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EDUCATION

1988: Ph.D., Economics, The Johns Hopkins University
1987: M.A., Economics, The Johns Hopkins University
1984: B.S., Operations Research & Information Engineering, Cornell University

PRINCIPAL ACADEMIC APPOINTMENTS

2024-Present: Professor *Emeritus* of Economics, College of Business, Cleveland State University
2004-2024: Professor of Economics, College of Business, Cleveland State University
1989-2024: Graduate Faculty, Cleveland State University
2018-2019: Associate Dean, College of Liberal Arts and Social Sciences, Cleveland State University
2015-2018: Director, Master of Arts in Economics Program, Cleveland State University
2004-2015: Chairman, Department of Economics, Cleveland State University
1993-2004: Associate Professor, Department of Economics, Cleveland State University
1988-1993: Assistant Professor, Department of Economics, Cleveland State University

SHORTER-TERM ACADEMIC APPOINTMENTS

1-6/1999: Visiting Associate Professor, Owen Graduate School of Management, Vanderbilt University
1-6/1995: Visiting Associate Professor, Department of Economics, The Johns Hopkins University

RESEARCH AREAS

Agent-Based Modelling, Computational Economics, Epidemiology, Industrial Organization, Industry Dynamics, Microeconomic Theory, Modeling Social and Behavioral Dynamics, Organization Theory

RESEARCH GRANTS AND AWARDS

2020-2022: Faculty Scholarship Initiative Grant for *Learning to Vaccinate: Endogenous Vaccination and the Dynamics of Infectious Disease*, Cleveland State University

- 2008-2011: Faculty Research Development Grant for *A Computational Model of Industry Evolution*, Cleveland State University
- 2000-2002: National Science Foundation Research Grant (SES-0078752) for *Computational Modeling of Multi-Level/Multi-Unit Organizations*, Co-Principal Investigator (joint with Joseph E. Harrington, Jr.)
- 1989-1990: Research and Creative Activities Grant for *Exclusive Dealing Contracts and Market Foreclosure*, Cleveland State University
- 6-8/1989: Research Challenge Grant, Cleveland State University

PUBLICATIONS

Book

- 2015 *A Computational Model of Industry Dynamics*. London: Routledge, 2015.

Articles

- 2025 “Theory-Building in Organizational Science with Agent-Based Computational Models: Past, Present, and Future” in: Friederike Wall, Shu-Heng Chen, and Stephan Leitner, eds., *Oxford Handbook of Agent-Based Computational Management Science*, New York: Oxford University Press.
<<https://doi.org/10.1093/oxfordhb/9780197668122.013.9>>.
- 2023 “Spatial Disparities in Vaccination and the Risk of Infection in a Multi-Region Agent-Based Model of Epidemic Dynamics” (with Troy Tassier), *Journal of Artificial Societies and Social Simulation* 26 (3) 3 <<http://jasss.soc.surrey.ac.uk/26/3/3.html>>. doi: 10.18564/jasss.5095.
- 2023 “It’s Worth a Shot: Urban Density, Endogenous Vaccination Decisions, and Dynamics of Infectious Disease” (with Andrew Souther and Troy Tassier), *Journal of Economic Interaction and Coordination*, 18 (2023), 163-189.
- 2021 “Spatially Heterogeneous Vaccine Coverage and Externalities in a Computational Model of Epidemics” (with Troy Tassier), *Computational Economics*, 58 (2021), 27-55.
- 2020 “A Dynamic Computational Model of Social Stigma” (with Joseph E. Harrington, Jr.), *Journal of Artificial Societies and Social Simulation*, 23 (2), 1 <<https://www.jasss.org/23/2/1.html>>. doi: 10.18564/jasss.4225.
- 2018 “Computational Industrial Economics: A Generative Approach to Dynamic Analysis in Industrial Organization,” in: Shu-Heng Chen, Mak Kaboudan, and Ye-Rong Du, eds., *Oxford Handbook of Computational Economics and Finance*, New York: Oxford University Press, 2018, 594-634.

