

## CURRICULUM VITAE

### **Richard J. Gilbert**

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#### **EDUCATION**

B.S., CORNELL UNIVERSITY, Electrical Engineering (with honors), 1966

M.S., CORNELL UNIVERSITY, Electrical Engineering, 1967

M.A., STANFORD UNIVERSITY, Economics, 1975

Ph.D., STANFORD UNIVERSITY, Engineering-Economic Systems, 1976

#### **PRESENT POSITIONS**

UNIVERSITY OF CALIFORNIA, BERKELEY, July 1, 2008 – present  
Emeritus Professor of Economics

CHAIR, BERKELEY COMPETITION POLICY CENTER, 2006 - present

SENIOR CONSULTANT, COMPASS LEXECON, 2006 - present

#### **PROFESSIONAL EXPERIENCE**

UNIVERSITY OF CALIFORNIA, BERKELEY, July 1, 2008 – June 30, 2011  
Emeritus Professor of Economics and Professor of the Graduate School

UNIVERSITY OF CALIFORNIA, BERKELEY, 1983 - June 30, 2008  
Professor of Economics

UNIVERSITY OF CALIFORNIA, BERKELEY, 1997 - June 30, 2008  
Affiliated Professor of Business Administration

UNIVERSITY OF CALIFORNIA, BERKELEY, 2002 - 2005  
Chair, Department of Economics

DIRECTOR, LECG, 1989 - 2006

U.S. DEPARTMENT OF JUSTICE, Antitrust Division, 1993 - 1995  
Deputy Assistant Attorney General for Economics

UNIVERSITY OF CALIFORNIA, BERKELEY, 1990 - 1993  
Affiliated Professor of Business Administration

UNIVERSITY OF CALIFORNIA ENERGY INSTITUTE, 1984 - 1993  
Director

STANFORD UNIVERSITY, 1982 - 1983  
Associate Professor of Engineering-Economic Systems (with tenure)

UNIVERSITY OF CALIFORNIA, BERKELEY, 1979 - 1983  
Associate Professor of Economics (with tenure)

UNIVERSITY OF CALIFORNIA, BERKELEY, 1976 - 1979  
Assistant Professor of Economics

STANFORD UNIVERSITY, 1975 - 1976  
Research Associate, Department of Economics and Institute for Energy Studies

U.S. NAVY, 1967 - 1971  
Lieutenant, Senior Grade

## **FELLOWSHIPS AND AWARDS**

Visiting Fellow, Churchill College, University of Cambridge, 2006

Visiting Professor, Columbia University, 2005

Fulbright Scholar, South America, 1989

Visiting Fellow, Churchill College, University of Cambridge, 1979

Visiting Fellow, Nuffield College, University of Oxford, 1979

Recipient of the 1<sup>st</sup> Annual Berkeley Center for Law and Technology Award for  
Contributions to the Development of Law and Public Policy, 1996

Finalist, American Antitrust Institute Outstanding Antitrust Litigation in Economics, 2014

Listed in *Who's Who*

## **PROFESSIONAL ACTIVITIES**

President, *Industrial Organization Society*, 1994-1995

Associate Editor, *Journal of Sports Economics*, 1999-2009

Associate Editor, *Journal of Economic Theory*, 1983-1989

Associate Editor, *Journal of Industrial Economics*, 1990-1993

Associate Editor, *Review of Industrial Organization*, 1990-1993

Review Panel, National Science Foundation, 1985-1986

Advisor to U.S. Department of Energy, Energy Assessment Panel on Energy Security, 1992

Co-Director, Program on Workable Energy Regulation, 1990-1993

Member of Advisory Board, California Institute for Energy Efficiency, 1992-1993

Vice-Chair, American Bar Association Antitrust Economics Committee, 1993-1995

Member of the Advisory Board, Institute for Business and Economic Research, University of California at Berkeley, 1998-2010; Chair of the Advisory Board, 2001-2

