

CURRICULUM VITAE

EDWARD R. PETERSEN

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Personal Data: Birth date: May 31, 1938
Married with two children
Canadian citizen

Degrees: B.Sc. (Engineering Physics) University of Alberta, 1959
M.S. (Electrical Engineering) California Institute of Technology, 1960
Ph.D. (Electrical Engineering/Engineering-Economic Systems)
Stanford University, 1967
Visiting Scholar, University of California, Berkeley, 1975-1976
Visiting Scholar, MIT, Cambridge, 1982-83.
Visiting Fellow, Cambridge University, England, 1990.

Work Experience: Research Officer - National Research Council, 1960-63
Operations Research Analyst - Bonneville Power Administration, 1964-65
Senior O.R. Analyst - National Energy Board, 1967-68
Consultant - National Energy Board, 1968-70
Consultant - The World Bank, 1975-1985
Consultant - James F. Hickling, 1985-1995
Consultant - N.D. Lea International, 1990-1996
Consultant - CPCSTranscom, 1996-2002

Present Position: 1968-69 Assistant Professor
1969-78 Associate Professor
1978-2000 Professor
2000- Emeritus Professor
School of Business, Queen's University, Kingston, Ontario

Teaching Experience: Operational Research
Finance
Organization Theory
New Enterprise Management

Administrative and Professional Activities: Chairman, Research Committee School of Business Queen's University, 1973-76
Chairman, Education Committee Canadian Operational Research Society, 1973-76
Council Member Transportation Science Section of ORSA 1979-82
Member, Editorial Board INFOR 1979-86
Member of the Industrial Engineering Grants Selection Committee, NSERC 1980-83
Director, Centre for Resource Studies 1981-84

Chairman, PhD Program
 School of Business
 Queen's University
 1981-82, 1983-86, 1987-88

Member Advisory Council
 Canadian Institute of Guided Ground
 Transport, 1987-89

Associate Editor
 Transportation Science 84-99

Chair, MSc Committee
 School of Business, 1995-96

Fields of
 Interest:

Rail Transport, Freight Transport
 Application of Management Science to the Modelling of Large Scale Systems
 Study of complex organizations, Chaotic Systems

Typical Projects:

Development of a Highway Planning Model; QROAD
 Development of a costing model for African Railways; QRAIL
 Development of PROPS, a spreadsheet based system of probabilistic Operations
 Research models
 Development of RAIL (rail analysis interactive language a World Bank Railway project
 evaluation tool)
 Development of an information processing model of a Canadian municipal police force
 Comparison of behavioral and normative decision models of organizations
 Analysis of a common roadbed system for the Canadian railways
 Development of models of railyards and over-the-road train operations
 Development of a regional model for the energy sector of the Canadian economy
 Member of a task force responsible for producing a long range energy supply-demand
 forecast for Canada
 Development of investment models for electric power systems and oil and gas pipeline
 networks
 Development of an improved operating policy for the Columbia River Electric Power
 System

Publications

EDWARD R. PETERSEN

Published Papers

"A Digital Simulation Apparatus for Human Operator Studies with Particular Reference to the Control of VTOL Aircraft," OME/NAE Quarterly Bulletin, National Research of Canada, April 1963, pp. 35-39.

"Regional Model of the Energy Sector of the Canadian Economy, Proceedings of the VII World Power Conference, Moscow, USSR, August 1968, (with J.G. Debanne).

"Periodic Markov Programming," Canadian Operational Research Society Journal, Vol. 7, No. 1, March 1969, pp. 39-44.

"A Dynamic Programming Model for the Expansion of Electric Power Systems," Management Science, Vol. 20, No. 4, Part II, December 1973, pp. 656-664.

"Over-the-Road Transit Time for a Single Track Railway," Transportation Science, Vol. 8, No. 1, February 1974, pp. 65-74.

"An Optimizing Network Model for the Canadian Railways," Proceedings of the Fourth International Symposium on Railway Cybernetics, Washington, D.C., April 21-26, 1974, pp. I:6/1-6/6, (with H.V. Fullerton).

"A Primal-Dual Traffic Assignment Algorithm," Management Science, Vol. 21, No. 13, September 1975, pp. 87-95.

"Interference Delays on a Partially Double-Track Railway with Intermediate Signalling," Transportation Research Forum, Vol. 16, No.1, November 1975, pp. 55-62.

