July 1982.
48. "Educational Programs in Operations Research/Management Science," participant in panel session at ORSA/TIMS Joint National Meeting, Detroit, Spring 1982.
49. "Locating Facilities in Urban Mass Transit Planning" (with M. Ball, A. Assad, and L. Bodin), presented at ORSA/TIMS Joint National Meeting, San Diego, Fall 1982.
50. "Some New Algorithms for the Fleet Size and Mix Vehicle Routing Problem" (with F. Gheysens and A. Assad), presented at ORSA/TIMS Joint National Meeting, Chicago, Spring 1983.
51. "Mathematical Formulations and Solution Strategies for the Inventory Routing Problem" (with M. Dror, M. Ball, and L. Bodin), presented at ORSA/TIMS Joint National Meeting, Chicago, Spring 1983.
52. "Ranking Heuristics for Combinatorial Optimizations Problems" (with A. Assad and E. Wasil), presented at ORSA/TIMS Joint National Meeting, Chicago, Spring 1983.
53. "Scheduling and Routing in Large Scale Networks" (with A. Assad and M. Ball), presented at WORMSC Tutorial, Washington, D.C., March 1983.
54. "Vehicle Routing and Scheduling Research at the University of Maryland," presented at Cornell University Scheduling and Routing Workshop, Ithaca, New York, June 1983.
55. "Optimization by Simulated Annealing--A Preliminary Computational Study for the TSP" (with C. Skiscim), presented at the Summer School on Combinatorial Optimisation, Dublin, Ireland, July 1983.
56. "An Overview of Techniques for Solving the Fleet Size and Mix Vehicle Routing Problem" (with F. Gheysens and A. Assad), presented at ORBEL 2, Brussels, Belgium, December 1983.
57. "Vehicle Scheduling and Routing: State of the Art" (with L. Bodin, A. Assad, and M. Ball), presented at WORMSC Symposium, Washington, D.C., October 1983.

### **Presentations at Scholarly Meetings (A Partial Listing) – Continued**

58. "A Multiple Depot Location and Multiple Depot, Multiple Vehicle Routing Problem" (with D. McLain and L. Bodin), presented at ORSA/TIMS Joint National Meeting, Orlando, Fall 1983.
59. "Simulated Annealing for Combinatorial Optimization: An Evaluation of Alternative Density Functions" (with C. Skiscim), presented at ORSA/TIMS Joint National Meeting, Orlando, Fall 1983.
60. "Comparing Heuristic Procedures on the Basis of Accuracy" (with E. Wasil and A. Assad), presented at ORSA/TIMS Joint National Meeting, Orlando, Fall 1983.
61. "Analysis and Solution of a Large-Scale, Real-World Inventory Routing Problem," presented at Large-Scale Interconnected Systems Conference, Burr Oak Lodge, Athens, Ohio, October 1983.
62. "Workshop on Routing and Scheduling of Vehicles and Crews" (with A. Assad, L. Bodin, and M. Ball), 8-hour workshop presented at ORSA/TIMS Joint National Meeting, Orlando, Fall 1983.
63. "Implementing an Integrated Computerized System for Fuel Delivery" (with A. Assad, R. Dahl, and L. Levy), presented at ORSA/TIMS Joint National Meeting, San Francisco, Spring 1984.
64. "Optimization by Simulated Annealing--A Statistical Evaluation of Parameter Sensitivity" (with C. Skiscim), presented at TIMS XXVI International Meeting, Copenhagen, June 1984.
65. "Selected Applications of an Expected Utility Approach for Ranking Alternative Methods" (with E. Wasil and A. Assad), presented at TIMS XXVI International Meeting, Copenhagen, June 1984.
66. "Recent Advances in Methods for Routing Problems" (with L. Bodin), presented at IFORS '84 Meeting, Washington, D.C., August 1984.
67. "An Integrated Optimization-Based Distribution System for a Large Commercial Firm" (with A. Assad, R. Dahl, and L. Levy), presented at ORSA/TIMS Joint National Meeting, Dallas, Fall 1984.
68. "The Capacitated Chinese Postman Problem: Some New Results" (with W.L. Pearn and A. Assad), presented at ORSA/TIMS Joint National Meeting, Boston, Spring 1985.
69. "Vehicle Routing Software for Microcomputers: A Survey" (with L. Bodin), presented at ORSA/TIMS Joint National Meeting, Boston, Spring 1985.
70. "Heuristics and Lower Bounds for the Capacitated Chinese Postman Problem" (with A. Assad and W.L. Pearn), presented at Seventh European Congress on Operations Research, Bologna, Italy, Summer 1985.
71. "Routing with Vehicle Type/Site Dependency Constraints" (with B. Nag and A. Assad), presented at Seventh European Congress on Operations Research, Bologna, Italy, Summer 1985.
72. "The Orienteering Problem" (with L. Levy and R. Vohra), presented at Mathematical Programming Symposium, Boston, Summer 1985.



**Presentations at Scholarly Meetings (A Partial Listing) – Continued**

73. "Workshop on Vehicle Routing and Scheduling" (with A. Assad, L. Bodin, and M. Ball), 8-hour workshop presented at ORSA/TIMS Joint National Meeting, Atlanta, Fall 1985.
74. "The Orienteering Problem" (with L. Levy and R. Vohra), presented at ORSA/TIMS Joint National Meeting, Atlanta, Fall, 1985.
75. "Vehicle Routing in the Presence of Compatibility Constraints" (with A. Assad and B. Nag), presented at ORSA/TIMS Joint National Meeting, Los Angeles, Spring, 1986.
76. "The Vehicle Routing Problem with Backhauling: An Integrated System for Decision Support" (with D. Casco and E. Wasil), presented at ORSA/TIMS Joint National Meeting, Los Angeles, Spring, 1986.
77. "Computing k-Shortest Paths in Euclidean Networks Efficiently" (with C. Skiscim), presented at ORSA/TIMS Joint National Meeting, Los Angeles, Spring, 1986.
78. "A Microcomputer-Based Decision Support System for Multi-Species Fishery Management" (with B. Rothschild and A. Assad), presented at Second Symposium on Analytic Techniques for Energy, Natural Resources, and Environmental Planning, Philadelphia, Spring, 1986.
79. "K-Shortest Paths in Euclidean Networks: Computational Results" (with C. Skiscim), presented at Eighth European Congress on Operations Research, Lisbon, Portugal, Summer, 1986.
80. "Microcomputer-Based Tools for Multi-Species Fishery Management" (with B. Rothschild and A. Assad), presented at Eighth European Congress on Operations Research, Lisbon, Portugal, Summer, 1986.
81. "Algorithms for Solving a Vehicle Routing Problem with Site/Vehicle Compatibility Constraints" (with B. Nag and A. Assad), presented at ORSA/TIMS Joint National Meeting, Miami Beach, Fall, 1986.
82. "Microcomputer-Based Vehicle Routing in the Soft Drink Industry" (with E. Wasil), presented at ORSA/TIMS Joint National Meeting, Miami Beach, Fall, 1986.
83. "Solving K-Shortest Path Problems and Variants Efficiently" (with C. Skiscim), presented at ORSA/TIMS Joint National Meeting, New Orleans, Spring, 1987.
84. "Features and Applications of Micro-Based Decision Modeling Software" (with E. Wasil), presented at ORSA/TIMS Joint National Meeting, New Orleans, Spring, 1987.
85. "Evaluating the Performance of Micro-Based Nonlinear Optimization Software" (with E. Wasil), presented at ORSA/TIMS Joint National Meeting, St. Louis, Fall, 1987.
86. "Finding the K Most Vital Links in a Network" (with R. Vohra), presented at ORSA/TIMS Joint National Meeting, St. Louis, Fall, 1987.
87. "Ranking Outstanding Sports Records" (with E. Wasil), presented at ORSA/TIMS Joint National Meeting, St. Louis, Fall, 1987.

### Presentations at Scholarly Meetings (A Partial Listing) – Continued

88. "A Stochastic Model for Prediction of Adult Population Size in Fisheries Management" (with H. Trivedi), presented at American Fisheries Society Annual Meeting, Winston-Salem, September, 1987.
89. "A Multi-Faceted Heuristic for the Orienteering Problem" (with Q. Wang and L. Liu), presented at Regional Science Association Annual Meeting, Baltimore, November, 1987.
90. "An Efficient Heuristic Algorithm for a Generalization of the TSP" (with L. Iollo, L. Levy, and G. Storchi), presented at Italian Association of Operations Research Meeting, Milan, Italy, September 1987.
91. "Vehicle Routing with Backhauls: Algorithms and Real-World Practice" (with D. Casco and E. Wasil), presented at ORSA/TIMS Joint National Meeting, Washington, D.C., Spring, 1988.
92. "A Deliberate Planning Algorithm for the Military Airlift Command" (with H. Rappoport, L. Bodin, R. Dahl, and D. Feshbach), presented at ORSA/TIMS Joint National Meeting, Washington, D.C., Spring, 1988.
93. "Controlled Rounding of Three-Dimensional Tabular Data" (with J. Kelly, A. Assad, and E. Baker), presented at ORSA/TIMS Joint National Meeting, Denver, Fall, 1988.
94. "A Categorized Review of AHP Applications" (with E. Wasil), presented at ORSA/TIMS Joint National Meeting, Denver, Fall, 1988.
95. "An Algorithm for Deliberate Planning" (with H. Rappoport, L. Bodin, R. Dahl, D. Feshbach, and L. Levy), presented at ORSA/TIMS Joint National Meeting, Denver, Fall, 1988.
96. "Vehicle Routing and Scheduling: The Impact of New Technologies" (with A. Assad, M. Ball, and L. Bodin), 8-hour workshop presented at ORSA/TIMS Joint National Meeting, Denver, Fall, 1988.
97. "Controlled Rounding of Tabular Data for the Census Bureau," presented at M.I.T. Symposium on Recent Developments in Mathematical Programming, Cambridge, April, 1988.
98. "Canonical Fishery Management System II" (with B. Rothschild and C. Stagg), presented at American Fisheries Society Annual Meeting, Toronto, September, 1988.
99. "Using Analytic Hierarchy Process Decision Analysis to Develop Management Information for Maryland's River Herring and Blue Crab Fisheries" (with G. DiNardo and D. Levy), presented at American Fisheries Society Annual Meeting, Toronto, September, 1988.
100. "Enhancements to a Deliberate Planning Algorithm for the Military Airlift Command" (with H. Rappoport, L. Levy, and D. Feshbach), presented at ORSA/TIMS Joint National Meeting, Vancouver, Spring, 1989.
101. "Time Dependencies in the Deliberate Planning Algorithm for the Military Airlift Command" (with H. Rappoport, L. Levy, and D. Feshbach), presented at ORSA/TIMS Joint National Meeting, New York, Fall, 1989.

**Presentations at Scholarly Meetings (A Partial Listing) – Continued**

102. "A Computer Simulation Model to Study Operational Issues Relating to Red Cross Bloodmobiles" (with J. Brennan), presented at ORSA/TIMS Joint National Meeting, New York, Fall, 1989.
103. "An LP Model for Enhancing the Productivity of the Chesapeake Bay Oyster Fishery" (with Q. Wang, S. Bashyam, E. Wasil, B. Rothschild, and A.-L. Chai), presented at ORSA/TIMS Joint National Meeting, New York, Fall, 1989.
104. "Controlled Rounding of Tabular Data: An Overview" (with J. Kelly and A. Assad), presented at ORSA/TIMS Joint National Meeting, New York, Fall, 1989.
105. "An Airlift Planning Algorithm for MAC" (with H. Rappoport, L. Levy, and K. Toussaint), presented at WORMSC Symposium, Washington, D.C., Fall, 1989.
106. "Solving Controlled Rounding Problems Efficiently" (with J. Kelly and A. Assad), presented at US/USSR Seminar on Large-Scale Optimization, College Park, Maryland, January 1990.
107. "A Transportation Problem Estimator for the MAC Deliberate Planning Problem" (with L. Levy and H. Rappoport), presented at ORSA/TIMS Joint National Meeting, Las Vegas, Spring, 1990.
108. "Cell Suppression of Tabular Data for the Census Bureau" (with J. Kelly and A. Assad), presented at ORSA/TIMS Joint National Meeting, Las Vegas, Spring, 1990.
109. "A Density-Dependent Model for Predicting Adult Population Size to Help Manage a Fishery" (with Q. Wang, H. Trivedi, and E. Wasil), presented at ORSA/TIMS Joint National Meeting, Las Vegas, Spring, 1990.
110. "An Airlift Planning Algorithm for the Military Airlift Command (MAC)" (with H. Rappoport, L. Levy, and K. Toussaint), presented at ORSA/TIMS Joint National Meeting, Las Vegas, Spring, 1990.
111. "Cell Suppression of Tabular Data" (with J. Kelly and A. Assad), presented at US/USSR Seminar on Large-Scale Optimization, Moscow, June 1990.
112. "Successful Applications of Operations Research Models to Natural Resource Decision Problems" (with E. Wasil), presented at ORSA/TIMS Joint national Meeting, Philadelphia, Fall, 1990.
113. "Cell Suppression Using Sliding Protection Ranges" (with J. Kelly and A. Assad), presented at ORSA/TIMS Joint National Meeting, Philadelphia, Fall, 1990.
114. "Large-Scale Controlled Rounding" (with J. Kelly and A. Assad), presented at ORSA/TIMS Joint National Meeting, Nashville, Spring, 1991.
115. "An Algorithm for Airlift Allocation and Scheduling" (with H. Rappoport, L. Levy, K. Toussaint, and K. Thomas), presented at ORSA/TIMS Joint National Meeting, Nashville, Spring, 1991.
116. "A Comprehensive Review of OR Modeling Efforts in The Management of Natural Resources" (with E. Wasil), presented at ORSA/TIMS Joint National Meeting, Nashville, Spring, 1991.

