

ADAM B. JAFFE

PROFESSIONAL POSITIONS

Brandeis University, Faculty of Arts and Sciences and International Business School

- 1999- *Fred C. Hecht Professor in Economics*
2003-2011 *Dean of Arts and Sciences*
Strengthened Graduate School of A&S both academically and fiscally. Initiated school-wide mentorship program for new faculty. Created school-wide experiential learning program. Spearheaded initiatives in interdisciplinary programs. Raised faculty salaries and hired over 100 full-time faculty. Chaired faculty/staff/student committee charged with strategic restructuring in response to 2008-10 financial crisis.
- 2001-2011 *Member, University Advisory Council*
2000-2002 *Economics Department Chair*
2001-2002 *Chair, University Intellectual Property Policy Committee*
1994-1999 *Associate Professor of Economics*

National Bureau of Economic Research

- 1985- *Faculty Research Fellow (1985-1994) and then Research Associate*
1995-2007 *Co-founder and Co-organizer, Science and Technology Policy Research Workshop (1995-98) and Innovation Policy and the Economy Group (1999-2007)*
These groups created a new venue for support and communication of high-quality policy-relevant research related to science, technology and innovation policy.
- 1994-1999 *Project Coordinator, NBER Research Project on Industrial Technology and Productivity (funded by the Alfred P. Sloan Foundation)*

Organization for Economic Cooperation and Development (OECD), Paris

- 2002-2003 *Visitor, Directorate for Science, Technology and Industry*

Economics Resource Group, Inc.

- 1988-1999 Founding partner of an economics consulting firm specializing in expert testimony in regulatory, antitrust and intellectual property matters. Firm grew to about 50 people before being sold to Lexecon, Inc. in 1999

Harvard University, Faculty of Arts and Sciences

- 1985-94 *Assistant, then Associate Professor of Economics. (On leave, academic year 1990-91; visiting the Kennedy School of Government, 1992-94)*

President's Council of Economic Advisers, Washington DC

- 1990-91 *Senior Staff Economist.*
Responsible for energy policy, antitrust and regulatory policy, and innovation policy.

EDUCATION

- 1980-85 *Ph.D. in Economics, Harvard University.* Thesis: "Quantifying the Effects of Technological Opportunity and Research Spillovers in Industrial Innovation."
- 1976-78 *S.M. in Technology and Policy, Massachusetts Institute of Technology.* Thesis: "Regulating Chemicals: Product and Process Technology as a Determinant of the Compliance Response."
- 1973-76 *S.B. in Chemistry, Massachusetts Institute of Technology.*

TEACHING EXPERIENCE

How Do We Know What We Know (Second-year seminar)
What a Good Idea! Technology and Innovation in Society (First-year seminar)
Introductory Economics (undergraduate)
Microeconomic Theory (Ph.D.)
Law and Economics (undergraduate)
Environmental and Natural Resource Economics (undergraduate)
Government Regulation and Antitrust Policy (undergraduate and Ph.D.)
R&D, Innovation and Productivity Growth (undergraduate)
Industrial Organization (Ph.D. and undergraduate)
Applied Welfare Economics (John F. Kennedy School of Government)

Competition and Innovation Summer School, run by K. U. Leuven (Belgium) and The Center for European Economic Research, Mannheim (Germany)

Foundation for American Communications, economics education for journalists, "The Role of Government in the Economy"

OTHER PROFESSIONAL ACTIVITIES

Editorial Board, Environmental Innovation and Societal Transitions, 2011 ongoing

Lead Author, Fifth Assessment Report, Intergovernmental Panel on Climate Change, 2011 ongoing

Keynote Speaker, Symposium on Universities, Innovation and Territory, Universidad de Barcelona, September 2011

Invited Participant, NIH Science of Science Management meeting, October 2008

Consultant, Finance Ministry, Government of Chile, 2007

Keynote address, NSF Workshop on Advancing Measures of Innovation: Knowledge Flows, Business Metrics and Measurement Strategies, Arlington VA, 2006

Consultant, World Bank (evaluation of program in El Salvador to increase productivity in SME), 2006

Member, Board of Editors, Journal of Industrial Economics, 1995-2003; American Economic Review, 1995-2000; Associate Editor, Rand Journal of Economics, 1997-2003

Guest Associate Editor, Management Science Special Issue: “Managing Knowledge in Organizations,” 2001