Member of the Advisory Board, Program on Intellectual Property and Entrepreneurship, Berkeley Center for Law and Technology, 2006 – 2011

Member of the Advisory Board, American Antitrust Institute, 2007 – present

Member of the Advisory Board, SSRN Law, Policy & Economics of Technical Standards eJournal, 2012 – present

Co-Chair, Intellectual Property Program, American Bar Association, 2008-9

Non-lawyer representative to the Council of the Antitrust Section of the American Bar Association, 2011 – 2014

Member, Committee on Intellectual Property Management in Standard-Setting Processes, The National Academies, Board on Science, Technology and Economic Policy, 2011 – present

Conference Organizer: Co-Chair, ABA Conference on Intellectual Property and Antitrust, San Francisco, CA, February 2009; Symposium in Honor of Thomas C. Schelling, Berkeley, March 4, 2008; The Economics of Competition and Innovation, Berkeley, October 26-27, 2007; Prescriptions for Social Security Reform, Berkeley, March 11, 2005; European Summer Symposium in Economic Theory, Gerzensee, 1998; Post-Chicago Economics Conference, Washington, D.C., May 26-27, 1994; International Comparisons of Electricity Regulation, Toulouse, May 1993; Economics of Energy Conservation, Berkeley, June 1992; Telecommunications Policy Research Conference, 1988, 1989; Developments in Electricity Regulation, Berkeley, June 1987

Session Organizer: 1994 Meetings of the American Economic Association; 1987 Meetings of the Econometrics Society; 1984 Meetings of the American Economic Association; 1983 Meetings of ORSA/TIMS Associations

Nominating Committee Member, Industrial Organization Society Professional Service Award, 1998, 1999

External Reviewer for University of Colorado Department of Economics, 2004

Member of School of Engineering Dean Search Committee, U.C. Berkeley, 2007

Member of the Selection Committee, ABA Scholars in Residence Program, 2012 -

Member of American Economic Association, Econometric Society, Sigma Xi, Tau Beta Pi, Eta Kappa Nu. Associate Member, American Bar Association, Antitrust Section.

## PUBLICATIONS

### Articles

- 1) "Not Another Drug! Antitrust for Drug and Other Innovations," *Antitrust*, Vol. 30, No. 1, Fall 2015, pp. 38-45.
- 2) "Merging Innovation into Antitrust Agency Enforcement of the Clayton Act," with Hillary Greene, *George Washington Law Review*, Vol. 83, No. 6, November 2015, pp. 1919 -1947.
- 3) "A Unified Framework for RAND and Other Reasonable Royalties," with Jorge Contreras, *Berkeley Technology Law Review*, Vol. 30, No. 2, (Fall 2015), pp. 1451-1504.
- 4) "E-books: A Tale of Digital Disruption," *Journal of Economic Perspectives*, Vol. 29, No. 3, (Summer 2015), pp. 165-184.
- 5) "The Protected Profits Benchmark: A Refusal to Deal Metric?" by Steven C. Salop, *Antitrust Law Journal*, vol. 78, Issue 3, 2013, pp. 689-702.
- 6) "Deal or No Deal? Licensing Negotiations in Standard-Setting Organizations," *Antitrust Law Journal*, vol. 77, Issue 3, 2011, pp. 855-888.
- 7) "Efficient Division of Profits from Complementary Innovations," (with Michael Katz), *International Journal of Industrial Organization*, vol. 29, Issue 4, July 2011, pp. 443-454.
- 8) "A World Without Intellectual Property?: Boldrin and Levine, *Against Intellectual Monopoly*," *Journal of Economic Literature*, vol. 49, No.2, 2011, pp. 421-432.
- 9) "Ties That Bind: Policies to Promote (Good) Patent Pools," *Antitrust Law Journal*, vol. 77, Issue 1, 2010, pp. 1-45.

