

## **Stephen G. Powell**

The Amos Tuck School of Business Administration  
Dartmouth College  
Hanover, NH 03755  
603-646-2844  
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### **Research Interests**

Application of management science modeling to business and public decision making: design of production lines and business processes, advertising and promotion strategies, inventory policy, natural resource modeling.

### **Teaching Interests**

Management Science, The Art of Modeling, Applications of Simulation, Collaborative Problem Solving, Advanced Business Analytics

### **Education**

Ph.D., Engineering-Economic Systems, 1983, Stanford University  
M.S., Engineering-Economic Systems, 1976, Stanford University  
B.A. (High Honors), Economics, 1971, Oberlin College

### **Awards**

INFORMS Award for the Teaching of OR/MS Practice 2001

### **Publications**

1. "Optimal Supply of a Depletable Resource with a Backstop Technology: Heal's Theorem Revisited," (with Shmuel S. Oren), *Operations Research*, Vol. 32, No. 2, March-April, 1985, pp. 277-292.
2. "Transition to Nondepletable Energy: Social Planning and Market Models of Capacity Expansion," (with Shmuel S. Oren), *Operations Research*, Vol. 37, No. 3, May-June, 1989, pp. 373-383.
3. "The Target-Capacity Model of OPEC and the Dynamics of the World Oil Market," *The Energy Journal*, Volume 11, Number 1, January, 1990, p. 27-63.
4. "Arctic National Wildlife Refuge: How Much Oil Can We Expect," *Resources Policy*, September, 1990, pp. 225-238.
5. "The Performance of Push and Pull Systems: A Corrected Analysis," (with Ken Baker and David Pyke), *International Journal of Production Research*, Volume 28, Number 9, 1990, pp. 1731-1736.

6. "Buffered and Unbuffered Assembly Systems with Variable Processing Times," (with Ken Baker and David Pyke), *Journal of Manufacturing and Operations Management*, Volume 3, Number 3, Fall 1990, pp. 200-223.
7. "A Risk Analysis of Oil Development in the Arctic National Wildlife Refuge," June, 1991, *The Energy Journal*, July-August, 1991, Vol. 12, No. 3, pp. 55-76.
8. "Optimal Allocation of Work in Assembly Systems," (with Ken Baker and David Pyke), *Management Science*, Volume 39, Number 1, January 1993.
9. "A Predictive Model for the Throughput of Unbuffered Three-Station Serial Lines," (with Ken Baker and David Pyke), *IIE Transactions*, Vol. 26, No. 4, 1994, pp. 62-71.
10. "A Predictive Model for the Throughput of Simple Assembly Systems," (with Ken Baker), *European Journal of Operational Research*, Vol. 81, No. 2, 1995, pp. 336-345.
11. "An Empirical Investigation of the Two-Moment Approximation for Production Lines," (with Dave Pyke), *International Journal of Production Research*, Vol. 32, No. 5, 1994, pp. 1137-1157.
12. "Buffer Allocation in Unbalanced Three-Station Serial Lines," *International Journal of Production Research*, Vol. 32, No. 9, 1994, pp. 2201-2217.
13. "The Effects of Retailer and Consumer Response on Optimal Manufacturer Advertising and Trade Promotion Strategies," (with Scott Neslin and Linda Schneider), *Management Science*, Vol. 41, No. 5, 1995, pp. 749-766.
14. "Optimal Inventory Policies under Service-Sensitive Demand," (with Ricardo Ernst), *European Journal of Operational Research*, Vol. 87, 1995, pp. 316-327.
15. "Exploiting Timely Demand Information to Reduce Inventories," (with Karla Bourland and David Pyke), *European Journal of Operational Research*, Vol. 92, Issue 2, 1996, pp. 239-253.
16. "Optimal Allocation of Buffers in Serial Production Lines with a Single Bottleneck," (with Dave Pyke), *IIE Transactions*, Vol. 28, 1996, pp. 18-29.
17. "Manufacturer Incentives to Improve Retail Service Levels," (with Ricardo Ernst), *European Journal of Operational Research*, Vol. 104, No. 3, 1998.
18. "Buffering Unbalanced Assembly Systems," (with Dave Pyke), *IIE Transactions*, Vol. 30, 1998, pp. 55-65.
19. "An Algorithm for Optimal Buffer Placement in Reliable Serial Lines," (with John H. Harris), forthcoming in *IIE Transactions*, Vol. 31, No. 4, 1999, pp. 287-302.