"Railyard Modelling I, Prediction of Put-Through Times," Transportation Science, Vol. 11, No. 1 February 1977, pp. 37-49.

"Railyard Modelling II, The Effect of Yard Facilities on Congestion," Transportation Science, Vol. 11, No. 1, February 1977, pp. 50-59.

"Operational Research in Transportation: A Canadian Viewpoint," K.B. Haley, ed., OR'78, North Holland Publishing Company, 1979, pp. 624-661, (with Law, Fullerton, and McMillan).

"Management Issues in Canadian Municipal Policing," Canadian Police College Journal, Vol. 4, No. 1, 1980, pp. 32-66 (with Neave, Cooper and MacDonald).

"A Comparison of Optimal and Adaptive Decision Mechanism in an Organizational Setting," Management Science, Vol. 26, No. 8, August 1980, pp. 810-822 (with Neave).

"The Accuracy of a Long-Term Forecast: Canadian Energy Requirements," Energy Research, Vol. 5, April 1981, pp. 141-154 (with Daub).

"Operations Research and Rail Transportation," Scientific Management of Transportation Systems, N.K. Jaiswal editor, North Holland, 1981, pp. 37-51.

- "A Train Scheduling Model," INFOR, Vol. 19, No. 3, August, 1981, pp. 246-258 (with Merchant).
- "A Structural Model for Rail Line Simulation and Optimization," Transportation Science, Vol. 16, No. 4, 1982, pp. 192-206 (with A.J. Taylor).
- "An Information Processing Model of Police Force Activities," Canadian Police College Journal, Vol. 6, No. 2, 1982 pp. 125-153 (with Neave and Simms).
- "Track Configuration for High-Speed Rail Line," proceedings 1982 Winter Simulation Conference, San Diego, December 1982, pp. 359-368 (with A.J. Taylor).
- "Line Block Prevention in Rail Line Dispatch and Simulation Models," INFOR Vol. 21, No. 1, February 1983, pp. 46-51 (with A.J. Taylor).
- "Planning Tool for the Evaluation of Railway Projects in Developing Countries," Proceedings of the World Conference on Transportation Research, Hamburg, Germany, April 26-29, 1983 (with Taborga).
- "Rail Analysis Interactive Language: A Decision Support System", Transportation Planning Models, M. Florian (Editor) Elsevier Science Publishers, 1984, pp. 289-346.
- "An Introduction to Computer Assisted Train Dispatch," Journal of Advanced Transportation Vol. 20, No. 1, 1986, pp. 63-72 (With A.J. Taylor and C.D. Martland).
- "Design for a Single Track Line for High Speed Trains," Transportation Research, Vol. 21A, No.1, 1987, pp. 47-57 (with A.J. Taylor).
- "An Optimal Scheduling System for the Welland Canal", Transportation Science, Vol.22, No.3, Aug 1988, pp 173-185 (with A.J. Taylor)
- "A Cost Model of the Canadian Railways", INFOR, Vol. 27, No. 1, 1989, pp. 36-47 (with A.J. Taylor).
- "The Economics of Criminal Investigation in a Municipal Police Force", Journal of Criminal Justice, Vol. 17, 1989, pp. 199-224 (with B.W. Simms).
- "Statistical Comparison and Performance Measures for World Railways", Railway Gazette International, Developing Railways 1990, December 1989, pp. 8-15 (with L.S. Thomson and W.G. Wood).
- "Probabilistic Optimization Spreadsheets: PROPS", Operations Research Letters, Vol. 9, No. 4, July 1990, pp. 271-274 (with A.J. Taylor).
- "An Information Processing Model of A Police Organization", Management Science Vol. 37, No. 2, February 1991, pp. 216-232 (with B.W. Simms).
- "Nonlinear Tariffs and Freight Network Equilibrium", Transportation Science, Vol 28, No. 3, pp 236-245, 1994 (with W. J. Hurley).
- "Optimal Freight Transport Pricing and the Freight Network Equilibrium Problem", Advanced Methods in Transportation Analysis, Edited by Lucio Bianco and Paolo Toth, Springer Verlag, 1996, pp. 389-412 (with W.J. Hurley).