- 10) "It Works for Mergers, Why Not for Finance?," with Aaron Edlin, *The Economists' Voice*, [www.bepress.com/ev](http://www.bepress.com/ev), April 2010, reprinted in Aaron S. Edlin and Joseph E. Stiglitz, *The Economists' Voice 2.0: The Financial Crisis, Health Care Reform, and More*, Columbia University Press, 2012.
- 11) "Injecting Innovation into The Rule of Reason: A Comment on Evans and Hylton," *GCP Magazine*, Vol. 4, No. 2, Autumn 2008.
- 12) "Innovation Markets after Genzyme/Novazyme," *GCP Magazine*, Vol. 4, No. 1, July 2008.
- 13) "Analytical Screens for Electricity Mergers," (with David Newbery), *Review of Industrial Organization*, 32(3-4), May 2008, pp. 217-239.
- 14) "Holding Innovation to an Antitrust Standard," *Competition Policy International*, vol. 3, No. 1, Spring, 2007, pp. 3-33.
- 15) "Product Improvement and Technological Tying in a Winner-Take-All Market," (with Michael Riordan), *Journal of Industrial Economics*, vol. 55, no. 1, 2007, pp. 113-139.
- 16) "Competition and Innovation," *Journal of Industrial Organization Education*: Vol. 1: Issue 1, Article 8, 2006. Available at: <http://www.bepress.com/jioe/vol1/iss1/8>
- 17) "Dollars For Genes: Revenue Generation by the California Institute for Regenerative Medicine," *Berkeley Technology Law Journal*, Symposium Issue, Vol. 21(3), 2006, pp. 1107-1141.
- 18) "Should Good Patents Come in Small Packages? A Welfare Analysis of Intellectual Property Bundling" (with Michael Katz), *International Journal of Industrial Organization*, vol. 24, Issue 5, September 2006, pp. 931-952.
- 19) "Market Power, Vertical Integration and the Wholesale Price of Gasoline" (with Justine Hastings), *Journal of Industrial Economics*, vol. 53, no. 4, 2005, pp. 469-492.
- 20) "Converging Doctrines? U.S. and EU Antitrust Policy for the Licensing of Intellectual Property," *Antitrust*, vol. 19, no. 1, Fall 2004, pp. 51-57.
- 21) "Antitrust for Patent Pools: A Century of Policy Evolution," *Stanford Technology Law Review*, April 2004. Available at [http://stlr.stanford.edu/STLR/Core\\_Page/](http://stlr.stanford.edu/STLR/Core_Page/).
- 22) "Allocating Transmission to Mitigate Market Power in Electricity Networks," (with Karsten Neuhoff and David Newbery), *Rand Journal of Economics*, Volume 35, No. 4, Winter 2004, pp. 691-709.
- 23) "Is Innovation King at the Antitrust Agencies? The Intellectual Property Guidelines Five Years Later," with Willard Tom, *Antitrust Law Journal*, vol. 69, 2001, pp. 43-86.
- 24) "When Good Value Chains Go Bad: The Economics of Indirect Liability for Copyright Enforcement," with Michael Katz, *Hastings Law Journal*, vol. 52, no. 4, April 2001, pp. 961-990.