20. "Anatomy of a Process Modeling Workshop," with Jan Fuelscher, *Business Process Management Journal*, Vol. 5, No. 3, 1999, pp. 208-238.
21. "Specialization, teamwork, and production efficiency," *International Journal of Production Economics*, 67 (2000) 205-218, pp. 205-218.
22. "The Value of Information Integration in Meeting Delivery Dates," with Elgar Fleisch, *Journal of Organizational Computing and Electronic Commerce*, 2001, Vol. 11, No. 1, pp. 15-30
23. "Measurement and Control of Business Processes," with Markus Schwaninger and Chris Trimble, *Systems Dynamics Review*, Vol. 17, No. 1, Spring 2001, pp. 63-91.
24. "Methods for Assigning Students to Groups: a Study of Alternative Objective Functions," with Ken Baker, *Journal of Operational Research*, Vol. 54, No. 4, 2002, pp. 397-404.
25. "Modeling a Control System for Organizational Processes," with Markus Schwaninger and Chris Trimble, *Cybernetics and Systems*, Vol. 33, 2002, PP. 675-721.
26. "Throughput in Serial Lines with State-Dependent Behavior," with Ken Schultz, *Management Science*, 2004, Vol. 50, pp. 1095-1105.
27. "Rapid Implementation of Enterprise Resource Planning Systems," with Elgar Fleisch and Hubert Oesterle, *Journal of Organizational Computing and Electronic Commerce*, 2004, Vol. 14, No. 2, pp. 107-126.
28. "How Novices Formulate Models Part I: Qualitative Insights and Implications for Teaching," with Tom Willemain, *Journal of the Operational Research Society*, 58, 983-995, 2007.
29. "How Novices Formulate Models Part II: A Quantitative Description of Behavior," with Tom Willemain, *Journal of the Operational Research Society*, 58, 1271-1283, 2007.
30. "A Comparison of Spreadsheet Users with Different Levels of Experience," with Ken Baker, Barry Lawson, and Lynn Foster-Johnson, *Omega* 37 (2009), 579-590.
31. "A Critical Review of the Literature on Spreadsheet Errors," Stephen G. Powell, Kenneth R. Baker, and Barry Lawson, *Decision Support Systems*, 46 (2008) 128-138.
32. "An Auditing Protocol for Spreadsheet Models," Stephen G. Powell, Kenneth R. Baker, and Barry Lawson, *Information and Management*, 45(5) (2008) 312-320.
33. "Errors in Operational Spreadsheets," Stephen G. Powell, Kenneth R. Baker, and Barry Lawson, *Journal of End User and Organizational Computing*, 21(3), 24-36, July-September 2009.
34. "Impacts of Errors in Operational Spreadsheets," Stephen G. Powell, Kenneth R. Baker, and Barry Lawson, *Decision Support Systems*, 47(2), 2009, 126-132.

35. "Pricing Early-Exercise Options using Genetic Optimization," *Journal of Derivatives*, Spring 2013, 43-59.
36. "A Comparison of Free Autologous Breast Reconstruction with and without the use of Laser-assisted Indocyanine Green Angiography: A Cost Effectiveness Analysis," Abhishek Chatterjee, Naveen M. Krishnan, Micheael M. Van Vliet, Stephen G. Powell, Joseph M. Rosen, and Emily B. Ridgway, forthcoming, *Plastic and Reconstructive Surgery*, May 2013.
37. "A Comparison of Acellular Dermal Matrix to Autologous Dermal Flaps in Single-Stage, Implant-based Immediate Breast Reconstruction: A Cost Effectiveness Analysis," Abhishek Chatterjee, M.D., Naveen M. Krishnan, Micheael M. Van Vliet, Stephen G. Powell, Joseph M. Rosen, and John F. Nigriny. Forthcoming, *Plastic and Reconstructive Surgery*, May 2013.
38. "The Cost Effectiveness of Acellular Dermal Matrix in Expander-Implant Immediate Breast Reconstruction," Naveen M. Krishnan, Abhishek Chatterjee, K. M. Rosenkranz, Stephen G. Powell, J.F. Nigriny, and D. C. Vidal. *British Journal of Plastic Surgery*, forthcoming.