"Why Regulate Prices in Freight Transport Markets?", Advanced Methods in Transportation Analysis, Edited by Lucio Bianco and Paolo Toth, Springer Verlag, 1996, pp.373-387 (with W.J. Hurley).

"Optimal Pricing of Priority Services", Operations Research, Vol. 46, no. 1, January 1998, pp.46-56, (with S. Rao).

"A Dynamic Programming Model for Assigning Customers to Priority Service Classes", INFOR, Vol. 36, no.4, November 1998, pp. 238-246 (with S. Rao).

"An Investment planning model for a new North-Central railway in Brazil", Transportation Research A, Vol. 53, no. 9, November 2001, pp.847-862 (with A. J. Taylor).

"A Highway Corridor Planning Model:QROAD", Transportation Research A, Vol 36 no. 2, February 2002, pp. 107-125.

Books

PROPS: Probabilistic Optimization Spreadsheets, Alwington Press, 1988, ISBN 0-9693414-0-7 (with A.J Taylor)

PROPS⁺: Probabilistic and Optimization Spreadsheets, Addison-Wesley, Boston, 1994, pp. xx + 363 (with A.J. Taylor).

Major Reports

"Optimal Operation and Control of Multi-Dam Hydroelectric Power Systems: An Application of Decision Theory," Stanford University, Stanford, California, Report EES-8, February 1966, pp. x + 90, (with K.M. Ahmed and N.V. Arvanatidis).

"Planning of Hydrothermal Electric Power System," PhD Dissertation, Institute of Engineering-Economic Systems, Stanford University, California, December 1966, pp. vii + 114.

Energy Supply and Demand in Canada and Export Demand for Canadian Energy, 1966-1990, National Energy Board, Ottawa, 1969, (member of five person task force which prepared report).

"Railcar Network Model Feasibility Report," School of Business, Queen's University, Kingston, March 1971, pp. 115, (with H.V. Fullerton and J.E. Cloutier).

Canadian Freight Transport Data Base, published by the Canadian Institute of Guided Ground Transport, No. 73-5, Queen's University, Kingston, November 1972, pp. 74.

The Railcar Network Model, published by the Canadian Institute of Guided Ground Transport, No. 75-11, Queen's University, Kingston, June 1975, pp. 1x + 306, (with H.V. Fullerton).

User's Manual for Petersen-Taylor Rail Line Analysis (LINE), School of Business, Queen's University, Kingston 1981, pp. 61 (with A.J. Taylor).

Determinants of Track Configuration for High-Speed Passenger Operations, CIGGT Report No. 82-12, Kingston Ontario, August 1982, pp. 68 (with A.J. Taylor).

RAIL User's Manual, The World Bank, Washington, D.C., October 1982, pp. 105.

Optimal Scheduling of Vessel Traffic in the Welland Canal: Project Report, Queen's University, January 1985 (with A.J. Taylor).

OSCAR: Operational Simplified Costing for African Railways, Hickling Corporation, Ottawa, May 1990, pp. 77.

Africana Railways: A Case Study on Railway Restructuring, World Bank Seminar on Railway Restructuring, Bulawayo, Zimbabwe, June 1992, pp. 70 (with Greg Wood).

A General Purpose Railway Costing Model: QRAIL, School of Business, Queen's University, January 1993, pp. 69.

QROAD, A Model for Optimal Highway Planning; User's Manual, School of Business, Queen's University, March 1996, pp. 59.

Conference Papers

"On the Optimal Expansion of Electric Generation Capacity," presented to the CORS 9th Annual Conference, May 1967.

"Optimization of a Periodic Markov Chain with Return," presented at the ORSA 32nd National Meeting, Chicago, Illinois, November 1967.

"A Network Flow Model for Mainline Rail Freight," Proceedings of a Seminar on Transportation Research and Education, Canadian Institute of Guided Ground Transport, Queen's University, Kingston, February 7-8, 1972, pp. 132-146, (with H.V. Fullerton, A.J. Taylor and J.E. Cloutier).

"Model Choice for Canadian Freight: A CFTM Progress Report," in Proceedings of the First Annual Conference at the Canadian Association of Administrative Sciences, Queen's University, Kingston, May 20, 31, and June 1 1973, pp. 3-27 - 3-44, (with R.E. Turner and F.V. Fullerton).