Lead Author, Third Assessment Report, Intergovernmental Panel on Climate Change, 1998-2001

Member, National Academy of Engineering Committee on the Impact of Academic Research on Industrial Performance, 1998-2001

Member, Economic Impact Committee, Association of University Technology Managers, 1994-95

Contributing Author, Working Group III (socioeconomics) of the Intergovernmental Panel on Climate Change (IPCC), 1994

Member, Stanford Energy Modeling Forum, Working Group on Energy Conservation (EMF 13), 1992-94

Referee/Reviewer for American Economic Review, Econometrica, Economic Inquiry, Economics of Innovation and New Technology, Journal of Economics Organization and Management, Journal of Environmental Economics and Management, Journal of Industrial Economics, Journal of Law and Economics, Journal of Political Economy, Quarterly Journal of Economics, Rand Journal of Economics, Research Policy, Review of Economics and Statistics, Science, and MIT Press.

BOOKS AND EDITED VOLUMES

Innovation and its Discontents (with J. Lerner), Princeton University Press, 2004; issued in paperback, 2006

Patents, Citations and Innovations: A Window on the Knowledge Economy (with M. Trajtenberg), M.I.T. Press, 2002; issued in paperback, 2005

Innovation Policy and the Economy, (edited with J. Lerner and S. Stern), M.I.T. Press, Cambridge, Volume 1 (2001) through Volume 8 (2007)

RECENT PAPERS AND PUBLICATIONS

Measuring Science, Technology, and Innovation: A report prepared for the National Academies of Science Panel on Developing Science, Technology, and Innovation Indicators for the Future (with B. Hall), 2012

“International Harmonization of IPR Protection: Lessons from the Economics Literature” (with A.G.Z. Hu), in Intellectual Property Rights and Development, J. Stiglitz, G. Dosi, J. Reichman, M. Cimoli, K. Maskus, eds, Oxford University Press, forthcoming

“Technology Policy and Climate Change,” *Climate Change Economics*, forthcoming

“Induced Innovation and Technology Trajectory: Evidence from Smoking Cessation Products” (with S. Werfel), *Research Policy*, forthcoming

Comment on "The Diffusion of Scientific Knowledge Across Time and Space: Evidence from Professional Transitions for the Superstars of Medicine," in J. Lerner and S. Stern, eds., Rate and Direction of Inventive Activity, University of Chicago Press, 2012

“Comment: The Economics of Technologies to Combat Global Warming,” *Energy Economics*, 33:4, 2011

“Analysis of Public Research, Industrial R&D, and Commercial Innovation: Measurement Issues Underlying the Science of Science Policy,” in The Science of Science Policy: A Handbook, K. Fealing, J. Lane, J. Marburger and S. Shipp, eds., Stanford: Stanford Business Books, 2011

HIGH-IMPACT PUBLICATIONS (100 or more citations from subsequent literature)

“Market Value and Patent Citations: A First Look” (with B. Hall and M. Trajtenberg), *Rand Journal of Economics*, 2005, Reprinted in The Economics of Patents, John Cantwell, Ed., Edward Elgar, 2006

“Patent Citations and International Knowledge Flow: The Cases of Korea and Taiwan” (with A. Hu), *International Journal of Industrial Organization*, 2003; reprinted in The Economics of Patents, John Cantwell, Ed., Edward Elgar, 2006

“Do Alliances Promote Knowledge Flows” (with B. Gomes-Casseres and John Hagedoorn), *The Journal of Financial Economics*, 2006

“Technological Change and the Environment” (with R. Newell and R. Stavins), in Karl-Göran Mäler and Jeffrey Vincent, eds, Handbook of Environmental Economics, North-Holland, 2003

“Building Programme Evaluation into the Design of Public Research-Support Programmes,” *Oxford Review of Economic Policy*, 2002

“The NBER Patent Citations Data File: Lessons, Insights and Methodological Tools” (with B. Hall and M. Trajtenberg), NBER Working Paper No. 8498, 2001; reprinted in A. Jaffe and M. Trajtenberg, Patents, Citations and Innovations: A Window on the Knowledge Economy, MIT Press (2002)

“Reinventing Public R&D: Patent Policy and the Commercialization of National Laboratory Technologies” (with Josh Lerner), *Rand Journal of Economics*, Spring 2001; reprinted in **Innovation and Entrepreneurship**, David Audretsch, Oliver Falck and Stephan Heblich, eds., Edward Elgar (2009)