- 2015 “Competition Policy,” in: David J. Teece and Mie Augier, eds., *The Palgrave Encyclopedia of Strategic Management*, London: Palgrave Macmillan, 2015.
- 2015 “When Can We Expect a Corporate Leniency Program to Result in Fewer Cartels?” (with Joseph E. Harrington, Jr.), *Journal of Law and Economics*, 58 (2015), 417-449.
- 2013 “Individual Learning and Social Learning: Endogenous Division of Cognitive Labor in a Population of Co-evolving Problem-Solvers,” (with Joseph E. Harrington, Jr.), *Administrative Sciences*, 3 (2013), 53-75 [Special issue on *Computational Organization Theory*]
- 2011 “Emergent Social Learning Networks in Organizations with Heterogeneous Agents,” *Advances in Complex Systems*, 14 (2011), 169-199
- 2011 “Entry, Exit, and the Endogenous Market Structure in Technologically Turbulent Industries,” *Eastern Economic Journal*, 37 (2011), 51-84 [Symposium Issue on *Agent-Based Computational Economics*]
- 2011 “Agent-Based Modeling and Computational Experiments in Industrial Organization: Growing Firms and Industries *in silico*,” *Eastern Economic Journal*, 37 (2011), 28-34 [Symposium Issue on *Agent-Based Computational Economics*]
- 2009 “Modeling the Birth and Death of Cartels with an Application to Evaluating Competition Policy,” (with Joseph E. Harrington, Jr.), *Journal of the European Economic Association*, 7 (2009), 1400-1435
- 2009 “Industry Dynamics with Knowledge-Based Competition: A Computational Study of Entry and Exit Patterns,” *Journal of Economic Interaction and Coordination*, 4 (2009), 73-114
- 2007 “Innovators, Imitators, and the Evolving Architecture of Problem-Solving Networks,” (with Joseph E. Harrington, Jr.), *Organization Science*, 18 (2007), 648-666
- 2007 “Decentralization,” in: Stewart Clegg and James R. Bailey, editors, *International Encyclopedia of Organization Studies*, Volume 1, SAGE Publications, Thousand Oaks, CA, 2007, 359-362
- 2006 “Agent-Based Models of Organizations,” (with Joseph E. Harrington, Jr.), in: Leigh Tesfatsion and Kenneth L. Judd, eds., *Handbook of Computational Economics II: Agent-Based Computational Economics*, Elsevier, 2006, 1273-1337
- 2005 “Discovery and Diffusion of Knowledge in an Endogenous Social Network,” (with Joseph E. Harrington, Jr.), *American Journal of Sociology*, 110 (2005), 937-976