**Presentations at Scholarly Meetings (A Partial Listing) – Continued**

117. "A Neural Net Model for Cell Suppression" (with L. DeSilets, R. Kumar, and Q. Wang), presented at ORSA/TIMS Joint National Meeting, Anaheim, Fall, 1991.
118. "Modeling Salinity Dynamics in the Chesapeake Bay" (with E. Wasil, Q. Wang, and G. DiNardo), presented at ORSA/TIMS Joint National Meeting, Anaheim, Fall, 1991.
119. "A Transportation Problem Formulation for the MAC Airlift Planning Problem" (with H. Rappoport, L. Levy, and K. Toussaint), presented at ORSA/CSTS Conference, Williamsburg, January, 1992.
120. "A New Heuristic for the Period Routing Problem" (with I.-M. Chao and E. Wasil), presented at ORSA/TIMS Joint National Meeting, Orlando, Spring, 1992.
121. "Cell Suppression Strategies for Three-Dimensional Tables" (with R. Kumar and A. Assad), presented at ORSA/TIMS Joint National Meeting, Orlando, Spring, 1992.
122. "A Modified Hopfield Neural Network for Cell Suppression" (with Q. Wang and X. Sun), presented at ORSA/TIMS Joint National Meeting, Orlando, Spring, 1992.
123. "A Neural Network Model for the Wire Bonding Process" (with Q. Wang, X. Sun, E. Wasil, L. DeSilets, S. Luco, and A. Peck), presented at ORSA/TIMS Joint National Meeting, Orlando, Spring, 1992.
124. "Data Security in Three-Dimensional Tables Using Sliding Protection Levels" (with R. Kumar and A. Assad), presented at ORSA/TIMS Joint National Meeting, San Francisco, Fall, 1992.
125. "Applications of Neural Networks to Natural Resource Management" (with E. Wasil), presented at ORSA/TIMS Joint National Meeting, San Francisco, Fall, 1992.
126. "Application of Neural Networks to Data Security in Three-Dimensional Tables of Economic Data" (with R. Kumar and A. Assad), presented at ORSA/TIMS Joint National Meeting, Chicago, Spring, 1993.
127. "Solving Multi-Depot Vehicle Routing Problems Effectively" (with I.-M. Chao and E. Wasil), presented at ORSA/TIMS Joint National Meeting, Chicago, Spring, 1993.
128. "A Neural Network Model for the Wire Bonding Process: Part 2" (with X. Sun, Q. Wang, O. Kwon, and E. Wasil), presented at ORSA/TIMS Joint National Meeting, Phoenix, Fall, 1993.
129. "Solving Routing Problems Using Elastic Networks" (with A. Vakhutinsky), presented at ORSA/TIMS Joint National Meeting, Phoenix, Fall, 1993.
130. "Computational Experimentation with Neural Network Models for the Wire Bonding Process" (with X. Sun, O. Kwon, E. Wasil, Q. Wang, S. Luco, and A. Peck), presented at ORSA/CSTS Conference, Williamsburg, January, 1994.
131. "Neural Networks vs. Discriminant Analysis for Predicting Wire Bonding Failure Modes" (with X. Sun, O. Kwon, E. Wasil, and A. Peck), presented at ORSA/TIMS Joint National Meeting, Boston, Spring, 1994.

**Presentations at Scholarly Meetings (A Partial Listing) – Continued**

132. "A Neural Network Approach to the Orienteering Problem" (with Q. Wang, X. Sun, and J. Jia), presented at 15<sup>th</sup> International Symposium on Mathematical Programming, Ann Arbor, August, 1994.
133. "Using Neural Networks to Predict Hurricane Activity" (with O. Kwon, E. Wasil, and R. Gordon), presented at INFORMS National Meeting, Los Angeles, Spring, 1995.
134. "Accelerating a Neural Network Solution to the Traveling Salesman Problem" (with A. Vakhutinsky), presented at INFORMS National Meeting, Los Angeles, Spring, 1995.
135. "Optimization via Neural Networks," presented at Optimization Days, Montreal, May, 1995. (Plenary Lecture)
136. "Designing and Reporting on Computational Experiments with Heuristics" (with R. Barr, J. Kelly, M. Resende, and W. Stewart), presented at Metaheuristics International Conference, Breckenridge, Colorado, July, 1995.
137. "Multi-level Routing Problems: Heuristics, Test Problems, and Solutions" (with I.-M. Chao and E. Wasil), presented at Metaheuristics International Conference, Breckenridge, Colorado, July, 1995.
138. "A General Approach to Solving Multi-level Routing Problems" (with I.-M. Chao and E. Wasil), presented at INFORMS National Meeting, New Orleans, Fall, 1995.
139. "Neural Networks and Combinatorial Optimization," presented at Symposium on Combinatorial Optimization (CO96), London, March, 1996. (Plenary Lecture)
140. "A Fine-Tuned Learning Approach to Optimization" (with S. Coy, G. Runger, and E. Wasil), presented at INFORMS National Meeting, Atlanta, Fall, 1996.
141. "Modeling First-Day Returns of Initial Public Offerings with Neural Networks" (with S. Robertson, G. Runger, and E. Wasil), presented at INFORMS National Meeting, San Diego, Spring, 1997.
142. "A Fine-Tuned Learning Approach to Neural Networks" (with S. Coy, G. Runger, and E. Wasil), presented at Joint EURO-INFORMS Meeting, Barcelona, July, 1997.
143. "A Neural Network Solution to the Generalized Orienteering Problem" (with Q. Wang and X. Sun), presented at INFORMS National Meeting, Dallas, Fall, 1997.
144. "The Future of Vehicle Routing Research," presented at INFORMS National Meeting, Dallas, Fall, 1997.
145. "Predicting the Success of Nations in the Summer Olympics Using Neural Networks" (with E. Condon and E. Wasil), presented at INFORMS National Meeting, Montreal, Spring, 1998.
146. "Some Future Directions in Vehicle Routing Research," presented at INFORMS International Conference, Tel Aviv, June 1998.

**Presentations at Scholarly Meetings (A Partial Listing) – Continued**

147. "An Experimental Design Based Method for Finding Effective Parameter Settings for Heuristic Methods" (with S. Coy, G. Runger, and E. Wasil), presented at INFORMS National Meeting, Seattle, Fall, 1998.
148. "Data Analysis for the New Millennium: Data Mining, Genetic Algorithms, and Visualization," presented at the Fourth IMC Leveraging Corporate Knowledge Seminar, R.H. Smith School of Business, College Park, April 1999.
149. "Smoothing Metaheuristics," presented at INFORMS National Meeting, Cincinnati, Spring, 1999.
150. "Using Genetic Algorithms to Design Intelligent Decision Trees" (with Z. Fu, S. Lele, S. Raghavan, and E. Wasil), presented at INFORMS National Meeting, Philadelphia, Fall, 1999.
151. "Dynamic Multidimensional Fitness Functions for Genetic Algorithms for Classification Trees" (with Z. Fu, S. Lele, S. Raghavan, and E. Wasil), presented at INFORMS National Meeting, Salt Lake City, Spring, 2000.
152. "Solving the Traveling Salesman Problem with Demon Algorithms & Variants" (with J. Pepper and E. Wasil), presented at INFORMS National Meeting, Salt Lake City, Spring, 2000.
153. "Algorithms, Logistics, and the New Economy," Distinguished Scholar-Teacher Lecture, R.H. Smith School of Business, College Park, October 2000.
154. "Visualizing Data with Adjacency Measures" (with S. Raghavan, E. Condon, S. Lele, and E. Wasil), presented at INFORMS National Meeting, San Antonio, Fall, 2000.
155. "An Example of Visualization in Data Mining," presented at Netcentricity Symposium, University of Maryland, College Park, March 2001.
156. "A Visualization Model Based on Adjacency Data" (with S. Raghavan, E. Condon, S. Lele, and E. Wasil), presented at EURO 2001, Rotterdam, The Netherlands, July 2001.
157. "A Discrete Optimization Approach to Data Visualization" (with S. Raghavan, R. Abbiw-Jackson, S. Lele, and E. Wasil), presented at INFORMS National Meeting, Miami Beach, Fall 2001.
158. "A Visualization Model Based on Adjacency Data" (with E. Condon, S. Lele, S. Raghavan, and E. Wasil), presented at INFORMS National Meeting, Miami Beach, Fall 2001.
159. "An Evolutionary Approach to the Multi-Level Capacitated Minimum Spanning Tree Problem" (with I. Gamvros and S. Raghavan), presented at the INFORMS Telecom 2002 Conference, Boca Raton, March 2002.
160. "An Evolutionary Approach to the Multi-Level Capacitated Minimum Spanning Tree Problem" (with I. Gamvros and S. Raghavan), presented at the International Symposium on Combinatorial Optimization (CO 2002), Paris, April 2002.

**Presentations at Scholarly Meetings (A Partial Listing) – Continued**

161. "Some Examples of Visualization in Data Mining," presented at CORS Meeting, Toronto, June 2002.
162. "Heuristics for the Multi-Level Capacitated Minimum Spanning Tree (MLCMST) Problem" (with I. Gamvros and S. Raghavan), presented at INFORMS National Meeting, San Jose, Fall 2002.
163. "Metaheuristics for the New Millennium," presented at the First Mid-American Energy Speaker Series in Transportation, Henry B. Tippie College of Business, University of Iowa, Iowa City, March 2003.
164. "Heuristic Search for the Generalized Minimum Spanning Tree Problem" (with D. Stanojevic and S. Raghavan), presented at INFORMS National Meeting, Atlanta, Fall 2003.
165. "Solving the Minimum Labeling Spanning Tree Problem" (with E. Wasil and Y. Xiong), presented at INFORMS National Meeting, Atlanta, Fall 2003.
166. "Improved Heuristics for the Multi-Level Capacitated Minimum Spanning Tree Problem" (with I. Gamvros and S. Raghavan), presented at INFORMS National Meeting, Atlanta, Fall 2003.
167. "Analysis of the Noisy Euclidean Traveling Salesman Problem" (with F. Li and E. Wasil), presented at INFORMS National Meeting, Atlanta, Fall 2003.
168. "The Prize-Collecting Generalized Minimum Spanning Tree Problem" (with S. Raghavan and D. Stanojevic), presented at INFORMS Telecom 2004 Conference, Boca Raton, March 2004.
169. "The Minimum Labeling Spanning Tree Problem: Heuristic and Metaheuristic Approaches," presented at the Italian Operations Research Workshop in Honor of Paolo Carraresi, Pisa, March 2004.
170. "Visualization in Operations Research," presented at MIT/ORC 50<sup>th</sup> Anniversary Celebration, Cambridge, Massachusetts, April 2004.
171. "Generating and Solving Very Large-Scale Vehicle Routing Problems" (with F. Li and E. Wasil), presented at CORS/INFORMS Joint Meeting, Banff, May 2004.
172. "Some Recent Developments in the Analytic Hierarchy Process," presented at CORS/INFORMS Joint Meeting, Banff, May 2004.
173. "Some Recent Developments in the Analytic Hierarchy Process," presented at the Maryland Transportation Initiative Distinguished Speaker Series, College Park, Maryland, June 2004.
174. "Heuristic Search for Network Design" (with I. Gamvros, S. Raghavan, and D. Stanojevic), presented at INFORMS National Meeting, Denver, Fall 2004.
175. "Some Advice on the Teaching of OR/MS," presented at the Future Academician Colloquium, INFORMS National Meeting, Denver, Fall 2004.
176. "Achieving Controlled Tabular Adjustment Using Genetic Algorithms" (with X. Wang and E. Wasil), presented at INFORMS Computing Society Conference, Annapolis, January 2005.

**Presentations at Scholarly Meetings (A Partial Listing) – Continued**

177. "The Split Delivery Vehicle Routing Problem: A New Heuristic and Benchmark Problems" (with S. Chen and E. Wasil), presented at Route 2005: International Workshop on Vehicle Routing and Intermodal Transportation, Bertinoro, Italy, June 2005.
178. "Improved Metaheuristics for the Minimum Labeling Spanning Tree Problem" (with Y. Xiong and E. Wasil), presented at the 6<sup>th</sup> Metaheuristics International Conference, Vienna, Austria, August 2005.
179. "The Minimum Labeling Spanning Tree Problem and Some Variants," presented at Department of Mathematics and Statistics, University of Maryland, Baltimore County, September 2005.
180. "The Minimum Labeling Spanning Tree Problem and Some Variants," presented at the William S. Spears School of Business, Oklahoma State University, Stillwater, October 2005.
181. "The Split Delivery Vehicle Routing Problem," presented at the Katz Graduate School of Business, the University of Pittsburgh, Pittsburgh, October 2005
182. "Solving the Concave Cost Supply Scheduling Problem Using a Genetic Algorithm" (with X. Wang and E. Wasil), presented at INFORMS National Meeting, San Francisco, Fall 2005.
183. "The Label-Constrained Minimum Spanning Tree Problem" (with Y. Xiong and E. Wasil), presented at INFORMS National Meeting, San Francisco, Fall 2005.
184. "A New Heuristic and Test Problems for the Vehicle Routing Problem with Split Deliveries" (with S. Chen and E. Wasil), presented at INFORMS National Meeting, San Francisco, Fall 2005.
185. "Solving the Open Vehicle Routing Problem: New Heuristic and Test Problems" (with F. Li and E. Wasil), presented at INFORMS National Meeting, San Francisco, Fall 2005.
186. "Solving the Bin Packing Problem with a Weight Annealing Heuristic: A Computational Study" (with K.-H. Loh and E. Wasil), presented at INFORMS National Meeting, San Francisco, Fall 2005.
187. "Heuristic Approaches for a TSP Variant: The Meter Reading Shortest Tour Problem" (with J. Dong, M. Chen, and N. Yang), presented at INFORMS National Meeting, San Francisco, Fall 2005.
188. "The Split Delivery Vehicle Routing Problem: A Review and a New Approach," presented at the University of North Carolina, Chapel Hill, North Carolina, December 2005.
189. "The Minimum Label Spanning Tree Problem: Some Genetic Algorithm Approaches," presented at the 31<sup>st</sup> Conference on the Mathematics of Operations Research, Lunteren, The Netherlands, January 2006.
190. "The Split Delivery Vehicle Routing Problem: Using Mixed Integer Programming within a Heuristic Framework," presented at the 31<sup>st</sup> Conference on the Mathematics of Operations Research, Lunteren, The Netherlands, January 2006.