“Knowledge Spillovers and Patent Citations: Evidence from a Survey of Inventors” (with Manuel Trajtenberg and Michael Fogarty), *American Economic Review Papers and Proceedings*, 2000

“The U.S. Patent System in Transition: Policy Innovation and the Innovation Process,” *Research Policy*, 2000; reprinted in Albert N. Link, Ed., **The Economics of Innovation Policy**, Edward Elgar (2008)

“The Induced Innovation Hypothesis and Energy-Saving Technological Change” (with R. Newell and R. Stavins), *Quarterly Journal of Economics*, 1999; reprinted in A. Grübler, N. Nakicenovic, and W. Nordhaus, eds., **Technological Change and the Environment**, Resources for the Future, 2002

“Universities as a Source of Commercial Technology: A Detailed Analysis of University Patenting, 1965-1988” (with R. Henderson and M. Trajtenberg), *Review of Economics and Statistics*, February 1998; also published in a slightly different form as “University Patenting Amid Changing Incentives for Commercialization” in G.B. Navaretti, P. Dasgupta, K.-G. Mäler and D. Siniscalco, eds., **Creation and Transfer of Knowledge**, Springer, 1998; reprinted in **Technological Entrepreneurship**, Donald Siegel, ed., Edward Elgar (2007)

“Environmental Regulation and Innovation: A Panel Data Study” (with K. Palmer), *Review of Economics and Statistics*, November 1997

“University Versus Corporate Patents: A Window on the Basicness of Invention” (with M. Trajtenberg and R. Henderson), *Economics of Innovation and New Technology*, 1997

“Bounding the Effects of R&D: An Investigation Using Linked Establishment and Firm Data” (with J. Adams), *Rand Journal of Economics*, Winter 1996

“Flows of Knowledge from Universities and Federal Labs: Modeling the Flow of Patent Citations over Time and Across Institutional and Geographic Boundaries” (with M. Trajtenberg), *Proceedings of the National Academy of Sciences*, 93: 12671-12677, November 1996

“Dynamic Incentives of Environmental Regulations: The Effects of Alternative Policy Instruments on Technology Diffusion” (with R. Stavins), *Journal of Environmental Economics and Management*, 1995

“Environmental Regulation and the Competitiveness of U.S. Manufacturing: What Does the Evidence Tell Us?” (with S. Peterson, P. Portney and R. Stavins), *The Journal of Economic Literature*, 1995; reprinted in **Trade and the Environment: Economic, Legal and Policy Perspectives**, Alan M. Rugman and John J. Kirton, eds., Edward Elgar Publishing Limited, 1998;

also in **Economics of the Environment: Selected Readings**, Robert Stavins, ed., Norton, 2005; and **Economics of Environmental Law**, Richard Brooks, Nathaniel Keohane and Douglas Kysar, eds, Edward Elgar (2009)

"Energy-Efficiency Investments and Public Policy" (with R. Stavins), *The Energy Journal*, 1994

"The Energy-Efficiency Gap" (with R. Stavins), *Energy Policy*, 1994

"The Energy Paradox and the Diffusion of Conservation Technology" (with R. Stavins), *Resource and Energy Economics*, 1994

"Geographic Localization of Knowledge Spillovers as Evidenced by Patent Citations" (with M. Trajtenberg and R. Henderson), *Quarterly Journal of Economics*, 1993; reprinted in **Innovation and Entrepreneurship**, David Audretsch, Oliver Falck and Stephan Heblich, eds., Edward Elgar (2009); also in **The Growth of Cities**, Zoltan Acs, ed., Edward Elgar (2006); also in **Globalization and the Location of Firms**, John Cantwell, ed., Edward Elgar (2005), and in **Recent Developments in Growth Theory**, Daron Acemoglu, ed., Edward Elgar (2004)

"The Effect of Liquidity on Firms' R&D Spending" (with K. Hao), *Economics of Innovation and New Technology*, 1993

"How High are the Giants' Shoulders: An Empirical Assessment of Knowledge Spillovers and Creative Destruction in a Model of Economic Growth" (with R. Caballero), in O. Blanchard and S. Fischer, eds., **National Bureau of Economic Research Macroeconomics Annual**, Vol. 8, MIT Press, 1993; reprinted in Gene M. Grossman, ed., **Economic Growth: Theory and Evidence**, Cheltenham, UK: Edward Elgar, 1996