- 2005 "Co-Evolution of Firms and Consumers and the Implications for Market Dominance," (with Joseph E. Harrington, Jr.), *Journal of Economic Dynamics and Control*, 29 (2005), 245-276
- 2004 "Organization of Innovation in a Multi-Unit Firm: Coordinating Adaptive Search on Multiple Rugged Landscapes," (with Joseph E. Harrington, Jr.), in: William Barnett, Christophe Deissenberg, and Gustav Feichtinger, editors, *Economic Complexity: Non-linear Dynamics, Multi-agents Economies, and Learning*, International Symposia on Economic Theory and Econometrics, Vol. 14, 2004, Elsevier, Amsterdam, 189-214
- 2003 "Multi-Market Competition, Consumer Search, and the Organizational Structure of Multi-Unit Firms," (with Joseph E. Harrington, Jr.), *Management Science*, 49 (2003), 541-552
- 2002 "Decentralized Business Strategies in a Multi-Unit Firm," (with Joseph E. Harrington, Jr.), *Annals of Operations Research*, 109 (2002), 77-98
- 2000 "Centralization vs. Decentralization in a Multi-Unit Organization: A Computational Model of a Retail Chain as a Multi-Agent Adaptive System," (with Joseph E. Harrington, Jr.), *Management Science*, 46 (2000), 1427-1440
- 1998 "Product Switching Cost and Strategic Flexibility," *Journal of Economics and Management Strategy*, 7 (1998), 461-488
- 1997 "Organizational Structure and Firm Innovation in a Retail Chain," (with Joseph E. Harrington, Jr.), *Computational and Mathematical Organization Theory*, 3 (1997), 267-288
- 1996 "The Interactive Effect of Product Differentiation and Cost Variability on Profit," (with Joseph E. Harrington, Jr.), *Journal of Economics and Management Strategy*, 5 (1996), 175-193
- 1993 "Flexible Manufacturing, Uncertain Consumer Tastes, and Strategic Entry Deterrence," *Journal of Industrial Economics*, XLI (1993), 77-90
- 1992 "Inter-temporal Product Choice and Its Effects on Collusive Firm Behavior," *International Economic Review*, 33 (1992), 773-793
- 1992 "Exclusive Dealing Contracts in a Successive Duopoly with Side Payments," *Southern Economic Journal*, 59 (1992), 180-193
- 1991 "The Effects of Product Differentiation on Collusive Pricing," *International Journal of Industrial Organization*, 9 (1991), 453-469

- 1988 “The Effects of Irreversible Investment in Durable Capacity on the Incentive for Horizontal Merger,” (with Joseph E. Harrington, Jr.), *Southern Economic Journal*, 55 (1988), 443-453

Book reviews

- 2013 Review of *Game Theory: A Nontechnical Introduction to the Analysis of Strategy* by Roger A. McCain, *Eastern Economic Journal*, 39 (2013), 267-269

WORKING PAPERS

- 2025: Learning to Vaccinate: An Emergent Social Dilemma in a Spatiotemporal Model of Pandemic with Interpersonal Contact Networks of Limited Size

PROFESSIONAL ACTIVITIES

Editorial Positions

- 2016-Present: Member, Advisory Board, *Preprints* (MDPI)
 2015-Present: Member, Editorial Board, *Administrative Sciences* (MDPI)
 2012-2014: Guest Editor, Special Issue on “Computational Organization Theory,” *Administrative Sciences*

Referee/Reviewer Activities

- Journals: *Administrative Sciences, American Economic Review, American Journal of Sociology, Annals of Operations Research, Bulletin of Economic Research, Canadian Journal of Economics, Central European Journal of Operations Research, Computational Economics, Computational Management Science, Computational and Mathematical Organization Theory, Computers in Biology and Medicine, Eastern Economic Journal, Ecology and Society, Economic Journal, Economic Inquiry, Economic Theory, Economics Letters, European Economic Review, Economics (e-journal), International Economic Review, International Journal of Industrial Organization, Journal of Artificial Societies and Social Simulation, Journal of Economic Behavior and Organization, Journal of Economic Dynamics and Control, Journal of Economic Interaction and Coordination, Journal of Economics and Business, Journal of Economics and Management Strategy, Journal of Economic Theory, Journal of Industrial Economics, Management Science, Managerial and Decision Economics, Marketing Science, Metroeconomica, New Mathematics and Natural Computation, Organization Science, Quarterly Journal of Business and Economics, RAND Journal of Economics, Review of Economic Studies, Review of Industrial Organization, Scandinavian Journal of Economics, Southern Economic Journal, Strategy Science, Zeitschrift Für Nationalökonomie*

Publishers: Addison Wesley Longman, Cambridge University Press, Harper Collins Publishers, John Wiley & Sons, Inc., Johns Hopkins University Press, MIT Press, Prentice Hall, Routledge, Stanford University Press, W. W. Norton & Company

Foundations: Israel Science Foundation (Israel)
National Science Foundation (USA)