"A Network Flow Model for Mainline Rail Freight," Proceedings of a Seminar on Transportation Research, Bruges, Belgium, June 1973, pp. 611-620, (with H.V. Fullerton).

"The Canadian Freight Transport Model Project - A Progress Report," Proceedings of a Seminar on Research and Innovations in Guided Ground Transportation, Canadian Institute of Guided Ground Transport, Queen's University, Kingston, April 16-17, 1974, (with H.V. Fullerton and R.E. Turner).

"Application on Queueing Theory to Railyards," ORSA/TIMS Joint National Meeting, San Juan, Puerto Rico, October 16-18, 1974.

"Capacity Expansion Under Technological Change," ORSA/TIMS Meeting, Chicago, April 30 - May 2, 1974 (with Ram Rao).

"A Model of the Mainline Operation of a Railway," CORS Annual Conference, Waterloo, Ontario, May 25-28, 1975, (with H.V. Fullerton).

"Operational Research Education at Canadian Universities," CORS Annual conference, Waterloo, Ontario, May 25-28, 1975.

"Using the Queen's Railcar Network Model," ORSA/TIMS National Meeting, Miami, Florida, November 3-5, 1976, (with H.V. Fullerton).

"A Line Capacity Model, Proceedings of the Biennial CIGGT Seminar on Railway Research, Canadian Institute of Guided Ground Transport, Queen's University, Kingston, January 29-31, 1978.

"Comparison of Optimal and Adaptive Decision Processes," CORS Annual Conference, Vancouver, B.C., May 15-18, 1978.

"The Use of Multiple Sidings to Increase the Capacity of a Rail Line", ORSA/TIMS National Meeting, New Orleans, April 30 - May 2, 1979.

"A Rail Line Simulation Model," TIMS/ORSA National Meeting, Washington, D.C., May 4-7, 1980, (with A.J. Taylor).

"The Economics of Rail Line Operations," ORSA/TIMS National Meeting, Colorado Springs, November 10-12, 1980, (with D. Tulett).

"Information Processing Model of Police Force Activities," CORS/TIMS/ORSA Joint National Meeting, Toronto, May 3-6, 1981 (with Neave and Simms).

"Rail Supply and Equilibrium Models," Frontiers in Transportation Equilibrium and Supply Models, Universite de Montreal, Montreal, October 1981.

"An Algorithm for Calculating Equilibrium Demand with Fixed Traffic Routing," TIMS/ORSA National Meeting, Detroit, April 18-21, 1982 (with D. Tulett).

"Rail Analysis Interactive Language (RAIL): A Decision Support System," International Center For Transportation Studies, Amalfi, Italy, October 11-16, 1982.

"Operations Research and Railways," presented at Tsinghu University, Beijing, China, April 1983.

"Scheduling Vessel Traffic in a Canal," ORSA/TIMS National Meeting, Orlando, November 7-9, 1983 (with A.J. Taylor).

"An Introduction to Computer-Assisted Train Dispatch," Transportation Research Board, Washington D.C., January 16-20, 1984 (with A.J. Taylor).

"Optimal Switching in a Railway System," ORSA/TIMS National Meeting, Dallas, November 26-28, 1984 (with D.M. Tulett).

"An Algorithm for Scheduling Traffic Through a Canal," CORS National Conference, Halifax, May 21-23, 1985.

"Western Canada: A Case Study in Rail Modeling", Canadian Transportation Research Forum, Vancouver, B.C., May 1986 (with A.J. Taylor and M.L. McLaren).

"The Fixed Charge Network Design Problem: An Optimal Algorithm for a Special Case," Canadian Operational Research Society Annual Conference, Toronto, June 1986 (with D. Tulett)

"Stochastic Modelling Using LOTUS 1-2-3", Canadian Operational Research Society Annual Conference, Montreal, May 24-26, 1988 (with A.J. Taylor)

"Modelling Using LOTUS 1-2-3", EURO/TIMS Joint Conference, Paris, July 6-8, 1988 (with A.J.

Taylor)

"An Information Processing Model of a Police Organization", ORSA/TIMS National Meeting, New York, October 16-18, 1989 (with B.W. Simms).

"A Theory of Rail Pricing", ORSA/TIMS National Meeting, New York, October 16-18, 1989 (with W. Hurley).