"Unintended Impacts of Public Investments on Private Decisions: The Depletion of Forested Wetlands" (with R. Stavins), *American Economic Review*, 1990; reprinted in **Economics of Environmental Law**, Richard Brooks, Nathaniel Keohane and Douglas Kysar, eds, Edward Elgar (2009)

"Real Effects of Academic Research," *American Economic Review*, 1989; reprinted in **The Economics of Science and Innovation**, Paula E. Stephan and David B. Audretsch, eds., Edward Elgar (2000); also in **Globalization and the Location of Firms**, John Cantwell, ed., Edward Elgar, (2005); also in **The Economics of Innovation Policy**, Albert Link, ed., Edward Elgar (2008); and in **Innovation and Entrepreneurship**, David Audretsch, Oliver Falck and Stephan Heblich, eds., Edward Elgar (2009)

"Technological Opportunity and Spillovers of R&D: Evidence from Firms' Patents, Profits and Market Value," *American Economic Review*, 1986; reprinted in Edward N. Wolff, ed., **The Economics of Productivity**, Edward Elgar (1997); in R. Towse and R.W. Holzhauser, eds., **The Economics of Intellectual Property**, Edward Elgar (2002); and in Cristiano Antonelli, ed., **The Economics of Innovation: Critical Concepts in Economics**, Routledge (2007)

OTHER PAPERS AND PUBLICATIONS

“Energy, the Environment and Technological Change” (with D. Popp and R. Newell), in B. Hall and N. Rosenberg, eds, Handbook of The Economics of Innovation, North-Holland, 2010

“The US Patent System: Does It Strengthen or Weaken Innovation and Progress?” (with J. Lerner), Chapter 2.2 of *The Innovation for Development Report 2009-2010: Strengthening Innovation for the Prosperity of Nations*, Augusto López-Claros, ed, Palgrave MacMillan, 2009

“The ‘Science of Science Policy’,” *Journal of Technology Transfer*, 2008

“Patent Reform: No Time Like the Present,” *I/S Journal of Law and Policy for the Information Society*, 2008

“Double Research Funding? Be Careful,” *The Scientist*, Vol. 21 No. 7, page 31, 2007

“Academic science and entrepreneurship: Dual engines of growth?” (with J. Lerner, S. Stern and M. Thursby), *Journal of Economic Behavior and Organization*, 2007

“Peanut Butter Patents Versus the New Economy: Does the Increased Rate of Patenting Signal More Invention or Just Lower Standards?” (with P. Sanyal). *Annales d’Economie et de Statistique*, 2006

“The effects of economic and policy incentives on carbon mitigation technologies,” (with R. Newell and R. Stavins), *Energy Economics* 28, no. 5-6: 563-578, 2006.

Public Financial Support for Commercial Innovation (with I. Goldberg, M. Trajtenberg, T. Muller, J. Sunderland and E. Armas), World Bank, 2006

“Innovation and Its Discontents” (with J. Lerner), in *Innovation Policy and the Economy Volume 6*, A. Jaffe, J. Lerner and S. Stern, eds., 2006; reprinted in *Capitalism and Society* Vol. 1 No. 3 (2006) and in Perspectives on Commercializing Innovation, F. Kieff and Troy Paredes, eds., Cambridge University Press (2012)

“A tale of two market failures: Technology and environmental policy” (with R. Newell and R. Stavins), *Ecological Economics*, 2005

Comment on “Patent Citations and the Geography of Spillovers: A Reassessment” (with R. Henderson and M. Trajtenberg), *American Economic Review*, 2005

“Economics of Energy Conservation” (with R.G. Newell and R. N. Stavins), in Cutler Cleveland, ed., Encyclopedia of Energy, Elsevier, Inc. 2004

“Technology Policy for Energy and the Environment” (with R.G. Newell and R.N. Stavins), in *Innovation Policy and the Economy Volume 4*, A. Jaffe, J. Lerner and S. Stern, eds., 2003

“Environmental Policy and Technological Change” (with R. Newell and R. Stavins), *Environmental and Resource Economics*, 2002

“International Taxation and the Location of Inventive Activity” (with J.R. Hines, Jr.), in James R. Hines Jr. ed., International Taxation and Multinational Activity, Chicago: University of Chicago Press (2001)