### **Presentations at Scholarly Meetings (A Partial Listing) – Continued**

191. "The Minimum Label Spanning Tree Problem: Illustrating the Utility of Genetic Algorithms," presented at BAE Systems Distinguished Speaker Series, Boston, March 2006.
192. "The Minimum Label Spanning Tree Problem: Illustrating the Power and Flexibility of Genetic Algorithms," presented in the Dept. of Civil & Environmental Engineering, Distinguished Speaker Series, University of Maryland, College Park, April 2006.
193. "Solving the Concave Cost Supply Scheduling Problem Using a Genetic Algorithm" (with X. Wang and E. Wasil), presented at Odysseus 2006, Altea, Spain, May 2006.
194. "Weight Annealing Heuristics for Solving the Two-Dimensional Bin Packing Problem" (with K-H. Loh and E. Wasil), presented at INFORMS International Conference, Hong Kong, June 2006.
195. "The Split Delivery Vehicle Routing Problem: Applications, Algorithms, Test Problems, and Computational Results" (with S. Chen and E. Wasil), presented at 21<sup>st</sup> European Conference on Operational Research, Reykjavik, Iceland, July 2006.
196. "Solving the Concave Cost Supply Scheduling Problem" (with X. Wang and E. Wasil), presented at 21<sup>st</sup> European Conference on Operational Research, Reykjavik, Iceland, July 2006.
197. "The Consistent Vehicle Routing Problem" (with C. Groer and E. Wasil), presented at UPS, Timonium, Maryland, August 2006.
198. "A Guided Tour of Several New and Interesting Routing Problems" (with E. Wasil), presented at Network Optimization Workshop, Saint – Remy de Provence, France, August 2006.
199. "Tuning a Parametric Clarke – Wright Heuristic for Vehicle Routing through a Genetic Algorithm" (with M. Battarra and D. Vigo), presented at AIRO2006, Cesena, Italy, September 2006.
200. "Weight Annealing Heuristics for Solving Bin Packing Problems" (with K.-H. Loh and E. Wasil), presented at INFORMS National Meeting, Pittsburgh, Fall 2006.
201. "Mining Data with Classification Trees, Discrete Optimization Models, and Sammon Maps" (with Z. Fu, S. Lele, S. Raghavan, and E. Wasil), presented at INFORMS National Meeting, Pittsburgh, Fall 2006.
202. "New Developments in the Computerized Routing of Meter Readers over Street Networks" (with R. Shuttleworth and E. Wasil), presented at INFORMS National Meeting, Pittsburgh, Fall 2006.
203. "A Genetic Algorithm for Solving the Euclidean Non-Uniform Steiner Tree Problem" (with I. Frommer), presented at INFORMS Computing Society Conference, Coral Gables, January 2007.
204. "The Generalized Traveling Salesman Problem: A New Genetic Algorithm Approach" (with J. Silberholz), presented at INFORMS Computing Society Conference, Coral Gables, January 2007.

**Presentations at Scholarly Meetings (A Partial Listing) – Continued**

205. "The Colorful Traveling Salesman Problem" (with Y. Xiong and E. Wasil), presented at INFORMS Computing Society Conference, Coral Gables, January 2007.
206. "Solving the Maximum Cardinality Bin Packing Problem with a Weight Annealing-Based Algorithm" (with K-H. Loh and E. Wasil), presented at INFORMS Computing Society Conference, Coral Gables, January 2007.
207. "Maximizing Cardiac Surgery Throughput Using a Simulation Model" (with C. Price, E. Wasil, T. Babineau, and B. Griffith), presented at the 18<sup>th</sup> Annual POMS Conference, Dallas, May 2007.
208. "The Balanced Billing Cycle Vehicle Routing Problem" (with C. Groër and E. Wasil), presented at ROUTE 2007, Jekyll Island, Georgia, May 2007.
209. "Analyzing Post-Operative Bed Mix at a Major Hospital" (with C. Price, T. Babineau, B. Griffith, and E. Wasil), presented at Operations Research in Healthcare Conference, M.I.T., May 2007.
210. "The Billing Cycle Vehicle Routing Problem" (with C. Groër and E. Wasil), presented at EUROGEN 2007, Jyväskylä, Finland, June 2007.
211. "Metaheuristics and Combinatorial Optimization: Some Ideas, Insights, and Observations," presented at MIC 2007, Montréal, June 2007.
212. "The Computerized Routing of Meter Readers over Street Networks: New Technologies Turn Old Problems into New Opportunities" (with R. Shuttleworth and E. Wasil), presented at 22<sup>nd</sup> European Conference on Operational Research, Prague, July 2007.
213. "The Probabilistic Arc Routing Problem" (with S. Chen, R. Wong, and H. Zhong), presented at INFORMS National Meeting, Seattle, Fall 2007.
214. "Balanced Billing Cycles and Vehicle Routing of Meter Readers" (with C. Groer and E. Wasil), presented at INFORMS National Meeting, Seattle, Fall 2007.
215. "Capacity Management in a Cardiac Surgery Line" (with T. Babineau, B. Griffith, M. Harrington, and E. Wasil), presented at INFORMS National Meeting, Seattle, Fall 2007.
216. "Solving the Close-enough Traveling Salesman Problem" (with W. Mennell and E. Wasil), presented at INFORMS National Meeting, Seattle, Fall 2007.
217. "Using a Genetic Algorithm and Mixed Integer Program to Solve Concave Cost Supply Scheduling Problems" (with X. Wang and E. Wasil), presented at INFORMS National Meeting, Seattle, Fall 2007.
218. "Comparison of Heuristics for Solving the GMLST Problem" (with J. Silberholz, N. Cornick, A. Hall, R. Sahajpal, Y. Chen, and I. Yahav), presented at INFORMS Telecommunications Conference, College Park, MD, March 2008.
219. "Solving the Close Enough Traveling Salesman Problem" (with W. Mennell and E. Wasil), presented at INFORMS Telecommunications Conference, College Park, MD, March 2008.

**Presentations at Scholarly Meetings (A Partial Listing) – Continued**

220. "The Label-Constrained Minimum Spanning Tree Problem" (with Y. Xiong, E. Wasil, and S. Chen), presented at INFORMS Telecommunications Conference, College Park, MD, March 2008.
221. "Maximizing Cardiac Surgery Throughput at a Major Hospital" (with C. Price, E. Wasil, T. Babineau, and B. Griffith), presented at the 17<sup>th</sup> International Conference on Health Sciences Simulation, Ottawa, April 2008.
222. "Reducing Boarding in a Post-Anesthesia Care Unit" (with C. Price, M. Harrington, and E. Wasil), presented at MSOM Conference, College Park, MD, June 2008.
223. "The Consistent Vehicle Routing Problem" (with C. Groer and E. Wasil), presented at MSOM Conference, College Park, MD, June 2008.
224. "Balanced Billing Cycles and Vehicle Routing of Meter Readers" (with C. Groer and E. Wasil), presented at School on Graph Theory, Algorithms, and Applications, Erice, Sicily, September 2008.
225. "The Consistent Vehicle Routing Problem" (with C. Groer and E. Wasil), presented at School on Graph Theory, Algorithms, and Applications, Erice, Sicily, September 2008.
226. "Metaheuristics and Combinatorial Optimization," presented at School on Graph Theory, Algorithms, and Applications, Erice, Sicily, September 2008.
227. "Tutorial: Some Future Directions in Vehicle Routing Research" (with C. Groer and E. Wasil), presented at INFORMS National Meeting, Washington, D.C., October 2008.
228. "Operating Room Scheduling Heuristics to Improve Post-operative Patient Flow" (with C. Price, E. Wasil, T. Babineau, M. Harrington, and R. Konewko), presented at INFORMS National Meeting, Washington, D.C., October 2008.
229. "A Weight Annealing Algorithm for Solving Two-dimensional Bin Packing Problems" (with K-H. Loh and E. Wasil), presented at INFORMS Computing Society Conference, Charleston, January 2009.
230. "Solving the Maximum Cardinality Bin Packing Problem" (with K-H. Loh and E. Wasil), presented at INFORMS Computing Society Conference, Charleston, January 2009.
231. "The Split Delivery Vehicle Routing Problem with Minimum Delivery Amounts" (with D. Gulczynski and E. Wasil), presented at INFORMS Computing Society Conference, Charleston, January 2009.
232. "The Effective Application of a New Approach to the Generalized Orienteering Problem" (with J. Silberholz), presented at INFORMS Computing Society Conference, Charleston, January 2009.
233. "From Greedy to Global: New Results on the Close Enough Traveling Salesman Problem" (with W. Mennell and E. Wasil), presented at INFORMS Computing Society Conference, Charleston, January 2009.

**Presentations at Scholarly Meetings (A Partial Listing) – Continued**

234. "The Generalized Covering Salesman Problem" (with M. Salari, Z. Naji Azimi, S. Raghavan, and P. Toth), presented at 23<sup>rd</sup> European Conference on Operational Research, Bonn, July 2009.
235. "The Cost-Constrained Minimum Label Spanning Tree and Label-Constrained Minimum Spanning Tree Problems" (with Z. Naji Azimi, M. Salari, S. Raghavan, and P. Toth), presented at 23<sup>rd</sup> European Conference on Operational Research, Bonn, July 2009.
236. "Variable Neighborhood Search for the Cost Constrained Minimum Label Spanning Tree and Label Constrained Minimum Spanning Tree Problems" (with M. Salari, Z. Naji Azimi, S. Raghavan, and P. Toth), presented at Metaheuristics International Conference, Hamburg, July 2009.
237. "Heuristic Procedures for the Generalized Covering Salesman Problem" (with Z. Naji Azimi, M. Salari, S. Raghavan, and P. Toth), presented at Metaheuristics International Conference, Hamburg, July 2009.
238. "The Effective Application of a New Approach to the Generalized Orienteering Problem" (with J. Silberholz), presented at Metaheuristics International Conference, Hamburg, July 2009.
239. "Generalized Covering Salesman Problem" (with Z. Naji-Azimi, M. Salari, S. Raghavan, and P. Toth), presented at AIRO2009, Siena, Italy, September 2009.
240. "An Integer Programming-Based Heuristic for the Period Vehicle Routing Problem" (with D. Gulczynski and E. Wasil), presented at DOMinant Workshop, Molde, Norway, September 2009.
241. "An Integer Programming-Based Heuristic for the Period Vehicle Routing Problem" (with D. Gulczynski and E. Wasil), presented at INFORMS National Meeting, San Diego, October 2009.
242. "MRSA Transmission Reduction using Agent-Based Modeling and Simulation" (with S. Barnes and E. Wasil), presented at INFORMS National Meeting, San Diego, October 2009.
243. "Routing Models for Humanitarian Logistics" (with K. Panchamgam and E. Wasil), presented at INFORMS National Meeting, San Diego, October 2009.
244. "Multi-Period Vehicle Routing," presented at Transportation and Logistics Workshop (TRANSLOG), Reñaca, Chile, December 2009.
245. "Multi-Period Street Scheduling and Sweeping" (with C. Cerrone, B. Dussault, and E. Wasil), presented at TRISTAN VII, Tromso, Norway, June 2010.
246. "Worst-Case Analysis for the Split Delivery Vehicle Routing Problem with Minimum Delivery Amounts" (with Y. Xiong, D. Gulczynski, and E. Wasil), presented at Network Optimization Workshop, Ajaccio, France, August 2010.

### Presentations at Scholarly Meetings (A Partial Listing) – Continued

247. "Factorial Design Quantifies Effects of Hand Hygiene Compliance and Nurse-to-Patient Ratio on MRSA Acquisition" (with S. Barnes, E. Wasil, J. Furuno, and A. Harris), presented at Interscience Conference on Antimicrobial Agents and Chemotherapy, Boston, September 2010.
248. "The Effective Application of a New Approach to the Generalized Orienteering Problem" (with J. Silberholz), presented at INFORMS National Meeting, Austin, November 2010.
249. "A Dynamic Patient Network Model of Hospital-Acquired Infections" (with S. Barnes and E. Wasil), presented at INFORMS National Meeting, Austin, November 2010.
250. "The Effects of the Residency Teaching Model on the Efficiency of the Emergency Department" (with D. Anderson, J. Silberholz, and others), presented at INFORMS National Meeting, Austin, November 2010.
251. "Factorial Design Quantifies Effects of Hand Hygiene Compliance and Nurse-to-Patient Ratio on MRSA Acquisition" (with S. Barnes, E. Wasil, A. Harris, and J. Furuno), presented at INFORMS National Meeting, Austin, November 2010.
252. "Worst-Case Analysis for the Split Delivery Vehicle Routing Problem with Minimum Delivery Amounts" (with Y. Xiong, D. Gulczynski, D. Kleitman, and E. Wasil), presented at the 45<sup>th</sup> Annual Conference of the Operational Society of New Zealand, Auckland, November 2010.
253. "A Dynamic Patient Network Model of Hospital-Acquired Infections" (with S. Barnes and E. Wasil), presented at the Winter Simulation Conference, Baltimore, December 2010.
254. "A Steiner-Zone Heuristic for Solving the Close-Enough Traveling Salesman Problem" (with X. Wang and E. Wasil), presented at INFORMS Computing Society Conference, Monterey, January 2011.
255. "Effects of Residents on Efficiency in an Emergency Department" (with D. Anderson, J. Silberholz, M. Harrington, and J.M. Hirshon), presented at INFORMS HEALTHCARE – 2011, Montreal, June 2011.
256. "A Dynamic Patient Network Model of Hospital-acquired Infections" (with S. Barnes and E. Wasil), presented at INFORMS HEALTHCARE – 2011, Montreal, June 2011.
257. "A New Variant of the Windy Postman Problem" (with B. Dussault, C. Groer, and E. Wasil), presented at ROUTE 2011, Sitges, Spain, June 2011.
258. "A New Variant of the Windy Postman Problem" (with B. Dussault, C. Groer, and E. Wasil), presented at INFORMS National Meeting, Charlotte, November 2011.
259. "The Hierarchical Traveling Salesman Problem" (with K. Panchangam, Y. Xiong, and E. Wasil), presented at INFORMS National Meeting, Charlotte, November 2011.
260. "The Impact of ICU Utilization on Patient Discharge and Readmission Rate" (with D. Anderson, C. Price, W. Jank, and E. Wasil), presented at INFORMS National Meeting, Charlotte, November 2011.