- 25) "An Economist's Guide to U.S. v. Microsoft," with Michael Katz, *Journal of Economic Perspectives*, vol. 15, no. 2, Spring 2001, pp. 25-44.
- 26) "The Analysis of Professional Sports Leagues as Joint Ventures," with Michael Flynn, *The Economic Journal*, vol. 111, no. 469, February 2001, pp. 27-46.
- 27) "Exclusive Dealing, Preferential Dealing, and Dynamic Efficiency," *Review of Industrial Organization*, vol. 16, no. 2, March 2000, pp. 167-184.
- 28) "An Equilibrium Theory of Rationing," with Paul Klemperer, *Rand Journal of Economics*, vol. 31, no. 1, Spring 2000, pp. 1-21.
- 29) "Antitrust Policy for the Licensing of Intellectual Property: An International Comparison," *International Journal of Technology Management*, vol. 19, no. 1/2, 2000, pp. 206-223.
- 30) "Antitrust Policy," with Oliver Williamson, *The New Palgrave Dictionary of Law and Economics*, Macmillan, 1998.
- 31) "Antitrust Issues in the Licensing of Intellectual Property: The Nine No-No's Meet the Nineties," with Carl Shapiro, *Brookings Papers: Microeconomics*, 1997, pp. 283-336.
- 32) "Do Gasoline Prices Respond Asymmetrically to Crude Oil Price Changes?" with Severin Borenstein and A. Colin Cameron, *Quarterly Journal of Economics*, vol. 112, Issue 1, February 1997, pp. 305-339.
- 33) "An Economic Analysis of Unilateral Refusals to License Intellectual Property," with Carl Shapiro, *Proceedings of the National Academy of Sciences of the United States of America*, vol. 93, no. 23, November 12, 1996, pp. 12749-12755.
- 34) "The Use of Innovation Markets: A Reply to Hay, Rapp and Hoerner," with Steven Sunshine, *Antitrust Law Journal*, vol. 64, no.1, Fall 1995, pp. 75-82.
- 35) "Defining the Intersection of Intellectual Property and the Antitrust Laws: The 1995 Antitrust Guidelines for the Licensing of Intellectual Property," *Antitrust*, vol. 9, issue 3, Summer, 1995.
- 36) "Regulating Complementary Products: A Comparative Institutional Analysis," with Michael Riordan, *Rand Journal of Economics*, vol. 26, no. 2, Summer, 1995, pp. 243-256.
- 37) "Incorporating Dynamic Efficiency Concerns in Merger Analysis: The Use of Innovation Markets," with Steven Sunshine, *Antitrust Law Journal*, vol. 63, no. 2, Winter 1995, pp. 569-602. Reprinted in Andrew I. Gavil (ed.), *An Antitrust Anthology*, Anderson Publishing, 1996 and Michael Carrier (ed.), *Critical Concepts In Intellectual Property Law: Competition*, Edward Elgar, 2011.
- 38) "The Dynamic Efficiency of Regulatory Constitutions," with David Newbery, *Rand Journal of Economics*, vol. 25, no. 4, Winter, 1994, pp. 538-554.

- 39) "A Review and Analysis of Utility Conservation Incentive Programs," with Steven Stoft, *The Yale Journal on Regulation*, Winter, 1994, pp. 1-42.
- 40) "Coordination in the Wholesale Market: Where does it Work?" with Edward Kahn and Matthew White, *The Electricity Journal*, vol. 6, no. 8, October 1993, pp. 51-59.
- 41) "Uncle Sam at the Gas Pump: The Causes and Consequences of Gasoline Distribution Regulations," with Severin Borenstein, *Regulation*, vol. 16, no. 2, 1993, pp. 63-75.
- 42) "Product Line Rivalry with Brand Differentiation," with Carmen Matutes, *The Journal of Industrial Economics*, September, 1993, pp. 223-240.
- 43) "Alternative Entry Paths: The Build or Buy Decision," with David Newbery, *Journal of Economics & Management Strategy*, Spring, 1992, pp. 129-150.
- 44) "Introduction to Symposium on Compatibility: Incentives and Market Structure," *The Journal of Industrial Economics*, March 1992, pp. 1-8.
- 45) "Legal and Economic Issues in the Commercialization of New Technology," *Journal of Institutional and Theoretical Economics*, March 1991, pp. 155-181.
- 46) "Multiproduct Competition," with Carmen Matutes, *Annales d'Economie et de Statistique*, vol. 18, April/June 1990, pp. 151-163.
- 47) "Optimal Patent Length and Breadth," with C. Shapiro, *Rand Journal of Economics*, vol. 21, no. 1, Spring 1990, pp. 106-112. Reprinted in Albert N. Link (ed.), *The Economics of Information Policy*, Edward Elgar Publishing (2008).
- 48) "The Role of Potential Competition in Industrial Organization," *Journal of Economic Perspectives*, vol. 3, No. 3, Summer 1989, pp. 107-127. Reprinted in Bonanno, G. and D. Brandolini (eds.), *Industrial Structure in the New Industrial Economics*, Clarendon Press, Oxford, 1990, pp. 38-67.
- 49) "Investment and Coordination in Oligopolistic Industries," with M. Lieberman, *Rand Journal of Economics*, vol. 18, no. 1, Spring 1987, pp. 17-33.
- 50) "Comment on Levin, R., A. Klevorick, R. Nelson, and S. Winter, 'Appropriating the Returns from Industrial Research and Development,'" *Brookings Papers on Economic Activity*, vol. 3, 1987, pp. 821-824.
- 51) "Investing Under Regulatory Uncertainty: What To Do When the Rules Change," with H. Chao and S. Peck, *Energy Systems and Policy*, vol. 9, no. 4, 1986, pp. 385-396.
- 52) "Efficient Pricing During Oil Supply Disruptions," with K. Mork, *Energy Journal*, vol. 7, no. 2, April 1986, pp. 51-68.
- 53) "Entry Deterrence and the Free Rider Problem," with X. Vives, *Review of Economic Studies*, vol. LIII(1), no. 172, January 1986, pp. 71-84.