"Railway Costing Model: QRAIL," Land Transport and Development, ISTED, Dunkirk France, June 18-22, 1990, pp. 43-48.

"Nonlinear Tariffs and Freight Network Equilibrium", ORSA/TIMS National Meeting, Anaheim, Ca. November 3-6, 1991 (with W. Hurley).

"A Railway Costing Model: QRAIL", Proceedings of the Third International COMPRAIL Conference, Washington D.C., August 18-20, 1992, pp. 47-56.

"Railway Yield Management", TIMS/ORSA National Meeting, Chicago, IL, May 16-19, 1993 (with W.J. Hurley).

"Optimal Pricing of Priority Services", CORS Annual Meeting, Halifax, NS, May 25-27, 1993 (with Sesh Rao).

"Nonlinear Price Support for the Freight Network Equilibrium Problem", CORS Annual Meeting, Halifax, NS, May 25-27, 1993 (with W. Hurley).

"Optimal Pricing of Priority Services", TIMS/ORSA National Meeting, Boston, Ma, April 24-27, 1994 (with S. Rao).

"Optimal Freight Tariffs", CORS'94-Optimization Days, Montreal, May 29-June 1, 1994

"Optimal Freight Transport Pricing and the Freight Network Equilibrium Problem", TRISTAN II, Capri, Italy, June 23-28, 1994 (with W. J. Hurley).

"Why Regulate Prices in Freight Transport Markets?", TRISTAN II, Capri, Italy, June 23-28, 1994 (with W. J. Hurley).

"QROAD: An Optimal Multiperiod Highway Planning Model", CORS Annual Meeting, Calgary, May 23-25, 1995.

"Equilibrium Utilization and Pricing of Competing Service Facilities", Optimization Days 1996, May 13-15, 1996 (with S. Rao).

"A Poverty Impact Road Planning Model, TRISTAN VI conference, Phuket Island, Thailand, June 10-15, 2007. (with A.J.Taylor)

"Highway Development, Impact of Tolling, and the Role of Government Subsidies, 43rd ORSNZ annual conference, Wellington, New Zealand, November 24-25, 2008. (with W.G. Wood)

Selected Working Papers

"Bulk Service Queues: With Application to Train Assembly Times," School of Business Working

Paper Series No. 71-2, Queen's University, August, 1971.

"Bulk Queues with Random Batch Size: With Application to Railroad Modelling," School of Business Working Paper Series No. 71-3, Queen's University, August 1971.

"Applied Organizational Analysis: A Proposal to the Canada Council," Draft Proposal, June 1977, (coordinated preparation).

"A Rail Line Simulation Model (LSIM)," School of Business Working Paper No. 79-11, Queen's University, August 1979.

"An Interactive Rail Line Evaluation Model (LINE), School of Business Working Paper No. 79-12, Queen's University, August 1979.

"Forecast of Rail Freight Traffic for Nigeria, 1982-2000," World Bank internal document, May, 1982.

"Final Testing of RAIL," World Bank internal document, June 1983.

"A Theory of Rail Freight Pricing", School of Business Working Paper 88-16, Queen's University, September 1988 (with W. Hurley).

"Equilibrium in Freight Network Models", School of Business Working Paper 88-18, Queen's University, October 1988 (with W. Hurley).

"Regulatory Competition and Vertical Exchange: The Case of Canadian Natural Gas", School of Business, Working Paper 88-20, Queen's University, October 1988 (with W. Hurley).

"Nonlinear Tariffs and Freight Network Equilibrium", School of Business Working Paper 92-02, Queen's University, January 1992 (with W.J. Hurley).

"Nonlinear Dynamic Systems, Chaos and Fractal Geometry", School of Business Working Paper 92-03, Queen's University, January 1992.

"A Noncooperative Equilibrium for the Freight Network Equilibrium Problem", School of Business Working Paper No. 93-17, Queen's University at Kingston, 1993 (with W. J. Hurley).

"Optimal Freight Transport Pricing", School of Business Working Paper No. 93-18, Queen's University at Kingston, 1993 (with W. J. Hurley).

Course Manuscripts

"Foundations of Systems Analysis and Operations Research (Linear Systems Analysis)," used in MGMT 902, 430 pages.

"Probabilistic Operations Research Course Notes," used in MBUS 964, 143 pages.