### **Presentations at Scholarly Meetings (A Partial Listing) – Continued**

261. "A Survey of Applications of Agent-based Modeling and Simulation to Healthcare Operations Management" (with S. Price and S. Barnes), presented at INFORMS National Meeting, Charlotte, November 2011.
262. "An Application of Factorial Design to Compare the Relative Effectiveness of Hospital Infection Control Measures" (with S. Barnes, E. Wasil, J. Furuno, and A. Harris), presented at the 2011 Winter Simulation Conference, Phoenix, December 2011.
263. "An Empirical Analysis of the Effect of Residents on Emergency Department Treatment Times" (with D. Anderson, J. Silberholz, M. Harrington, and J.M. Hirshon), presented at the POMS Conference, Chicago, April 2012.
264. "An Examination of Differences in Treatment Quality for Trauma Patients Based on Hospital Arrival Time" (with D. Anderson and G. Gao), presented at the POMS Conference, Chicago, April 2012.
265. "Routing Vehicles to Plow Snow-Covered Roads" (with B. Dussault, and E. Wasil), presented at the POMS Conference, Chicago, April 2012.
266. "The Downhill Plowing Problem with Multiple Plows" (with B. Dussault, and E. Wasil), presented at ODYSSEUS 2012 Conference, Mykonos, May 2012.
267. "Comparison of Heuristics for the Colorful Traveling Salesman Problem" (with A. Raiconi, J. Silberholz, R. Cerrulli, M. Gentili, and S. Chen), presented at VEROLOG 2012, Bologna, June 2012.
268. "Healthcare Analytics: Strength in Numbers," presented at 2<sup>nd</sup> Annual Robert H. Smith School of Business and IBM Business Analytics Workshop, College Park, May 2012.
269. "Multi-Period Vehicle Routing: Some New Applications," presented at Distinguished Speaker Series, Centre for Supply Chain Management, at Wilfrid Laurier University, Waterloo, Canada, April 2012.
270. "Interesting Research in Vehicle Routing and Healthcare Analytics," presented at AIRO 2012 Conference, Vietri sul Mare, Italy, September 2012.
271. "Data Mining to Aid Beam Angle Selection for Intensity-modulated Radiation Therapy" (with S. Price, H. Zhang, and E. Wasil), presented at INFORMS National Conference, Phoenix, October 2012.
272. "The Early Detection of Bioterrorism: A Combined Social and Spatial Network Analysis" (with I. Yahav, S. Barnes, and E. Wasil), presented at INFORMS National Meeting, Phoenix, October 2012.
273. "The Downhill Plow Problem with Multiple Plows" (with B. Dussault and E. Wasil), presented at INFORMS National Meeting, Phoenix, October 2012.
274. "Long Distance Triage: Assessing Risk for Inter-Hospital Transfer Patients" (with D. Anderson, M. Gulati, E. Wasil, and others), presented at INFORMS National Meeting, Phoenix, October 2012.

### **Presentations at Scholarly Meetings (A Partial Listing) – Continued**

275. “Exploring the Effects of Network Structure and Healthcare Worker Behavior on the Transmission of Hospital-Acquired Infections (with S. Barnes and E. Wasil), presented at the 4<sup>th</sup> Annual Complexity in Business Conference, Washington, DC, November 2012.
276. “Long Distance Triage: Assessing Patient Risk for Inter-Hospital Transfer Patients” (with D. Anderson, M. Gulati, E. Wasil, and others), presented at the 34<sup>th</sup> Annual Meeting of the Society of Medical Decision Making, Phoenix, October 2012.
277. “Multi-Period Street Scheduling and Sweeping” (with C. Cerrone, B. Dussault, and E. Wasil), presented at INFORMS Computing Society Conference, Santa Fe, January 2013.
278. “Solving the Min-Max Multi-Depot Vehicle Routing Problem” (with X. Wang and E. Wasil), presented at the POMS Conference, Denver, May 2013.
279. “HALT: Assessing Patient Risk from a Distance” (with D. Anderson, M. Gulati, R. Scilla, and E. Wasil), presented at the POMS Conference, Denver, May 2013.
280. “Data Mining Evaluated IMRT Plans to Aid Future Beam Angle Selection” (with S. Price, E. Wasil, and H. Zhang), presented at the POMS Conference, Denver, May 2013.
281. “The Cost of Turns in Vehicle Routing” (with B. Dussault and E. Wasil), presented at the POMS Conference, Denver, May 2013.
282. “An Empirical Analysis of the Effect of Residents on Emergency Department Treatment Times” (with D. Anderson and J. Silberholz), presented at the POMS Conference, Denver, May 2013.
283. “Publishing Your Healthcare Operations Research Work” (panelist with C. Froehle, M. Cote, and J. Fowler), presented at the POMS Conference, Denver, May 2013.
284. “Early Detection of Bioterrorism: Monitoring Disease Diffusion Through a Multilayered Network” (with I. Yahav, S. Barnes, and E. Wasil), presented at the IIE Annual (ISERC) Conference, San Juan, Puerto Rico, May 2013.
285. “Minimizing the Number of Turns in Arc Routing” (with B. Dussault and E. Wasil), presented at the 1<sup>st</sup> Workshop on Arc Routing Problems, Copenhagen, May 2013.
286. “Prostate Cancer Detection using MRI Data” (with D. Anderson, E. Wasil, and H. Zhang), presented at INFORMS Healthcare Conference, Chicago, June 2013.
287. “Simulating Potential Facility Layouts for Proton Therapy Treatment Centers” (with S. Price, E. Wasil, and H. Zhang), presented at INFORMS Healthcare Conference, Chicago, June 2013.
288. “Some Interesting Vehicle Routing Research Topics: Suggestions from an Oldtimer,” presented at the Verolog Conference, Southampton, U.K., July 2013.
289. “Vehicle Routing in Industry” (panelist with G. Hasle, M.G. Speranza, T. Pigden, and D. Vigo), presented at the Verolog Conference, Southampton, U.K., July 2013.

**Presentations at Scholarly Meetings (A Partial Listing) – Continued**

290. “The Generalized Consistent Vehicle Routing Problem” (with A. Kovacs, R. Hartl, and S. Parragh), presented at the Metaheuristics International Conference, Singapore, August 2013.
291. “The Hierarchical Traveling Salesman Problem: Some Worst-Case Results” (with K. Panchamgam, Y. Xiong, B. Dussault, and E. Wasil), presented at OR2013, Rotterdam, September 2013.
292. “Using Magnetic Resonance Imaging Data to Predict and Locate Prostate Cancer” (with D. Anderson, E. Wasil, and H. Zhang), presented at INFORMS National Meeting, Minneapolis, October 2013.
293. “The Min-Max Multi-Depot Vehicle Routing Problem: Three-Stage Heuristic and Computational Results” (with X. Wang and E. Wasil), presented at INFORMS National Meeting, Minneapolis, October 2013.
294. “HALT: Long Range Triage” (with D. Anderson, M. Gulati, R. Scilla, and E. Wasil), presented at INFORMS National Meeting, Minneapolis, October 2013.
295. “Design and Scheduling of Proton Therapy Treatment Centers” (with S. Price, E. Wasil, and H. Zhang), presented at INFORMS National Meeting, Minneapolis, October 2013.
296. “Some Interesting and Important Vehicle Routing Research Topics,” presented at DSI Annual Meeting, Baltimore, November 2013.
297. “Optimizing Throughput of a Multi-Room Proton Therapy Treatment Center via Simulation” (with S. Price, E. Wasil, and H. Zhang), presented at the Winter Simulation Conference, Washington, D.C., December 2013.
298. “Data Mining Evaluated IMRT Plans to Rank Potential Beam Angle Sets” (with S. Price, E. Wasil, and H. Zhang), presented at the POMS Conference, Atlanta, May 2014.
299. “An Agent-Based Modeling Approach to Reducing Pathogenic Transmission” (with S. Barnes, and E. Wasil), presented at the POMS Conference, Atlanta, May 2014.
300. “Min-Max vs. Min-Sum Vehicle Routing: A Worst-Case Analysis” (with L. Bertazzi and X. Wang), presented at the POMS Conference, Atlanta, May 2014.
301. “OAR Lib: An Open Source Arc Routing Java Library” (with O. Lum and C. Cerrone), presented at the POMS Conference, Atlanta, May 2014.
302. “Early Detection of Bioterrorism: Monitoring Disease Using an Agent-Based Model” (with X. Hu and S. Barnes), presented at the POMS Conference, Atlanta, May 2014.
303. “Simulating Scheduling Policies for a Proton Therapy Treatment Center” (with S. Price, E. Wasil, and H. Zhang), presented at the POMS Conference, Atlanta, May 2014.
304. “Min-Max vs. Min-Sum Vehicle Routing: A Worst-Case Analysis” (with L. Bertazzi and X. Wang), presented at Route 2014 Conference, Snekkersten, Denmark, June 2014.



### Presentations at Scholarly Meetings (A Partial Listing) – Continued

305. “The Windy Rural Postman Problem with a Time-Dependent Zigzag Option” (with J. Nossack, E. Pesch, and R. Zhang), presented at the Verolog Conference, Oslo, June 2014.
306. “On Solving the Swap Body Vehicle Routing Problem” (with P. Chen, X. Wang, and O. Lum), presented at the Verolog Conference, Oslo, June 2014.
307. “Carousel Greedy: A Generalized Greedy Algorithm for Optimizing the Cardinality of a Set” (with C. Cerrone and R. Cerulli), presented at Graphs and Optimization IX Meeting, Sirmione, Italy, July 2014.
308. “Carousel Greedy: A Generalized Greedy Algorithm for Optimizing the Cardinality of a Set” (with C. Cerrone and R. Cerulli), presented at AIRO 2014 Conference, Como, Italy, September 2014.
309. “Carousel Greedy: A Generalized Greedy Algorithm with Applications in Optimization and Statistics” (with C. Cerrone and R. Cerulli), presented at Serbian Operations Research Society Conference, Divcibare, Serbia, September 2014.
310. “Data Mining to Aid Beam Angle Selection for Intensity-Modulated Radiation Therapy” (with S. Price, E. Wasil, and H. Zhang), presented at the 5<sup>th</sup> ACM Conference on Bioinformatics, Computational Biology, and Health Informatics, Newport Beach, CA, September 2014.
311. “Scheduling Guidelines for a Multi-Room Proton Therapy Treatment Center” (with S. Price, E. Wasil, and H. Zhang), presented at the 28<sup>th</sup> European Simulation and Modelling Conference, Porto, Portugal, October 2014.
312. “Does Health Insurance Matter? Establishing Insurance Status as a Risk Factor for Mortality Rate” (with H. Talukder, H. Corrado Bravo, Z. Dekman, and S. Mankad), Presented at INFORMS National Meeting, San Francisco, November 2014.
313. “Life is All about Timing: Differences in Treatment Quality for Trauma Patients Based on Hospital Arrival Time” (with D. Anderson and G. Gao), presented at INFORMS National Meeting, San Francisco, November 2014.
314. “OAR Lib: An Open Source Arc Routing Library” (with O. Lum, C. Cerrone, and E. Wasil), presented at INFORMS National Meeting, San Francisco, November 2014.
315. “The Split Delivery Min-Max Multi-Depot Vehicle Routing Problem with Minimum Delivery Amounts” (with X. Wang and E. Wasil), presented at INFORMS National Meeting, San Francisco, November 2014.
316. “Early Detection of Bioterrorism: Monitoring Disease Using an Agent-Based Model” (with X. Hu and S. Barnes), presented at Winter Simulation Conference, Savannah, December 2014.
317. “A Two-Stage Partitioning Scheme for the Min-Max K Windy Rural Postman Problem” (with O. Lum, C. Cerrone, and E. Wasil), presented at INFORMS Computing Society Conference, Richmond, January 2015.
318. “A Heuristic Approach for the Swap-Body Vehicle Routing Problem” (with O. Lum, X. Wang, P. Chen, and E. Wasil), presented at INFORMS Computing Society Conference, Richmond, January 2015.

### Presentations at Scholarly Meetings (A Partial Listing) – Continued

319. “Big Data and Healthcare: Hype or Reality?” (panel organizer and moderator), presented at POMS College of Healthcare OM Conference, Washington, D.C., May 2015.
320. “The Split Delivery Min-Max Multi-Depot Vehicle Routing Problem with a Minimum Service Time Requirement” (with X. Wang and E. Wasil), presented at the POMS Conference, Washington, D.C., May 2015.
321. “Compact Routes for the Min-Max K Windy Rural Postman Problem” (with O. Lum, C. Cerrone, and E. Wasil), presented at the Verolog Conference, Vienna, June 2015.
322. “Solving the Vehicle Routing Problem with Time Windows by the Bee Colony Optimization Algorithm” (with M. Nikolic, D. Teodorovic, and M. Selmic), presented at the Verolog Conference, Vienna, June 2015.
323. “Challenges of Big Data in Urban Transportation Optimization” (panel moderator), presented at INFORMS TSL Workshop, Berlin, July 2015.
324. “Split Delivery Vehicle Routing and Related Problems,” presented at INFORMS TSL Workshop, Berlin, July 2015.
325. “Applying Queueing Theory and Simulation to the Modeling of Emergency Departments” (with X. Hu and S. Barnes), presented at INFORMS Healthcare Conference, Nashville, July 2015.
326. “Carousel Greedy: A Powerful Heuristic with Applications in Optimization and Statistics,” presented at Oakland University Summer Mathematics Institute, Rochester, Michigan, August 2015.
327. “The Windy Rural Postman Problem with Time-Dependent Zigzag Option” (with J. Nossack, E. Pesch, and R. Zhang), presented at OR 2015, Vienna, September 2015.
328. “Carousel Greedy: A Generalized Greedy Algorithm with Applications in Optimization and Statistics” (with C. Cerrone and R. Cerulli), presented at AIRO 2015, Pisa, September 2015.
329. “The Windy Rural Postman Problem with a Time-Dependent Zigzag Option” (with E. Pesch, J. Nossack, and R. Zhang), presented at Logistics Management 2015, Braunschweig, Germany, September 2015.
330. “Review of Queueing Theory Applied to Emergency Departments with Comparable Simulation Studies” (with X. Hu and S. Barnes), presented at INFORMS National Meeting, Philadelphia, November 2015.
331. “Operational Causes of Patients Leaving Before Treatment is Completed in Emergency Departments” (with D. Anderson, J.M. Hirshon, L. Pimentel, and E. Wasil), presented at INFORMS National Meeting, Philadelphia, November 2015.
332. “The Vehicle Routing Problem with Drones: A Worst-Case Analysis” (with X. Wang and S. Poikonen), presented at INFORMS National Meeting, Philadelphia, November 2015.