- 54) "Competition with Lumpy Investment," with R. Harris, *Rand Journal of Economics*, vol. 15, no. 2, Summer 1984, pp. 197-212.
- 55) "Will Oil Markets Tighten Again? A Survey of Policies to Manage Possible Oil Supply Disruptions," with K. Mork, *Journal of Policy Modeling*, vol. 6, no. 1, 1984, pp. 111-142.
- 56) "Customer and Investor Evaluations of Power Technologies: Conflicts and Common Grounds," with H. Chao and S. Peck, *Public Utilities Fortnightly*, vol. 113, no. 9, April 26, 1984, pp. 36-41.
- 57) "Preemptive Patenting and the Persistence of Monopoly: Reply," with D. Newbery, *American Economic Review*, vol. 74, no. 1, March 1984, pp. 251-253.
- 58) "Uncertain Innovation and the Persistence of Monopoly: Comment," with D. Newbery, *American Economic Review*, vol. 74, no. 1, March 1984, pp. 238-242.
- 59) "Strategic Considerations in Invention and Innovation: The Case of Natural Resources," with P. Dasgupta and J. Stiglitz, *Econometrica*, vol. 51, no. 5, September 1983, pp. 1439-1448. Reprinted in Binmore, K. and P. Dasgupta (eds.), *Economic Organizations as Games*, Basil Blackwell.
- 60) "Preemption, Leapfrogging and Competition in Patent Races," with D. Fudenberg, J. Stiglitz, and J. Tirole, *European Economic Review*, vol. 22, no. 1, June 1983, pp. 3-32.
- 61) "Invention and Innovation Under Alternative Market Structures: The Case of Natural Resources," with P. Dasgupta and J. Stiglitz, *Review of Economic Studies*, vol. 49(4), no. 158, October 1982, pp. 567-582.
- 62) "Preemptive Patenting and the Persistence of Monopoly," with D. Newbery, *American Economic Review*, vol. 72, no. 2, June 1982, pp. 514-526.
- 63) "Investment Decisions with Economies of Scale and Learning," with R. Harris, *American Economic Review*, Papers and Proceedings, vol. 71, no. 2, May 1981, pp. 172-177.
- 64) "Reducing Uranium Resource Uncertainty: Is it Worth the Cost?" with R. Richels, *Resources and Energy*, vol. 3, 1981, pp. 13-37.
- 65) "Optimal Depletion of an Uncertain Stock," *Review of Economic Studies*, vol. 46, no. 1, January 1979, pp. 47-58.
- 66) "An Overview of the Economic Theory of Uncertainty and Its Implications for Energy Supply," with D. Newbery and J. Stiglitz, *Electric Power Research Institute Technical Report*, January 1978.
- 67) "Dominant Firm Pricing Policy in a Market for an Exhaustible Resource," *Bell Journal of Economics*, Autumn, vol. 9, no. 2, 1978, pp. 385-395.
- 68) "Factor Price Stabilization with Flexible Production," *Annals of Economic and Social Measurement*, vol. 6, no. 5, 1978, pp. 521-533.



