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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

2004-Present: Professor, Department of Economics, Cleveland State University
1989-Present: 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

PROFESSIONAL ACTIVITIES

Editorial boards

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*

Advisory and review committees

2021: Member, Scientific Program Committee, *Conference on Complex Systems* (CCS 2021), Complex Systems Society: Lyon, France
2020: Member, Scientific Program Committee, *Conference on Complex Systems* (CCS 2020), Complex Systems Society: On-line
2020: Member, Scientific Program Committee, *Tenth International Conference on Complex Systems* (ICCS 2020): Nashua, NH, USA
2019-2020: Member, Evaluation Committee for *Administrative Sciences*, 2019 *Administrative Sciences Young Investigator Award*

- 2018: Member, Scientific Program Committee, *Fifth International Conference on Behavioral, Economic, Socio-Cultural Computing* (BESC 2018): Kaohsiung, Taiwan
- 2018: Member, Scientific Program Committee, *Conference on Complex Systems* (CCS 2018), Complex Systems Society: Thessaloniki, Greece
- 2018: Member, Scientific Program Committee, *Ninth International Conference on Complex Systems* (ICCS 2018): Cambridge, MA, USA
- 2017: Member, Scientific Program Committee, *Fourth International Conference on Behavioral, Economic, Socio-Cultural Computing* (BESC 2017): Krakow, Poland
- 2017: Member, Scientific Program Committee, *Conference on Complex Systems* (CCS 2017), Complex Systems Society: Cancun, Mexico
- 2016: Member, Scientific Program Committee, *Third International Conference on Behavioral, Economic, Socio-Cultural Computing* (BESC 2016): Durham, North Carolina
- 2015: Member, Scientific Program Committee, *Second International Conference on Behavioral, Economic, Socio-Cultural Computing* (BESC 2015): Nanjing, China
- 2007: Member, Davidson Fellows Review Committee, Davidson Institute
- 2007: Member, Grant Review Panel, *Human and Social Dynamics* Program, National Science Foundation
- 2006: Member, Selection Committee for Doctoral Student Research Paper Competition, North American Association for Computational Social and Organizational Science (NAACSOS)
- 2006: Member, Davidson Fellows Review Committee, Davidson Institute
- 2006: Member, International Scientific Committee, Third Workshop of Society for Computational Economics on *Complex Behavior in Economics: Modeling, Computing, and Mastering Complexity*: Aix-en-Provence, France
- 2004: Member, Grant Review Panel, *Human and Social Dynamics* Program, National Science Foundation
- 2003: Member, International Scientific Committee, Second Workshop of Society for Computational Economics on *Complex Behavior in Economics: Modeling, Computing, and Mastering Complexity*: Aix-en-Provence, France

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

RESEARCH INTERESTS

Agent-Based Modelling, Competition Policy, Competitive Strategy, Computational Economics, Epidemiology, Industrial Organization, Industry Dynamics, Infectious Diseases, Mathematical and Computational Modeling, Microeconomic Theory, Modeling Social and Behavioral Dynamics, Organization Theory, Social Norms, Social Network Theory

PUBLICATIONS

Book

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

Articles

- 2021 “Spatially Heterogeneous Vaccine Coverage and Externalities in a Computational Model of Epidemics” (with Troy Tassier), *Computational Economics*, 58 (2021), 27-55. (<https://doi.org/10.1007/s10614-019-09918-7>)
- 2020 “A Dynamic Computational Model of Social Stigma” (with Joseph E. Harrington, Jr.), *Journal of Artificial Societies and Social Simulation*, 23 (2020), 2.
- 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. (<http://www.palgraveconnect.com/esm/doifinder/10.1057/9781137294678.0767>)
- 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 Economics, 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

- 2021 “Modelling the Propagation of Infectious Disease through a Nexus of Multi-Regional Contact Networks When There Are Spatial Disparities in Vaccine Coverage” (with Troy Tassier), September 2021
- 2020 “It’s Worth a Shot: Urban Density, Endogenous Vaccination Decisions, and Dynamics of Infectious Disease” (with Andrew Souther and Troy Tassier), December 2020
- 2015 “A Non-Equilibrium Theory of Merger Waves,” April 2015
- 2012 “A Note on the Dynamics of Firm Turnovers in the East Liverpool (Ohio) Pottery Industry, 1825-2010,” May 2012
- 2010 “The Impact of a Corporate Leniency Program on Antitrust Enforcement and Cartelization” (with Joseph E. Harrington, Jr.), February 2009 [Revised: April 2010]
- 2007 “Partition and Delegate: A Computational Algorithm for Generating Nested Organizational Hierarchies with a Fixed Number of Tasks,” June 2007
- 2001 “Co-Evolution of Firms and Consumers and the Implications for Market Dominance,” (with Joseph E. Harrington, Jr.), *Center on Social and Economic Dynamics Working Paper Series No. 23*, The Brookings Institution, October 2001
- 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.), *Santa Fe Institute Working Paper 00-02-010*, 2000

REFEREE/REVIEWER ACTIVITIES

- Journals: *Administrative Sciences*, *American Economic Review*, *American Journal of Sociology*, *Annals of Operations Research*, *Canadian Journal of Economics*, *Central European Journal of Operations Research*, *Computational Economics*, *Computational Management Science*, *Computational and Mathematical Organization Theory*, *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: Cambridge University Press, Harper Collins Publishers, John Wiley & Sons, Inc., Addison Wesley Longman, Prentice Hall, Johns Hopkins University Press, MIT Press, Routledge, Stanford University Press, W. W. Norton & Company

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