### Presentations at Scholarly Meetings (A Partial Listing) – Continued

333. “Metrics of Compactness: The Benefits of a Cluster-first, Route-second Approach to the Min-max WRPP” (with O. Lum, C. Cerrone, and E. Wasil), presented at INFORMS National Meeting, Philadelphia, November 2015.
334. “The Windy Rural Postman Problem with a Time-Dependent Zigzag Option” (with R. Zhang, J. Nossack, and E. Pesch), presented at INFORMS National Meeting, Philadelphia, November 2015.
335. “Impact of Maryland Health Policy Changes on Emergency Medicine Practice by Socioeconomic Status” (with L. Pimentel, D. Anderson, E. Wasil, F. Barrueto, and J.M. Hirshon), presented at the Society for Academic Emergency Medicine Conference, New Orleans, May 2016.
336. “A Machine Learning Framework for Predicting Frequent Emergency Department Users Using Claims Data” (with X. Hu, M. Bjarnadottir, and S. Barnes), presented at the POMS Conference, Orlando, May 2016.
337. “The Vehicle Routing Problem with Drones: A Worst-Case Analysis” (with X. Wang and S. Poikonen), presented at INFORMS Optimization Society Workshop, Princeton, N.J., March 2016.
338. “A Hybrid Heuristic Procedure for the Windy Rural Postman Problem with Time-Dependent Zigzag Option” (with O. Lum and R. Zhang), presented at WARP2, Lisbon, Portugal, May 2016.
339. “Aesthetic Constraints for the Min-Max K-Windy Rural Postman Problem” (with I. Plana, A. Corberan, O. Lum, and J. Sanchis), presented at WARP2, Lisbon, Portugal, May 2016.
340. “Vehicle Routing Problem with Drones: Worst-Case Bounds and Related Problems” (with S. Poikonen and X. Wang), presented at 4<sup>th</sup> International Symposium on Combinatorial Optimization, Vietri sul Mare, Italy, May 2016.
341. “Some Exciting New Problems in Vehicle Routing” (with D. Vigo), presented at the Verolog Conference, Nantes, June 2016.
342. “The Vehicle Routing Problem with Drones: Some Worst-Case Results” (with X. Wang and S. Poikonen), presented at Triennial Symposium on Transportation Analysis (TRISTAN), Aruba, June 2016.
343. “Routing Problems with Time Dependencies or How Different are Trash Collection or Newspaper Delivery from Street Sweeping or Winter Gritting?” (with J. Nossack, E. Pesch, and Rui Zhang), presented at 7<sup>th</sup> International Conference on Engineering, Project, and Production Management (EPPM2016), Bialystok, Poland, September 2016.
344. “Drone Routing Models with Applications to Disaster Relief” (with S. Poikonen and X. Wang), presented at INFORMS National Meeting, Nashville, November 2016.
345. “A Hybrid Heuristic for the Windy Rural Postman Problem with a Time-Dependent Zigzag Option” (with O. Lum and R. Zhang), presented at INFORMS National Meeting, Nashville, November 2016.

**Presentations at Scholarly Meetings (A Partial Listing) – Continued**

346. “Addressing Uncertainty in Meter Reading for Utility Companies Using Radio-frequency Identification Technology” (with D. Roy), presented at INFORMS National Meeting, Nashville, November 2016.
347. “Solving the Split Delivery Vehicle Routing Problem with A Priori Split” (with P. Chen, X. Wang, and E. Wasil), presented at INFORMS National Meeting, Nashville, November 2016.
348. “Impact of State and Federal Policy Changes by Socioeconomic Status on Emergency Medicine Practice in Maryland” (with D. Anderson, E. Wasil, L. Pimentel, J.M. Hirshon, and F. Barrueto), presented at INFORMS National Meeting, Nashville, November 2016.
349. “Understanding Emergency Department Jumper Behavior: Actionable Insights from Claims Data Using Machine Learning” (with X. Hu, S. Barnes, and M. Bjarnadottir), presented at INFORMS National Meeting, Nashville, November 2016.
350. “OAR Lib: An Open Source Arc Routing Library” (with O. Lum and E. Wasil), presented at INFORMS Computing Society Conference, Austin, January 2017.
351. “Fred Glover’s Research Impact,” presented at Fred80fest: Innovations in Optimization and Applications, Boulder, March 2017.
352. “Aesthetic Considerations for the Min-Max K-Windy Rural Postman Problem” (with A. Corberan, O. Lum, I. Plana, and J. Sanchis), presented at Verolog Conference, Amsterdam, July 2017.
353. “An Open Source Tool for Generating Arc Routing Instances from Real Street Data” (with O. Lum and E. Wasil), presented at Verolog Conference, Amsterdam, July 2017.
354. “Addressing Uncertainty in Meter Reading for Utility Companies Using RFID Technology” (with D. Roy and E. Wasil), presented at INFORMS TSL Conference, Chicago, July 2017.
355. “A Flow Formulation for the Close-Enough Arc Routing Problem” (with R. Pentangelo, C. Cerrone, and R. Cerulli), presented at International Conference on Optimization and Decision Science, Sorrento, September 2017.
356. “Traveling Salesman Problem with Drone: Computational Approaches” (with S. Poikonen), presented at International Conference on Optimization and Decision Science, Sorrento, September 2017.
357. “A Branch-and-Bound Approach to the Traveling Salesman Problem with Drone and Related Heuristics” (with S. Poikonen and E. Wasil), presented at INFORMS National Meeting, Houston, October 2017.
358. “The Mothership and Drone Routing Problem” (with S. Poikonen), presented at INFORMS National Meeting, Houston, October 2017.
359. “A Steiner Zone Heuristic for the Close-Enough Traveling Salesman Problem” (with X. Wang and E. Wasil), presented at INFORMS National Meeting, Houston, October 2017.

### Presentations at Scholarly Meetings (A Partial Listing) – Continued

360. “Addressing Uncertainty in Meter Reading for Utility Companies using RFID Technology” (with D.S. Roy and E. Wasil), presented at INFORMS National Meeting, Houston, October 2017.
361. “An Approximate Dynamic Programming Approach for Patient and Process Prioritization in a Hospital Environment” (with L. Apergi, J. Baras, and K. Wood), presented at INFORMS National Meeting, Houston, October 2017.
362. “Dijkstra’s Algorithm and Graph Modification: Applications to Electric Vehicle Routing and the k-Nearest Retailers Problem” (with S. Poikonen and L. Levy), presented at INFORMS National Meeting, Houston, October 2017.
363. “Addressing Uncertainty in Meter Reading for Utility Companies Using RFID Technology” (with D.S. Roy and E. Wasil), presented at ISB-POMS Workshop, Hyderabad, India, December 2017.
364. “Addressing Uncertainty in Meter Reading for Utility Companies Using RFID Technology: Simulation Experiments” (with C. Defryn and D.S. Roy), presented at ORBEL 2018, Liège, Belgium, February 2018.
365. “A Steiner Zone Variable Neighborhood Search Heuristic for the Close-Enough Traveling Salesman Problem” (with X. Wang and E. Wasil), presented at Odysseus 2018 Conference, Cagliari, Sardinia, June 2018.
366. “Planning Deliveries in Disaster Relief by Truck and Drone” (with A. Otto and S. Poikonen), presented at Odysseus 2018 Conference, Cagliari, Sardinia, June 2018.
367. “Mothership and Drone Routing Problems” (with S. Poikonen), presented at Odysseus 2018 Conference, Cagliari, Sardinia, June 2018.
368. “A Carousel Greedy Approach to the Close Enough Traveling Salesman Problem” (with F. Carrabs, C. Cerrone, and R. Cerulli), presented at Joint EURO/ALIO International Conference 2018 on Applied Combinatorial Optimization, Bologna, June 2018.
369. “New Optimization Problems Arising in Civil Applications of Unmanned Aerial Vehicles (UAVs), or Drones” (with A. Otto, N. Agatz, J. Campbell, and E. Pesch), presented at EURO Mini-Conference on Logistics Analytics, Minsk, Belarus, June 2018.
370. “A Stochastic Programming Approach for Multi-Appointment Outpatient Scheduling in Cardiology” (with L. Apergi, J. Baras, and K. Wood), presented at EURO 2018 Conference, Valencia, July 2018.
371. “The Discrete P-dispersion Problem for the Close Enough Traveling Salesman Problem” (with C. Cerrone, F. Carrabs, and R. Cerulli), presented at EURO 2018 Conference, Valencia, July 2018.
372. “Routing a Truck and a Drone in Disaster Relief” (with A. Otto and S. Poikonen), presented at OR2018, Brussels, September 2018.
373. “Mothership and Drone Routing Problem” (with S. Poikonen), presented at INFORMS National Meeting, Phoenix, November 2018.

**Presentations at Scholarly Meetings (A Partial Listing) – Continued**

374. “The Multi Visit Drone Routing Problem” (with S. Poikonen), presented at INFORMS National Meeting, Phoenix, November 2018.
375. “Global Budget Revenue Policy Impact on Emergency Department Efficiency in Maryland” (with A. Ren, E. Wasil, and M. Bjarnadottir), presented at INFORMS National Meeting, Phoenix, November 2018.
376. “Multi-appointment Outpatient Scheduling for Cardiology Programs” (with L. Apergi, J. Baras, and K. Wood), presented at INFORMS National Meeting, Phoenix, November 2018.
377. “A Continuous-time Markov Model for Estimating Readmission Risk for Hospital Inpatients” (with X. Zhang, S. Barnes, and P. Smith), presented at INFORMS National Meeting, Phoenix, November 2018.
378. “Data Driven Variability Analysis of Vehicle Routes” (with D. S. Roy), presented at INFORMS National Meeting, Phoenix, November 2018.
379. “Data Driven Optimization and Statistical Modeling to Improve Meter Reading for Utility Companies” (with D. S. Roy, C. Defryn, and E. Wasil), presented at INFORMS National Meeting, Phoenix, November 2018.
380. “Data Driven Variability Analysis of Vehicle Routes” (with D. S. Roy), presented at Annual Meeting of DSI, Chicago, November 2018.
381. “Data Driven Optimization and Statistical Modeling to Improve Meter Reading for Utility Companies” (with D. S. Roy, C. Defryn, and E. Wasil), presented at Annual Meeting of DSI, Chicago, November 2018.
382. “Multi-visit Drone Routing Problem with Speed Optimization” (with S. Poikonen), presented at INFORMS Computing Society Conference, Knoxville, January 2019.
383. “Data-Driven Optimization and Statistical Modeling to Improve Meter Reading for Utility Companies” (with D.S. Roy, C. Defryn, and E. Wasil), presented at INFORMS Computing Society Conference, Knoxville, January 2019.
384. “Flying Taxis: The Future of Urban Mobility” (with E. Oden and S. Raghavan), presented at POMS 30<sup>th</sup> Annual Conference, Washington, D.C., May 2019.
385. “Data-Driven Optimization and Statistical Modeling to Improve Meter Reading for Utility Companies” (with D.S. Roy, C. Defryn, and E. Wasil), presented at POMS 30<sup>th</sup> Annual Conference, Washington, D.C., May 2019.
386. “Multi-Appointment Outpatient Scheduling in Cardiology” (with L. Apergi, J. Baras, and K. Wood), presented at IISE Annual Conference & Expo, Orlando, May 2019.
387. “Methods for Solving Problems in Urban Air Mobility” (with E. Oden and S. Raghavan), presented at Verolog Conference, Seville, June 2019.
388. “The Mothership and Drone Routing Problem with Obstacles” (with S. Poikonen), presented at Verolog Conference, Seville, June 2019.

**Presentations at Scholarly Meetings (A Partial Listing) – Continued**

389. “A Two-Stage Solution Approach for the Directed Rural Postman Problem with Turn Penalties” (with C. Cerrone, B. Dussault, X. Wang, and E. Wasil), presented at Verolog Conference, Seville, June 2019.
390. “The Mothership and Drone Routing Problem with Obstacles” (with S. Poikonen), presented at EURO Conference, Dublin, June 2019.
391. “Patient Prioritization in Cardiac Catheterization Labs” (with L. Apergi, J. Baras, and K. Wood), presented at EURO Conference, Dublin, June 2019.
392. “A Continuous Solution Method for the Multi-visit Drone Routing Problem” (with A. Masone and S. Poikonen), presented at TSL Workshop, Vienna, July 2019.
393. “Discovering Connections Among Emergency Rooms in Terms of Alerts in Region III in Maryland” (with X. Zhang, S. Barnes, and P. Smith), presented at Joint Statistical Meetings, Denver, July 2019.
394. “A Continuous Solution Method for the Multi-Visit Drone Routing Problem” (with A. Masone and S. Poikonen), presented at International Conference on Optimization and Decision Science, Genova, September 2019.
395. “A Framework to Transform Truck-and-Drone Coordination Problems into Traveling Salesman Problems” (with S. Poikonen and A. Masone), presented at International Conference on Optimization and Decision Science, Genova, September 2019.
396. “The Power of Linear Programming: Some Surprising and Unexpected LPs,” presented at International Conference on Optimization and Decision Science, Genova, September 2019.
397. “Reflections and Reminiscences from my 45 Years in Routing and Logistics,” presented at INFORMS National Meeting as TSL Distinguished Lecture, Seattle, October 2019.
398. “Applications of Difference-in-differences Design in Emergency Medicine” (with A. Ren and E. Wasil), presented at INFORMS National Meeting, Seattle, October 2019.
399. “Data Mining of Hospital Alerts in Emergency Departments in Maryland” (with X. Zhang, S. Barnes, and P. Smith), presented at INFORMS National Meeting, Seattle, October 2019.
400. “Global Budget Revenue Policy Impact on Emergency Department Efficiency in Maryland” (with A. Ren, E. Wasil, F. Alt, M. Bjarnadottir, J.M. Hirshon, and L. Pimentel), presented at INFORMS National Meeting, Seattle, October 2019.
401. “Data Driven Optimization and Statistical Modeling to Improve Meter Reading for Utility Companies” (with D.S. Roy, C. Defryn, and E. Wasil), presented at INFORMS National Meeting, Seattle, October 2019.
402. “MMR Vaccination Rates and the Effect of New Information” (with L. Apergi, M. Bjarnadottir, and J. Baras), presented at INFORMS National Meeting, Seattle, October 2019.
403. “A Framework to Transform Truck-and-Drone Coordination Problems into Traveling Salesman Problems” (with S. Poikonen and A. Masone), presented at INFORMS National Meeting, Seattle, October 2019.

### **Presentations at Scholarly Meetings (A Partial Listing) – Continued**

404. “The Multi-visit Drone Routing Problem” (with S. Poikonen and A. Masone), presented at INFORMS National Meeting, Seattle, October 2019.
405. “Patient Prioritization in Cardiac Catheterization Labs” (with L. Apergi, J. Baras, and K. Wood), presented at INFORMS National Meeting, Seattle, October 2019.
406. “The Mothership and Drone Routing Problem with Obstacles” (with S. Poikonen), presented at INFORMS National Meeting, Seattle, October 2019.
407. “Statistical Models in Vehicle Routing” (with D.S. Roy, E. Wasil, X. Wang, and A. Masone), presented at INFORMS National Meeting, Seattle, October 2019.
408. “A Two-stage Solution Approach for the Directed Rural Postman Problem with Turn Penalties” (with C. Cerrone, B. Dussault, X. Wang, and E. Wasil), presented at INFORMS National Meeting, Seattle, October 2019.
409. “The Power of Linear Programming: Some Surprising and Unexpected LPs,” presented at Villanova University, Villanova, November 2019.