“The Cigarette Industry,” in Walter Adams and James Brock, ed., The Structure of American Industry, Tenth Edition, Prentice Hall, 2000

“International Knowledge Flows: Evidence from Patent Citations” (with M. Trajtenberg), *Economics of Innovation and New Technology*, 1999; reprinted in John Cantwell, ed., The Economics of Patents, Edward Elgar (2006)

“Energy-Efficient Technologies and Climate Change Policies: Issues and Evidence” (with R. Newell and R. Stavins), Resources for the Future Climate Issue Brief No. 19, December 1999

“The Regional Economic Impact of Public Research Funding: A Case Study of Massachusetts” (with Amy B. Candell), in L.M. Branscomb, F. Kodama, and R. Florida, eds., Industrializing Knowledge: University-Industry Linkages in Japan and the United States, MIT Press, 1999

“Special Issue on Geography and Innovation: Editors’ Introduction” (with R. Henderson), *Economics of Innovation and New Technology*, 1999

Comment on “Inventors, Firms and the Market for Technology: U.S. Manufacturing in the Late Nineteenth and Early Twentieth Centuries,” in Daniel Raff, Naomi Lamoreaux and Peter Temin, eds., Learning By Doing in Firms, Markets, and Nations, University of Chicago Press, 1999

Comment on “What Do Technology Shocks Do?” in Bernanke, Ben S. and Julio Rotemberg, eds., NBER Macroeconomics Annual, 1998

“The Importance of ‘Spillovers’ in the Policy Mission of the Advanced Technology Program,” *Journal of Technology Transfer*, Summer 1998

“Inside the Pin-Factory: Empirical Studies Augmented by Manager Interviews: Introduction” (with S. Borenstein and J. Farrell), *Journal of Industrial Economics*, June 1998

"Evidence from Patents and Patent Citations on the Impact of NASA and Other Federal Labs on Commercial Innovation" (with B. Banks and M. Fogarty), *Journal of Industrial Economics*, June 1998

"Measurement Issues," in Investing in Innovation, L. M. Branscomb & J. Keller, Editors, MIT Press, 1998

Review of Green, Inc. by Frances Cairncross, *Journal of Economic Literature*, March 1997

"Economic Analysis of Research Spillovers: Implications for the Advanced Technology Program," Economic Assessment Office, The Advanced Technology Program, National Institutes of Standards and Technology, U.S. Department of Commerce, November 1996

"Trends and Patterns in U.S. Research and Development Expenditures," *Proceedings of the National Academy of Sciences*, 93: 12658-12663, November 1996

"Regional Localization of Technological Accumulation: Application to the Tri-State Region," *The Annals of the New York Academy of Sciences*, 1996

Comment on "Cross-Country Variations in National Economic Growth Rates" by J. Bradford Delong, in Technology and Growth, Jeffrey C. Fuhrer and Jane Sneddon Little, eds., Federal Reserve Bank of Boston Conference Series No. 40, June 1996

"Regulatory Reform and the Economics of Contract Confidentiality: The Example of Natural Gas Pipelines" (with J. P. Kalt, S. T. Jones, and F. A. Felder), *Regulation*, 1996

"Should Electricity Markets Have a Capacity Requirement: If So, How Should It Be Priced?" (with F. Felder), Proceedings of the Electric Power Research Institute Conference on Competitive Electricity Pricing, March 1996.

Planning for Change, Preparing for Growth: Implications for Massachusetts of Reductions in Federal Research Spending, prepared for the Massachusetts Technology Collaborative, March 1996

"On the Microeconomics of R&D Spillovers" (with J. Adams), in Louis A. Lefebvre and Élisabeth Lefebvre, eds., Management of Technology and Regional Development in a Global Environment, Paul Chapman Publishing, Ltd., 1995

"Incentive Regulation for Natural Gas Pipelines" (with J. Kalt), in Ellig, J. and J.P. Kalt, eds., New Horizons in Natural Gas Deregulation, 1995

Comment on "Taxes, Technology Transfer, and the R&D Activities of Multinational Firms" by James R. Hines, Jr., in Martin Feldstein, James R. Hines, Jr. and R. Glenn Hubbard, eds., The Effects of Taxation on Multinational Corporations, University of Chicago Press, 1995