### **Working Papers**

1. "Cost-Effectiveness Analysis of a New Tuberculosis Diagnostic Algorithm," Elizabeth A. Talbot, Stephen G. Powell, Kenton Allen, Jaime Bayona, Lisa V. Adams, submitted to the *International Journal of Tuberculosis and Lung Disease*, October 5, 2012.
2. "How Precise are Estimates of the Minimally Important Clinical Difference?," with Naveen Krishnan, submitted to *Statistics in Medicine*, January 11, 2014.
3. "The Performance of Novice Data Analysts on an Open-Ended Problem," with Tom Willemain and Julie Layton, June 8, 2013.

### **Articles on Teaching**

1. "Teaching the Art of Modeling to MBAs," *Interfaces*, 25:3, May-June, 1995, pp. 88-94.
2. "Six Key Modeling Heuristics," *Interfaces*, 25:4, July-August, 1995, pp. 114-125.
3. "From Intelligent Consumer to Active Modeler: Two MBA Success Stories," *Interfaces*, 27:3, 1997, pp. 88-98.
4. "Requiem for the Management Science Course?," *Interfaces*, 28:3, 1998, pp. 111-117.
5. "The Studio Approach to Teaching the Art of Modeling," *Annals of Operations Research*, Vol. 82, 1998, pp. 29-147.
6. "The Intuition behind Option Valuation: A Teaching Note," with Kent Womack, Tom Grossman, and Ying Zhang, *Financial Engineering News*, 2002.

7. Review of Maryellen Weimer: *Enhancing Scholarly Work on Teaching and Learning* Jossey-Bass, 2006: *INFORMS Transactions on Education*, Volume 6, Number 3 September 2006.

### **Books**

1. *Management Science: The Art of Modeling with Spreadsheets*, with Ken Baker, 3rd edition, Wiley, 2010.

2. *Modeling for Insight, A Master Class*, with Bob Batt, Wiley, 2009.

### **Papers Published in Conference Proceedings**

"Modeling Oil Development in the Arctic National Wildlife Refuge," *Energy Markets in the 1990's and Beyond*, Proceedings of the Eleventh Annual North American Conference, International Association for Energy Economics, October, 1989.

"A Comparison of Behavioral Simulation and Optimization Models of OPEC," Proceedings of the 1990 International System Dynamics Conference, July, 1990.

"The Value of Information in Business Networks," Proceedings of the Thirty-Second Annual Hawaii International Conference on Systems Sciences, January 5, 1999.

"Spreadsheet Modeling for Insight," Proceedings of the International Workshop on the Foundations of Spreadsheets, Rome, Italy, September 30, 2004.

### **Editorial Responsibilities**

*INFORMS Transactions on Education*: Associate Editor

Education Editor, *Interfaces*

*International Journal of Simulation and Process Modelling*, Associate Editor.

### **Executive Education**

Smith College, Northampton, MA

*Smith Management Program*, July 1989 and 1990.

One-week course for mid-career managers in decision analysis and management science.

Nijenrode, The Netherlands School of Business

*General Management Program*, July 1991

Three-week course in Decision Science for students entering MBA program.

University of Hawaii

*Advanced Management Program*, July 1993 and July 1995

One-week course for Asian-region managers in the Management of Information Technology.

Pacific Coast Banking School  
*General Management Program*, August 1994  
One-week course in Information Technology for mid-career banking executives.

VIANT  
Modeling with Spreadsheets, June 2001  
Two-and-a-half day course in Modeling for Decision Making.

The Parthenon Group  
Modeling with Spreadsheets  
One-day seminars 2003-present.

### **Professional Experience**

Merrill Lynch, Inc., Somerset, N.J. (1986-87)  
Senior Management Science Analyst

RCA Corporation, Princeton, NJ (1985-86)  
Senior Operations Research Analyst

Wang Laboratories, Lowell, MA (1983-85)  
Senior Strategic Analyst

Natomas Co., San Francisco, CA (1983)  
Consulting Analyst

Stanford University, Stanford, CA (1979-83)  
Assistant Study Coordinator, World Oil Study

Department of Energy, Washington, DC (1978-79)  
Policy Analyst, Department of Oil and Gas Policy

Aetna Life and Casualty, Hartford, CT (1972-74)  
Actuarial Assistant/Economic Analyst

### **Consulting**

Member of the independent external peer review panel to review the *Delta Region of Arkansas Hydrogeomorphic Methodology (HGM) Guidebook* for the U.S. Army Corps of Engineers Ecosystem Restoration Planning Center of Expertise as a subcontractor to Battelle (September 2009-February 2010).