### **Service to University of Maryland**

Chairman, Management Science and Statistics Workshop, 1976-1980.

Member, Graduate Committee in the College of Business and Management, 1977-1979

Member of Interdisciplinary Applied Mathematics Faculty, Chairman and Member of Numerous Student Advisory Committees, 1977-

Chairman, Task Force on Research Grants and Contracts, 1978-1979

Member, Research Committee in the College of Business and Management, 1978-1980

Member, Search Committee - Associate Dean, 1979

Member, MBA Revision Task Force, 1979-1980

Member, Academic Council of Division of Social and Behavioral Sciences, 1979-1980

Member, Applied Mathematics Graduate Committee, 1979-1981

Member, Committee to Organize and Fine-Tune the Master of Science Program in Management Science and Statistics, 1979-1982



**Service to University of Maryland – Continued**

Member, Search Committee for Computer Science Center Director, 1980

Member, General Research Board Awards Task Force, 1980

Chairman, Faculty of Management Science and Statistics, 1980-1995

Fundraiser, Raised in excess of \$5,000 for the College as Chairman

Editor, Management Science and Statistics Working Paper Series, 1980-1993

Member, Search Committee - Assistant Dean, 1982

Candidate Review Committee Chairman (Dr. Gene Carter), 1985

Member, Committee to Review the Department of Government and Politics, 1985-1986

Speaker, Executive Development Programs, 1985-1987

Supervisor, Numerous Independent Study Courses

Member, Ph.D. Thesis Committees, Computer Science, Civil Engineering, and Electrical Engineering Departments, and Center for Environmental and Estuarine Studies

Member of DBA/Ph.D. Committees, College of Business and Management

Member, Search Committee - Two Positions in Manufacturing, 1989

Member, General Research Board Year Award Committee, 1989

Member, Research Subcommittee of BMGT Strategic Planning Committee, 1990

Chairman, Campus-wide Conflict of Interest/Commitment Committee, 1990

Member, College-wide Budget Reduction Committee, 1990

Chairman, Search Committee - Associate Dean, 1991

Member, Search Committee - Dean, 1991-1992

Member, Search Committee - Ph.D. Director, 1993

Chairman, Search Committee - Associate Dean, 1994

Member, Faculty Services Reengineering Committee, 1995

Chairman, College-wide Salary Review Committee, 1996

Member, Graduate Committee of Applied Mathematics, 1996-1998

Chairman, Strategic Review Committee on the Role of Information Technology in the Maryland Business School, 1996-1997

**Service to University of Maryland – Continued**

Member, Academic Planning Advisory Committee (APAC), 1997-2000

Member, Search Committee - Statistician, 1997-1998

Member, Search Committee - Telecommunications & OR, 1997-1998

Member, Selection Committee - 1998-2000 Distinguished Faculty Research Fellow Awards, 1998

Candidate Review Committee Chairman (Dr. Donald Riley), 1998

Member, Search Committee - IS Chair, 1998-1999

Member, Endowed Chairs Committee, 1998-

Member, Selection Committee for 1999-2000 Lilly-CTE Fellows, 1999

Chair, Search Committee - Management of Technology, 1999-2000

Member, Steering Committee, Center for Knowledge and Information Management, 1999-2000

Member, Undergraduate Research Focus Group, 2000

Chair, Search Committee - Data Analysis, 2000-2001

Member, Selection Committee for 2001-2002 Lilly-CTE Fellows, 2001

Candidate Review Committee Chairman (Dr. G. Anandalingam), 2001

Chair, Selection Committee for Abraham Golub Memorial Dissertation Proposal Prize, 2001

Chair, Third Year Review Committee for Dr. Samer Faraj, 2001

Member, Applied Math and Scientific Computation Graduate Committee, 2001-2003

Member, Campus-wide Committee to prepare the Biotechnology Industry Center Proposal for the Sloan Foundation, 2001

Chair, Search Committee - Data Analysis, 2001-2002

Chair, Selection Committee for Abraham Golub Memorial Dissertation Proposal Prize, 2002

Chair, College-wide Salary Review Committee, 2002

Candidate Review Committee Member (Dr. Paul Tesluk), 2002

Candidate Review Committee Member (Dr. Craig Carter), 2002

Member, College-wide Ph.D. Oversight Committee, 2002-

Member, Selection Committee for 2003-2004 Distinguished Scholar-Teacher Awards, 2002

Member, Selection Committee for Kirwan Undergraduate Education Award, 2003

**Service to University of Maryland – Continued**

Chair, Selection Committee for Abraham Golub Memorial Dissertation Proposal Prize, 2003  
Candidate Review Committee Member (Dr. Tim Pollock), 2003  
Chair, Selection Committee for Abraham Golub Memorial Dissertation Proposal Prize, 2004  
Candidate Review Committee Chairman (Dr. S. Raghavan), 2004  
Candidate Review Committee Member (Dr. Violina Rindova), 2004  
Chair, Selection Committee for Abraham Golub Memorial Dissertation Proposal Prize, 2005  
Chair, Selection Committee for Abraham Golub Memorial Dissertation Proposal Prize, 2006  
Member, Organizing Committee, Operations Research in the 21<sup>st</sup> Century: A Symposium in Honor of Saul Gass on his 80<sup>th</sup> Birthday, 2005-2006  
  
Served as mentor to John Silberholz at Montgomery Blair High School in the Intel Competition in Science and Math, where John won 1<sup>st</sup> place in the computer science division, 2005-2006  
  
Candidate Review Committee Chairman (Dr. W. Jank), 2006  
Chair, Selection Committee for Abraham Golub Memorial Dissertation Proposal Prize, 2007  
Candidate Review Committee Member (Dr. Wedad Elmaghraby), 2007  
Chair, Selection Committee for Abraham Golub Memorial Dissertation Proposal Prize, 2008  
Chair, Selection Committee for Abraham Golub Memorial Dissertation Proposal Prize, 2009  
Member, Provost's Advisory Committee on Living-Learning and Special Programs, 2009-2011  
Member, Search Committee – Operations Management, 2009-2010  
Candidate Review Committee Member (Dr. S. Raghavan), 2009  
Chair, Selection Committee for Abraham Golub Memorial Dissertation Proposal Prize, 2010  
Fulbright Faculty Mentor and Evaluator, Fall 2011  
Member, Search Committee – OR/OM, 2011-2012  
Chair, Undergraduate Operations Management Committee, 2011-2012  
Chair, Selection Committee for Abraham Golub Memorial Dissertation Proposal Prize, 2011  
Chair, Selection Committee for Abraham Golub Memorial Dissertation Proposal Prize, 2012  
Fulbright Faculty Mentor and Evaluator, Fall 2012  
Fulbright Faculty Mentor and Evaluator, Fall 2013  
Candidate Review Committee Chairman (Dr. Tunay Tunca), 2013  
Chair, Selection Committee for Abraham Golub Memorial Dissertation Proposal Prize, 2013  
Moderator, Panel Discussion on Healthcare Analytics at Smith School Business Summit, 2014  
Member, Named Professorship/Endowed Chair Renewal Committee, 2014-2017

### **Service to University of Maryland – Continued**

Member, Smith School Research Seminar Committee, 2014

Member, IS Faculty Search Committee, 2014-2015

Fulbright Faculty Mentor and Evaluator, Fall 2014

Member, Campus APT Committee, 2014-2017

Chair, Selection Committee for Abraham Golub Memorial Dissertation Proposal Prize, 2014

Chair, Third Year Review Committee for Margret Bjarnadottir, 2015

Fulbright Faculty Mentor and Evaluator, Fall 2015

Chair, Selection Committee for Abraham Golub Memorial Dissertation Proposal Prize, 2015

Chair, Selection Committee for Abraham Golub Memorial Dissertation Proposal Prize, 2016

Chair, Third Year Review Committee for Sean Barnes, 2016

Candidate Review Committee Member (Dr. Frank Alt), 2016

Candidate Review Committee Member (Dr. Ilya Ryzhov), 2016

Candidate Review Committee Member (Dr. Anand Gopal), 2016

Chair, Post-tenure Review Committee for Dr. S. Raghavan, 2017

Chair, Selection Committee for Abraham Golub Memorial Dissertation Proposal Prize, 2017

Chair, Committee to Evaluate Journals in Healthcare Analytics, 2018-2019

Chair, Selection Committee for Abraham Golub Memorial Dissertation Proposal Prize, 2018

Member, Search Committee for Lecturer and Two Associate Clinical Professors, 2018

Candidate Review Committee Chairman (Dr. Gordon Gao), 2018

Chair, Selection Committee for Abraham Golub Memorial Dissertation Proposal Prize, 2019

Candidate Review Committee Chairman (Dr. Margret Bjarnadottir), 2019

### **Contracts and Grants**

Co-Principal Investigator (with L. Bodin), Contract from the Urban Mass Transportation Administration to analyze the subscription scheduling problem for dial-a-ride systems and to study the stochastic bus routing and scheduling problem, \$40,000, 1977-1979.

Co-Principal Investigator (with S. Gass and L. Bodin), "Workshop to Investigate Future Directions in Routing and Scheduling of Vehicles and Crews," NSF Grant, \$20,000, 1979.

Co-Principal Investigator (with L. Bodin), Grant from Urban Mass Transportation Administration of DOT to write a "State-of-the-Art Review on the Routing and Scheduling of Vehicles and Crews," \$35,000, 1980-1981.

Project Director, Grant from Westinghouse Defense and Electronic Systems Center to study reliability and microcomputer-based expert systems, \$27,000, 1984-1985.

Investigator (with B. Rothschild), Grant from the Agency for International Development to study Multiple-Species Fishery Management, \$500,000, 1985-1989.

**Contracts and Grants – Continued**

Project Director, Grant from Westinghouse Defense and Electronic Systems Center to develop a microcomputer-based availability and costing model, \$15,000, 1986.

Principal Investigator, Contract from the Bureau of the Census to apply network and combinatorial optimization algorithms to confidentiality protection problems, \$177,000, 1987-1992.

Investigator (with B. Rothschild), Contract with Maryland Department of Natural Resources to study enhancement of oyster production in the Chesapeake Bay, \$100,000, 1989-1990.

Principal Investigator, Grant from Westinghouse Defense and Electronic Systems Center to apply neural networks to wirebonding process control, \$25,000, 1991-1992.

Investigator (with G.L. Chang), Contract from the Federal Highway Administration to study dynamic traffic assignment for IVHS, \$200,000, 1990-1992.

Principal Investigator, Grant from Westinghouse Defense and Electronic Systems Center to apply neural networks to wirebonding process control (second year of support), \$30,000, 1992-1993.

Principal Investigator, Grant from Westinghouse Defense and Electronic Systems Center to apply neural networks to wirebonding process control (third year of support), \$20,000, 1993.

Principal Investigator, Grant from the Chubb Group of Insurance Companies to apply neural networks to hurricane prediction, \$2750 (student support), 1993.

Principal Investigator, Grant from the University of Maryland Total Quality Research Program to develop a template for applying neural networks to process manufacturing at Westinghouse, \$4000, 1993-1994.

Principal Investigator, Grant from the Chubb Group of Insurance Companies to apply neural networks to hurricane prediction, \$5500 (student support), 1994.

Principal Investigator, Grant from Westinghouse Defense and Electronic Systems Center for implementation of wirebond quality prediction using neural networks, \$9,000, 1994.

Investigator (with A. Haghani), Contract from the Federal Highway Administration to apply neural networks to traffic light synchronization, \$430,000, 1994-1995.

Principal Investigator, Grant from Westinghouse Defense and Electronic Systems Center to continue with the implementation of wirebond quality prediction using neural networks, \$20,000, 1994-1995.

Principal Investigator, Dingman Center Summer Research Grant to obtain better predictions of the degree of underpricing of initial public offerings, \$5000, 1995-1996.

Principal Investigator, College of Business and Management Summer Research Grant to apply fine-tuned learning to enhance prediction and forecasting, \$5000, 1996-1997.

Principal Investigator, College of Business and Management Summer Research Grant to study the intelligent application of metaheuristics to the vehicle routing problem, \$7000, 1997-1998.

### Contracts and Grants – Continued

Principal Investigator, College of Business and Management Summer Research Grant to study future directions in vehicle routing research, \$8000, 1998.

Principal Investigator, Confidentiality/Data Exchange Agreement with a prominent "Rent-A-Car" company to apply data mining techniques to massive data sets, 1998-2000.