"The Emerging Coexistence of Competition and Regulation in Natural Gas Transportation" (with S. Makowka), *Hume Papers on Public Policy*, 1995

The Investment Consequences of the Re-Regulation of Cable Television (with W. Emmons and J. Taylor), *The Economics Resource Group*, Cambridge, MA, 1994

"Insight on Oversight" (with J. Kalt), *Public Utilities Fortnightly*, April 15, 1994

"Prices, Regulation and Energy Conservation: An Econometric Analysis" (with R. Stavins), delivered at the Conference on Market Approaches to Environmental Regulation, Stanford University, December 1993

Comment on "R&D and Market Value in the 1980s" by Bronwyn Hall, *Brookings Papers on Economic Activity, Microeconomics*, 1993

Environmental Regulations and the Competitiveness of U.S. Industry (with S. Peterson, P. Portney and R. Stavins), U.S. Department of Commerce, Economics and Statistics Administration, Washington DC, NTIS No. PB-93-193514, July 1993

"Achieving Maximum Benefit from Competitive Natural Gas and Emission Allowance Markets" (with J. Kalt), Proceedings of the U.S. Department of Energy/National Association of Regulatory Utility Commissioners Conference on Natural Gas Use, State Regulation and Market Dynamics in the Post 636/Energy Policy Act Era, March 1993.

"The Diffusion of Energy-Conserving Windows: The Effect of Economic Incentives and Building Codes" (with R. Stavins), presented at the American Economic Association annual meeting, Anaheim CA, January 1993

Review of Investing in the Future, by John Irvine, *et al.*, *Journal of Economic Literature*, June, 1992

Review of Productivity and U.S. Economic Growth by D. Jorgenson, *et al.*, *Business History Review*, 1991

"Economic Evaluation of Policy Options for Global Climate Change: Some Methodological Reflections," Center for Energy and Environmental Policy, John F. Kennedy School of Government, Harvard University, August 1990

"Market Power of Local Cable Television Franchises: Evidence from the Effects of Deregulation" (with D. Kanter), *Rand Journal of Economics*, 1990

"Characterizing the 'Technological Position' of Firms, with Application to Quantifying Technological Opportunity and Research Spillovers," *Research Policy*, 1989

"Universities and Regional Patterns of Commercial Innovation," *REI Review*, Center For Regional Economic Issues, Case-Western Reserve University, 1989

"Demand and Supply Influences in R&D Intensity and Productivity Growth," *Review of Economics and Statistics*, August 1988

"Who Does R&D and Who Patents" (with J. Bound, *et al.*), in Z. Griliches, ed., **R&D, Patents and Productivity**, University of Chicago Press, 1984

"Benefit-Cost Analysis and Multi-Objective Evaluation of Federal Water Projects," *Harvard Environmental Law Review*, 1980

"Preventing Groundwater Pollution: Towards a Coordinated Strategy to Protect Critical Recharge Zones (with J.T.B. Tripp), *Harvard Environmental Law Review*, 1979

RESEARCH GRANTS AWARDED

"A Protocol for Empirical Measurement of the Impact of Public Research Funding," National Science Foundation, 2000-2001

"The Effects of Government Policies on the Invention, Innovation, and Diffusion of Energy-Efficient Technologies," U.S. Department of Energy, 1998-2001

"Energy-Efficiency Innovation and the Economic and Regulatory Environment: Analyzing Endogenous and Autonomous Technological Change for Integrated Assessment Models," U.S. Department of Energy, 1995-1998

"Using Patent Citation Data to Trace Knowledge Flows," National Science Foundation, 1994-98

"The Sources and Effects of Knowledge Spillovers," National Science Foundation, 1994-97

"Getting Down to Basics: Using University and Corporate Patents to Identify Basic Inventions and Trace Their Diffusion," National Science Foundation, 1991-92

"Evaluating the Relative Effectiveness of Economic Incentives and Direct Regulation for Environmental Protection: Impacts on the Diffusion of Technology," U.S. Environmental Protection Agency, 1991-93

HONORS AND AWARDS

Venice Award for Intellectual Property, Honorable Mention for Innovation and Its Discontents (2007)

Alfred P. Sloan Dissertation Fellowship, Harvard, 1984-85

Alfred P. Sloan Research Fellowship, MIT, 1976-77

Phi Beta Kappa, MIT, 1976

COORDINATES

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