- 69) "The Effects of Risk on Prices and Quantities of Energy Supplies," with J. Stiglitz, *Electric Power Research Institute Technical Report*, in four volumes, May 1978.
- 70) "Potential Competition and the Monopoly Price of an Exhaustible Resource," with S. Goldman, *Proceedings of the Lawrence Symposium on Systems and Decision Sciences*, October 1977, pp. 205-207; also published in *Journal of Economic Theory*, vol. 17, no. 2, April 1978, pp. 319-331.
- 71) "Resource Extraction with Differential Information," *American Economic Review*, Papers and Proceedings, February 1977, pp. 250-254.
- 72) "LSA Operation of Large Volume Bulk Gas Samples," *IEEE Transactions on Electron Devices*, vol. Ed-14, no. 9, September 1967.

### Books

- 1) *International Comparisons of Electricity Regulation*, with Edward Kahn, Cambridge University Press, 1996.
- 2) *The Environment of Oil*, Kluwer Academic Press, 1993.
- 3) *Regulatory Choices: A Perspective on Developments in Energy Policy*, University of California Press, 1991.
- 4) *Strategic Competition and Barriers to Entry*, with P. Geroski and A. Jacquemin, in series vol. 41: *Theory of the Firm and Industrial Organization*, Lesourne, J. and H. Sonnenschein (eds.), *Fundamentals of Pure and Applied Economics*, Harwood Academic Press, 1990.

### Chapters in Books and Other Publications

- 1) "Collective Rights Organizations: A Guide to Benefits, Costs and Antitrust Safeguards," *The Cambridge Handbook of Technical Standardization Law*, Vol. 1 - Patents and Competition Law (Jorge L. Contreras, ed., New York: Cambridge Univ. Press) (forthcoming)
- 2) "Competition Policy for Industry Standards," in *Oxford Handbook on International Antitrust Economics*, Vol. 2, Roger Blair and D. Daniel Sokol (eds.), 2014.
- 3) "Revising the Horizontal Merger Guidelines: Lessons from the U.S. and the E.U.," (with Daniel Rubinfeld), in Faure, M. and Zhang, X. (eds.), *Competition Policy and Regulation: Recent Developments in China, Europe and the US*, Cheltenham, Edward Elgar, 2011.
- 4) "The Rising Tide of Patent Damages," *Concurrences*, No. 2-2010, III Lisbon Conference on Competition Law and Economics, 14-15 January 2010, pp. 63-66.
- 5) "The Essentiality Test for Patent Pools," in Rochelle Dreyfuss, Diane Zimmerman and Harry First (eds.), *Working within the Boundaries of Intellectual Property*, Oxford University Press, 2010.
- 6) "Comments on Revising the Merger Guidelines," (with Daniel Rubinfeld), Filed with the U.S. Department of Justice and Federal Trade Commission, December 2009.
- 7) "Market Power in US and EU Electricity Generation," in F. Lévêque and H. Shelanski (eds.), *Antitrust and Regulation in Network Industries: EU and US perspectives*, Edward Elgar, 2009.
- 8) "A Personal Perspective on David Newbery," *Energy Journal*, vol 29, Special Issue No. 2, 2008.
- 9) "Competition and Innovation," in Wayne D. Collins (ed.), *Issues in Competition Law and Policy*, ABA Section of Antitrust Law, 2008.
- 10) "Competition Policy for Intellectual Property: Balancing Competition and Reward," (with Alan Weinschel), in Wayne D. Collins (ed.), *Issues in Competition Law and Policy*, ABA Section of Antitrust Law, 2008.
- 11) "Sky Wars: The Attempted Merger of EchoStar and DirecTV (2000)" (with James Ratliff), in Kwoka and White (eds), *The Antitrust Revolution*, 5<sup>th</sup> edition, 2009.
- 12) "Competition Policy for Intellectual Property," in Paolo Buccirossi (ed.), *Handbook of Antitrust Economics*, MIT Press, 2008.