### Courses Taught at the University of Maryland

BMGT 231 - Business Statistics I  
 BMGT 332 - Operations Research for Management Decisions  
 BMGT 434 - Introduction to Optimization  
 BMGT 434 (new) - Analytics Consulting: Papers, Cases, and Projects in OM/BA  
 BMGT 698 - MBA Group Field Projects  
 BMGT 734 - Management Science and Computer Laboratory  
 BMGT 735 - A Second Course in Management Science  
 BMGT 828 - Current Topics in Operations Research and Management Science  
 BMGT 831 - Management Science II, Network Optimization  
 BMGT 833 - Management Science IV, Integer Programming  
 BUDT 725 - Models and Applications in Operations Research  
 BMGT 808U - Quantitative Modeling for Hospital Operations and Management  
 BUDT 758B - Operations Management in Health Services Organizations  
 GEMS 296 - Team Project Seminar I  
 GEMS 297 - Team Project Seminar II  
 GEMS 396 - Team Project Seminar III  
 GEMS 397 - Team Project Seminar IV  
 GEMS 496 - Team Project Seminar V  
 GEMS 497 - Team Project Seminar VI  
 BMGT 490H - QUEST Capstone Course

### Thesis Supervision

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|-----------------------|-------|---|
| 1. Larry J. Levy      | M.S.  | "The Fleet Mix Vehicle Routing Problem"<br>August 1980  |
| 2. William R. Stewart | Ph.D. | "New Algorithms for Deterministic and Stochastic Vehicle Routing Problems"<br>March 1981                    |
| 3. Karen D. Keating   | M.S.  | "Applications of Network Analysis in Finance: Cash Flow Management and Asset Diversification"<br>April 1981 |

**Thesis Supervision – Continued**

4. James S. DeArmon	M.S.	"A Comparison of Heuristics for the Capacitated Chinese Postman Problem" April 1981
5. Moshe Dror	Ph.D.	"The Inventory Routing Problem" August 1983
6. Edward A. Wasil	Ph.D.	"Evaluating the Performance of Alternative Solution Methods for Combinatorial Optimization and Other Decision Problems" January 1984
7. Wen-Lea Pearn	Ph.D.	"Solving the Capacitated Arc Routing Problem" May 1984
8. Barindra Nag	Ph.D.	"Vehicle Routing in the Presence of Site/Vehicle Dependency Constraints" December 1986
9. Chris S. Skiscim	M.S.	"Solving k-Shortest and Constrained Shortest Path Problems Efficiently" June 1987
10. John E. Brennan	M.S.	"A Simulation Modeling Analysis of a Mobile Blood Collection Operation in the Red Cross" May 1989
11. Jayasree K. Suryanarayanan	M.S.	"Linear Placement with Multidimensional Scaling" June 1989
12. Michael Silberholz	M.S.	"A Simulation Model of Work Rules at Marine Container Terminals" August 1989
13. Douglas Levy	M.S.	"The Analytic Hierarchy Process: Applications to Natural Resource and Environmental Management" December 1989
14. James P. Kelly	Ph.D.	"Confidentiality Protection in Two and Three-Dimensional Tables" April 1990
15. Qiwen Wang	Ph.D.	"Applications of Operations Research to Fisheries Management" July 1990
16. Susan Imber	M.S.	"Applications of Linear Programming and the Analytic Hierarchy Process to Fisheries Management" July 1990
17. Daniel O. Casco	Ph.D.	"The Backhaul Problem and Related Topics in Vehicle Routing" January 1991

**Thesis Supervision – Continued**

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| 18. Jennifer Michaels         | M.S.  | "A Simulation Study of Donor Scheduling Systems for the American Red Cross"<br>April 1991  |
| 19. Katherine J.<br>Toussaint | M.S.  | "Exchange Heuristics to Improve the Clarity of Base/Time Plots"<br>August 1991   |
| 20. Lenore DeSilets           | M.S.  | "Applications of Neural Networks to Marine Ecology and Statistical Confidentiality"<br>August 1991   |
| 21. John B. Nocito            | M.S.  | "Heuristic Solutions to the Two- Player Orienteering Problem"<br>April 1993  |
| 22. Ram Kumar                 | Ph.D. | "Data Integrity and Security Issues in Publishing Tabular Economic Data"<br>July 1993  |
| 23. I-Ming Chao               | Ph.D. | "Algorithms and Solutions to Multi-level Vehicle Routing Problems"<br>July 1993  |
| 24. Xiaoyun Sun               | Ph.D. | "Neural Network Models for the Wire Bonding Process"<br>December 1994  |
| 25. Ohseok Kwon               | Ph.D. | "Neural Network Models for Prediction, Estimation, and Optimization: Algorithms and Applications"<br>October 1995                            |
| 26. Steven J. Robertson       | M.S.  | "Modeling Initial Public Offerings with Artificial Neural Networks"<br>May 1996  |
| 27. Edward M. Condon          | M.S.  | "Predicting the Success of Nations in the Summer Olympics Using Neural Networks"<br>December 1997  |
| 28. Andrew R. Beiderman       | M.S.  | "Solving the Vehicle Routing and Traveling Salesman Problems with Elastic Nets: Models, Algorithms, and Computational Results"<br>April 1998 |
| 29. Steven P. Coy             | Ph.D. | "Fine-Tuned Learning: A New Approach to Improving the Performance of Local Search Heuristics"<br>May 1998                                    |
| 30. Kimberly A. Hopkins       | M.S.  | "Modeling Initial Public Offerings using Artificial Neural Networks"<br>November 1998  |



**Thesis Supervision – Continued**

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|---------------------------------|-------|--|
| 31. Joshua W. Pepper            | M.S.  | "A Computational Study of Annealing-Based Heuristics for the Traveling Salesman Problem"<br>June 1999  |
| 32. Joseph Callender II         | M.S.  | "Identifying Potential Telecommunications Markets Using Regression Models"<br>December 1999  |
| 33. Zhiwei Fu                   | Ph.D. | "Using Genetic Algorithms to Develop Intelligent Decision Trees"<br>June 2000  |
| 34. James Richardson            | M.S.  | "Ranking the Greatest Active Sports Records Using the Analytic Hierarchy Process"<br>July 2000   |
| 35. Kimberly A. Ozga            | M.S.  | "An Empirical Study of Interestingness Measures for Classification Rules"<br>July 2001   |
| 36. Matthew P. Feist            | M.S.  | "Improving the Performance of Sammon Maps by the Use of Smoothing Functions and Principal Coordinate Analysis Starting Solutions"<br>December 2001 |
| 37. Ioannis Gamvros             | M.S.  | "The Multi-Level Capacitated Minimum Spanning Tree Problem"<br>December 2002   |
| 38. Roselyn M.<br>Abbiw-Jackson | Ph.D. | "Discrete Optimization Models in Data Visualization"<br>November 2004  |
| 39. Brian Alford                | M.S.  | "Two Applications Involving the Analytic Hierarchy Process"<br>November 2004   |
| 40. Haiyan Li                   | Ph.D. | "Data Visualization of Asymmetric Data Using Sammon Mapping and Applications of Self-Organizing Maps"<br>December 2004                             |
| 41. Ian Frommer                 | Ph.D. | "Modeling and Optimization of Transmission Networks"<br>April 2005   |
| 42. Todd Retchless              | M.S.  | "Ranking U.S. Army Generals of the Twentieth Century using the Group Analytic Hierarchy Process"<br>June 2005                                      |
| 43. Yupei Xiong                 | Ph.D. | "The Minimum Labeling Spanning Tree Problem and Some Variants"<br>July 2005  |

**Thesis Supervision – Continued**

44. Feiyue Li	Ph.D.	"Modeling and Solving Variants of the Vehicle Routing Problem: Algorithms, Test Problems, and Computational Results" August 2005
45. Kok – Hua Loh	Ph.D.	"Weight Annealing Heuristics for Solving Bin Packing and Other Combinatorial Optimization Problems: Concepts, Algorithms, and Computational Results" August 2006
46. Si Chen	Ph.D.	"A Study of Four Network Problems in Transportation, Telecommunications, and Supply Chain Management" July 2007
47. Xia Wang	Ph.D.	"Applications of Genetic Algorithms, Dynamic Programming, and Linear Programming to Combinatorial Optimization Problems" September 2008
48. Chris Groer	Ph.D.	"Parallel and Serial Algorithms for Vehicle Routing Problems" December 2008
49. Carter Price	Ph.D.	"Applications of Operations Research Models to Problems in Health Care" January 2009
50. Namrata Cornick	M.S.	"The Vehicle Routing Problem with Demand Ranges" May 2009
51. William Mennell	Ph.D.	"Heuristics for Solving Three Routing Problems: Close-Enough Traveling Salesman Problem, Close-Enough Vehicle Routing Problem, Sequence-Dependent Team Orienteering Problem" August 2009
52. Robert Kistner	M.S.	"The Robust Vehicle Routing Problem: An Application of the Traveling Salesman Problem with Center" December 2009
53. Damon Gulczynski	Ph.D.	"Integer Programming-Based Heuristics for Vehicle Routing Problems" May 2010
54. Kiran Panchamgam	Ph. D.	"Essays in Retail Operations and Humanitarian Logistics" December 2010
55. Sean Barnes	Ph. D.	"An Agent-Based Modeling Approach to Reducing Pathogenic Transmission in Medical Facilities and Community Populations" December 2011

### Thesis Supervision – Continued

56. Benjamin Dussault	Ph.D.	“Modeling and Solving Arc Routing Problems in Street Sweeping and Snow Plowing” August 2012
57. David Anderson	Ph.D.	“The Impact of Resource Management on Hospital Efficiency and Quality of Care” June 2013
58. Stuart Price	Ph.D.	“Applying Operations Research Models to Problems in Health Care” December 2014
59. Xingyin Wang	Ph.D.	“Vehicle Routing Problems that Minimize the Completion Time: Heuristics, Worst-Case Analyses, and Computational Results” June 2016
60. Oliver Lum	Ph.D.	“Solving, Generating, and Modeling Arc Routing Problems” July 2017
61. Xia Hu	Ph.D.	“Application of Mathematical and Computational Models to Mitigate the Overutilization of Healthcare Systems” July 2017
62. Stefan Poikonen	Ph.D.	“Hybrid Routing Models Utilizing Trucks or Ships to Launch Drones” June 2018
63. Debdatta S. Roy	Ph.D.	“Data-Driven Optimization and Statistical Modeling to Improve Decision Making in Logistics” July 2019
64. Xu Zhang	Ph.D.	“New Statistical Methods to Better Leverage Emerging Health Care Utility Data” December 2019

### APPENDICES--PUBLICATIONS\*

#### A. Books and Edited Volumes

1. Editor (with L. Bodin) - Proceedings of the International Workshop on Current and Future Directions in the Routing and Scheduling of Vehicles and Crews, Networks, 11 (2), 93-232, 1981.
2. Editor (with A. Assad and S. Zanakis) - Statistics and Optimization: The Interface, American Journal of Mathematical and Management Sciences, 4 (1&2), 1-198, 1984.

\* Abstracts, Newsletter Articles, Consulting Reports, Foreign Language Publications, and Unpublished Technical Reports are not included.

A. Books and Edited Volumes - Continued

3. Editor (with A. Assad and E. Wasil) - Microcomputers in Operations Research and Management Science, Computers & Operations Research, 13 (2/3), 105-366, 1986.
4. Editor (with A. Assad) - Vehicle Routing with Time-Window Constraints: Algorithmic Solutions, American Journal of Mathematical and Management Sciences, 6 (3&4), 251-428, 1986.
5. Editor (with A. Assad) - Vehicle Routing: Methods and Studies, North-Holland, Amsterdam, 1988.
6. Editor (with E. Wasil and P. Harker) - The Analytic Hierarchy Process: Applications and Studies, Springer-Verlag, Heidelberg, 1989.
7. Editor (with R. Sharda, E. Wasil, O. Balci, and W. Stewart) - Impact of Recent Computer Advances on Operations Research, North-Holland, Amsterdam, 1989.
8. Editor (with E. Wasil) - Public Sector Applications of the Analytic Hierarchy Process, Socio-Economic Planning Sciences, 25(2), 87-165, 1991.
9. Editor (with H.A. Eiselt) - Location Modeling in Practice: Applications, Theory, & History, American Journal of Mathematical and Management Sciences, 12(1), 1-87, 1992.
10. Editor (with R. Wong) - Vehicle Routing over Land, Sea, and Air, Interfaces, 22(3), 1-111, 1992.
11. Editor (with E. Wasil) - Operations Research and Fisheries Management, American Journal of Mathematical and Management Sciences, 12(2&3), 95-245, 1992.
12. Editor - Vehicle Routing Problems and Variants, American Journal of Mathematical and Management Sciences, 13(3&4), 245-410, 1993.
13. Editor (with E. Wasil) - The Analytic Hierarchy Process, Computers & Operations Research, 30(10), 1419-1497, 2003.
14. Editor (with S. Raghavan and E. Wasil) - The Next Wave in Computing, Optimization, and Decision Technologies, Springer, New York, 2005.
15. Editor (with F. Alt and M. Fu) - Perspectives in Operations Research: Papers in Honor of Saul Gass' 80<sup>th</sup> Birthday, Springer, New York, 2006.
16. Editor (with S. Raghavan and E. Wasil) - The Vehicle Routing Problem: Latest Advances and New Challenges, Springer, New York, 2008.
17. Editor (with S. Raghavan and E. Wasil) - Telecommunications Modeling, Policy, and Technology, Springer, New York, 2008.
18. Editor (with E. Dudewicz, D. Carpenter, Z. Govindarajulu, S. Mishra, M. Mulekar, J. Romeu, and K. Shimizu) - FSDD-II: Fitting Statistical Distributions to Data, Volume 2, Proceedings of the Symposium on Fitting Statistical Distributions to Data at Auburn University, American Sciences Press, Columbus, Ohio, 2008.
19. Editor (with M. Carter and E. Wasil) - Applications of Management Science and Operations Research Models and Methods to Problems in Health Care, Interfaces, 39(3), 183-287, 2009.
20. Editor (with A. Seidmann) - Healthcare Operations Management, Manufacturing & Service Operations Management, 14(4), 485-699, 2012.

### B. Journal Articles and Book Chapters

1. "Counting Trees in a Certain Class of Graphs" (with D.J. Kleitman), The American Mathematical Monthly, 82(1), 40-44, 1975.
2. "A Minimum-Cost Multicommodity Network Flow Problem Concerning Imports and Exports," Networks, 5(4), 331-356, 1975.
3. "Approaches to the Cutting Stock Problem," AIIE Transactions, 8(2), 265-274, 1976.
4. "Shortest Path Algorithms: A Comparison," Operations Research, 24(6), 1164-1168, 1976.
5. "Modeling and Optimization for Transportation Systems Planning and Operations" (with N. Gartner and R. Wong), in Large Engineering Systems (A. Wexler, ed.), Pergamon Press, Oxford, 198-213, 1977.
6. "Implementing Vehicle Routing Algorithms" (with T.L. Magnanti and H.Q. Nguyen), Networks, 7(2), 113-148, 1977.
7. "Deterministic Network Optimization -- A Bibliography" (with T.L. Magnanti), Networks, 7(2), 149-183, 1977.
8. "A Statistical Approach to the TSP," Networks, 7(3), 209-225, 1977.
9. "Evaluating a Sequential Vehicle Routing Algorithm," AIIE Transactions, 9(2), 204-208, 1977.
10. "Shortest Paths with Euclidean Distances: An Explanatory Model" (with M. Ball), Networks, 8(4), 297-314, 1978.
11. "Point Estimation of a Global Optimum for Large Combinatorial Problems," Communications in Statistics, B7(4), 361-367, 1978.
12. "Transportation Planning: Network Models and Their Implementation" (with T.L. Magnanti), Studies in Operations Management (A.C. Hax, ed.), 465-518, 1978.
13. "A Problem in Network Interdiction," Naval Research Logistics Quarterly, 25(4), 711-713, 1978.
14. "Interval Estimation of a Global Optimum for Large Combinatorial Problems" (with F. Alt), Naval Research Logistics Quarterly, 26(1), 69-77, 1979.
15. "A Framework for Probabilistic Vehicle Routing" (with J.R. Yee), AIIE Transactions, 11(2), 109-112, 1979.
16. "Models and Solution Techniques for Cash Flow Management" (with M. Liberatore and C. Lieberman), Computers & Operations Research, 6(1), 13-20, 1979.
17. "A Note on Determining Operating Strategies for Probabilistic Vehicle Routing" (with J.R. Yee), Naval Research Logistics Quarterly, 27(1), 159-163, 1980.
18. "A Model for the Blocking of Trains" (with L. Bodin, A. Schuster, and W. Romig), Transportation Research, 14B, 115-120, 1980.
19. "Approximate Traveling Salesman Algorithms" (with L. Bodin, T. Doyle, and W. Stewart), Operations Research, 28(3), 694-711, 1980.
20. "Current and Future Directions in Network Optimization" (with L. Bodin and M. Ball), Computers & Operations Research, 8(2), 71-81, 1981.

B. Journal Articles and Book Chapters – Continued

21. "Classification in Vehicle Routing and Scheduling" (with L. Bodin), Networks, 11(2), 97-108, 1981.
22. "Capacitated Arc Routing Problems" (with R. Wong), Networks, 11(3), 305-315, 1981.
23. "Two Generalizations of the Traveling Salesman Problem" (with L. Levy and R. Dahl), OMEGA, 9(4), 439-441, 1981.
24. "A Graph-Theoretic Approximation of e" (with D. Casco), Two-Year College Mathematics Readings (W. Page, ed.), The Mathematical Association of America, 147-148, 1981.
25. "A Categorized Bibliography of Survey Articles in Management Science and Operations Research" (with A. Assad), Management Science, 28(4), 425-438, 1982.
26. "Network Techniques for Solving Asset Diversification Problems in Finance" (with K. Keating), Computers & Operations Research, 9(3), 173-195, 1982.
27. "Planning for Truck Fleet Size in the Presence of a Common Carrier Option" (with M. Ball, A. Assad, and L. Bodin), Decision Sciences, 14(1), 103-120, 1983.
28. "Computational Experiments with Algorithms for a Class of Routing Problems" (with J. DeArmon and E. Baker), Computers & Operations Research, 10(1), 47-59, 1983.
29. "Routing and Scheduling of Vehicles and Crews: The State of the Art" (with L. Bodin, A. Assad, and M. Ball), Computers & Operations Research, 10(2), 62-212 (The Entire Issue), 1983.
30. "A Preliminary Framework for Urban Model-Building" (with A. Assad), in Adequate Modeling of Systems (H. Wedde, ed.), Springer-Verlag, Germany, 319-330, 1983.
31. "Stochastic Vehicle Routing: A Comprehensive Approach" (with W. Stewart), European Journal of Operational Research, 14, 371-385, 1983.
32. "Scheduling Players in Team Competitions: Theory and Computational Results" (with A. Assad and J. Yee), American Journal of Mathematical and Management Sciences, 3(2), 89-119, 1983.
33. "The Fleet Size and Mix Vehicle Routing Problem" (with A. Assad, L. Levy, and F. Gheysens), Computers & Operations Research, 11(1), 49-66, 1984.
34. "Introduction to and Recent Advances in Vehicle Routing Methods," Transportation Planning Models (M. Florian, ed.), North-Holland, 383-418, 1984.
35. "A Lagrangean Relaxation Heuristic for Vehicle Routing" (with W. Stewart), European Journal of Operational Research, 15, 84-88, 1984.
36. "Garage Location for an Urban Mass Transit System" (with M. Ball, A. Assad, L. Bodin, and F. Spielberg), Transportation Science, 18, 56-75, 1984.
37. "On Solving the Vehicle Fleet Size and Mix Problem" (with F. Gheysens and A. Assad), Operational Research '84 (J.P. Brans, ed.), North-Holland, 721-734, 1984.
38. "A Decision-Theoretic Framework for Comparing Heuristics" (with A. Assad), European Journal of Operational Research, 18, 167-171, 1984.
39. "A Comparison of Techniques for Solving the Fleet Size and Mix Vehicle Routing Problem" (with F. Gheysens and A. Assad), OR Spektrum, 6, 207-216, 1984.

B. Journal Articles and Book Chapters – Continued

40. "Analysis of a Large-Scale Vehicle Routing Problem with an Inventory Component" (with A. Assad and R. Dahl), Large Scale Systems, 7, 181-190, 1984.
41. "Empirical Analysis of Heuristics" (with W. Stewart), in The Traveling Salesman Problem (E. Lawler, J.K. Lenstra, A. Rinnooy Kan, D. Shmoys, eds.), John Wiley & Sons, 207-249, 1985.
42. "Statistics in Management Science" (with A. Assad and E. Wasil), Encyclopedia of Statistical Sciences - Volume 5 (S. Kotz, N. Johnson, and C. Read, eds.), John Wiley & Sons, 191-198, 1985.
43. "Network Analysis" (with L. Bodin), Encyclopedia of Statistical Sciences - Volume 6 (S. Kotz, N. Johnson, and C. Read, eds.), John Wiley & Sons, 185-191, 1985.
44. "Statistics in Optimization" (with A. Assad), Encyclopedia of Statistical Sciences - Volume 6 (S. Kotz, N. Johnson, and C. Read, eds.), John Wiley & Sons, 472-478, 1985.
45. "PERT" (with A. Assad), Encyclopedia of Statistical Sciences - Volume 6 (S. Kotz, N. Johnson, and C. Read, eds.), John Wiley & Sons, 691-697, 1985.
46. "Future Directions in Logistics Research" (with E. Baker), Transportation Research, 19A (5&6), 405-409, 1985.
47. "A New Heuristic for Determining Fleet Size and Composition" (with F. Gheysens and A. Assad), Mathematical Programming Study 26, 233-236, 1986.
48. "Using Simulated Annealing to Solve Routing and Location Problems" (with C. Skiscim), Naval Research Logistics Quarterly, 33(2), 261-279, 1986.
49. "Mathematical Programming Software for Microcomputers" (with R. Sharda and E. Wasil), Impacts of Microcomputers on Operations Research (S. Gass, H. Greenberg, K. Hoffman, R. Langley, eds.), 47-54, 1986.
50. "Vehicle Routing Software for Microcomputers: A Survey" (with L. Bodin and W. Goodwin), Impacts of Microcomputers on Operations Research (S. Gass, H. Greenberg, K. Hoffman, R. Langley, eds.), 65-72, 1986.
51. "Decision Insight Systems for Microcomputers: An Overview" (with A. Hevner, D. Power, and E. Wasil), Impacts of Microcomputers on Operations Research (S. Gass, H. Greenberg, K. Hoffman, R. Langley, eds.), 172-179, 1986.
52. "Nonlinear Programming on a Microcomputer" (with E. Wasil), Computers & Operations Research, 13(2/3), 149-166, 1986.
53. "Decision Insight Systems for Microcomputers: A Critical Evaluation" (with A. Hevner and D. Power), Computer & Operations Research, 13(2/3), 287-300, 1986.
54. "Expert Systems, Microcomputers, and Operations Research" (with A. Assad), Computers & Operations Research, 13(2/3), 301-321, 1986.
55. "Microcomputer-Based Vehicle Routing and Scheduling Software" (with L. Bodin and W. Goodwin), Computers & Operations Research, 13(2/3), 277-285, 1986.
56. "A Computational Comparison of Algorithms for the Inventory Routing Problem" (with M. Dror and M. Ball), Annals of Operations Research, 4, 3-23, 1985/6.
57. "Experimentation in Optimization" (with A. Assad, E. Wasil, and E. Baker), European Journal of Operational Research, 27(1), 1-16, 1986.

B. Journal Articles and Book Chapters – Continued

58. "Perspectives on Vehicle Routing: Exciting New Developments" (with A. Assad), Operations Research, 34(5), 803-810, 1986.
59. "A Microcomputer-Based Decision Support System for Multi-Species Fishery Management" (with B. Rothschild and A. Assad), in Strategic Planning in Energy and Natural Resources (B. Lev et al., eds.), 333-339, 1987.
60. "The Capacitated Chinese Postman Problem: Lower Bounds and Solvable Cases" (with A. Assad and W.L. Pearn), American Journal of Mathematical and Management Sciences, 7(1 & 2), 63-88, 1987.
61. "Transforming Arc Routing into Node Routing Problems" (with W.L. Pearn and A. Assad), Computers & Operations Research, 14(4), 285-288, 1987.
62. "The Orienteering Problem" (with L. Levy and R. Vohra), Naval Research Logistics, 34(3), 307-318, 1987.
63. "Computerized Vehicle Routing in the Soft Drink Industry" (with E. Wasil), Operations Research, 35(1), 6-17, 1987.
64. "Computing k-Shortest Path Lengths in Euclidean Networks" (with C. Skiscim), Networks, 17(3), 341-352, 1987.
65. "Ranking Outstanding Sports Records" (with E. Wasil), Interfaces, 17(5), 32-42, 1987. Reprinted in Excellence in Management Science Practice: A Readings Book (A. Assad, E. Wasil, and G. Lilien, eds.), Prentice Hall, 387-396, 1992.
66. "Interactive Reliability Analysis on a Microcomputer" (with A. Assad, M. Ball, and V. Jeffs), American Journal of Mathematical and Management Sciences, 8(1 & 2), 59-91, 1988.
67. "A Multi-Faceted Heuristic for the Orienteering Problem" (with Q. Wang and L. Liu), Naval Research Logistics, 35(3), 359-366, 1988.
68. "Vehicle Routing with Backhauls: Models, Algorithms, and Case Studies" (with D. Casco and E. Wasil), in Vehicle Routing: Methods and Studies (B. Golden and A. Assad, eds.), North-Holland, 127-147, 1988.
69. "Vehicle Routing with Site Dependencies" (with B. Nag and A. Assad), in Vehicle Routing: Methods and Studies (B. Golden and A. Assad, eds.), North-Holland, 149-159, 1988.
70. "Route Planning for Coast Guard Ships," in Vehicle Routing: Methods and Studies (B. Golden and A. Assad, eds.), North-Holland, 439-443, 1988.
71. "Simulated Annealing: An Annotated Bibliography" (with R. Eglese and N. Collins), American Journal of Mathematical and Management Sciences, 8 (3 & 4), 209-307, 1988.
72. "Finding the Most Vital Arcs in a Network" (with M. Ball and R. Vohra), Operations Research Letters, 8(2), 73-76, 1989.
73. "Using Decision Analysis to Manage Maryland's River Herring Fishery: An Application of AHP" (with G. DiNardo and D. Levy), Journal of Environmental Management, 29(2), 193-213, 1989.
74. "Solving k-Shortest Path Problems and Variants Efficiently" (with C. Skiscim), Annals of Operations Research, 20, 249-282, 1989.



B. Journal Articles and Book Chapters – Continued

75. "Applications of the Analytic Hierarchy Process: A Categorized, Annotated Bibliography" (with E. Wasil and D. Levy), in The Analytic Hierarchy Process: Applications and Studies (B. Golden, E. Wasil, and P. Harker, eds.), Springer-Verlag, 37-58, 1989.
76. "An Alternate Measure of Consistency" (with Q. Wang), in The Analytic Hierarchy Process: Applications and Studies (B. Golden, E. Wasil, and P. Harker, eds.), Springer-Verlag, 68-81, 1989.
77. "State-of-the-Art in Nonlinear Optimization Software for the Microcomputer" (with E. Wasil and L. Liu), Computers & Operations Research, 16(6), 497-512, 1989.
78. "Simulating a Marine Container Terminal on the Macintosh II" (with M. Silberholz and E. Baker), in Impact of Recent Computer Advances on Operations Research (R. Sharda, B. Golden, E. Wasil, O. Balci, and W. Stewart, eds.), North-Holland, 433-443, 1989.
79. "Mathematical Programming Software for the Microcomputer: Recent Advances, Comparisons, and Trends" (with E. Wasil and R. Sharda), in Impact of Recent Computer Advances on Operations Research (R. Sharda, B. Golden, E. Wasil, O. Balci, and W. Stewart, eds.), North-Holland, 263-272, 1989.
80. "Using Simulated Annealing to Solve Controlled Rounding Problems" (with J. Kelly and A. Assad), ORSA Journal on Computing, 2(2), 174-185, 1990.
81. "Scheduling Roving Patrols within a Physical Security System" (with seven co-authors), Defense Transportation Journal, 46(3), 22-23, 1990.
82. "Controlled Rounding of Tabular Data" (with J. Kelly, A. Assad, and E. Baker), Operations Research, 38(5), 761-773, 1990.
83. "The Controlled Rounding Problem: Relaxation and Complexity Issues" (with J. Kelly and A. Assad), OR Spektrum, 12, 129-138, 1990.
84. "Load Estimation in Deliberate Planning for the Military Airlift Command" (with H. Rappoport, L. Levy, and D. Feshbach), Interfaces, 21(4), 63-78, 1991.
85. "A New Heuristic for the Linear Placement Problem" (with J. Suryanarayanan and Q. Wang), Computers & Operations Research, 18(3), 255-262, 1991.
86. "Selecting a Survey Design to Monitor Recreational Angling for Striped Bass in the Chesapeake Bay" (with S. Imber, E. Wasil, and C. Stagg), Socio-Economic Planning Sciences, 25(2), 113-121, 1991.
87. "Using Simulation to Study the Impact of Work Rules on Productivity at Marine Container Terminals" (with M. Silberholz and E. Baker), Computers & Operations Research, 18(5), 433-452, 1991.
88. "A Planning Heuristic for Military Airlift" (with H. Rappoport, L. Levy, and K. Toussaint), Interfaces, 22(3), 73-87, 1992.
89. "Go with the Flow: Improving Red Cross Bloodmobiles Using Simulation Analysis" (with J. Brennan and H. Rappoport), Interfaces, 22(5), 1-13, 1992.
90. "Predicting Salinity in the Chesapeake Bay using Backpropagation" (with L. DeSilets, Q. Wang, and R. Kumar), Computers & Operations Research, 19(3/4), 277-285, 1992.
91. "Modeling Salinity Dynamics in the Chesapeake Bay" (with Q. Wang, E. Wasil, and G. DiNardo), American Journal of Mathematical and Management Sciences, 12 (2 & 3), 227-245, 1992.

B. Journal Articles and Book Chapters – Continued

92. "Cell Suppression: Disclosure Protection for Sensitive Tabular Data" (with J. Kelly and A. Assad), Networks, 22(4), 397-417, 1992.
93. "Predicting Wire Bond Quality using Backpropagation" (with Q. Wang, X. Sun, L. DeSilets, E. Wasil, S. Luco, and Adam Peck), in Intelligent Engineering Systems Through Artificial Neural Networks: Volume 2 (C. Dagli, L. Burke, and Y. Shin, eds.), ASME Press, 827-832, 1992.
94. "The Controlled Rounding Problem: Complexity and Computational Experience" (with J. Kelly and A. Assad), European Journal of Operational Research, 65(2), 207-217, 1993.
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