- 13) "Looking for Mr. Schumpeter: Where Are We in the Competition-Innovation Debate?," in Adam B. Jaffe, Josh Lerner, and Scott Stern (eds.), *Innovation Policy and the Economy*, National Bureau of Economic Research, 2006.
- 14) "Market Structure, Organizational Structure, and R&D Diversity," (with Joseph Farrell and Michael Katz), in *Economics for an Imperfect World: Essays in Honor of Joseph E. Stiglitz*, (Edited by Richard Arnott et al.), MIT Press, 2003.
- 15) Interview with Professor Richard J. Gilbert, in *Antitrust: Promoting Competition and Innovation*, vol. 16, no. 3., Summer 2002, pp. 15-21.
- 16) "California Gasoline: The Return of Refiner Profits," in *Controller's Quarterly*, Summer, 2001.
- 17) "Networks, Standards, and the Use of Market Dominance: Microsoft (1995)," in Kwoka, J. and L. White (eds.), *The Antitrust Revolution: Economics, Competition, and Policy*, 3<sup>rd</sup> edition, Oxford University Press, 1999.
- 18) "Unilateral Refusals to License Intellectual Property and International Competition Policy," in E. Hope and P. Maeleng (eds.), *Competition and Trade Policies: Coherence or Conflict?*, Routledge Press, London, 1998.
- 19) "The Efficiency of Market Coordination: Evidence from Wholesale Electric Power Pools," with Edward Kahn and Matthew White, in W. Sichel and D.L. Alexander (eds.), *Networks, Infrastructure, and the New Task for Regulation*, The University of Michigan Press, Ann Arbor, 1996.
- 20) "On the Delegation of Pricing Authority in Shared ATM Networks," in M. Guerin-Calvert and S. Wildman (eds.), *Electronic Services Networks: A Business and Public Policy Challenge*, Greenwood, Praeger Publishers, New York, 1991.
- 21) "Mobility Barriers and the Value of Incumbency," Chapter 8 in Schmalensee, R. and R. Willig (eds.), *Handbook of Industrial Organization*, North-Holland, 1989.
- 22) "Forecasting Technology Adoption with an Application to Telecommunications Bypass," with Jeffrey Rohlfs, in de Fontenay, A., M.H. Shugard and D.S. Sibley (eds.), *Telecommunications Demand Modelling: An Integrated View*, North-Holland, Amsterdam, 1990, pp. 399-412.
- 23) "Preemptive Competition," in G. F. Mathewson and J. Stiglitz (eds.), *New Directions in the Analysis of Market Structure*, MIT Press, Cambridge; Macmillan Press, London, 1986.
- 24) "Coping with Major Oil Disruptions," in J. Plummer, editor, *Energy Vulnerability*, Ballinger Press, 1982.
- 25) "Patents, Sleeping Patents, and Entry Deterrence," in S. Salop, editor, *Strategy, Predation, and Antitrust Analysis*, Federal Trade Commission, 1981.

- 26) “The Social and Private Value of Exploration Information,” in J. Ramsey, editor, *Symposium on the Economics of Exploration for Energy Resources*, Greenwich CT: JAI Press, 1981.
- 27) “Search Strategies and Private Incentives for Resource Exploration,” in R. Pindyck, (ed.), *Advances in the Economics of Energy and Resources*, vol. 2, JAI Press, 1979, pp. 149-169.
- 28) “The Economic Common Sense of Controlling Nuclear Power Development,” with M. Boskin, *The California Nuclear Initiative*, Institute for Energy Studies, Stanford University, 1976; also published in *California Energy: The Economic Factors*, Federal Reserve Bank of San Francisco, 1976.
- 29) “A 1.1 GHz Scanned Acoustic Microscope,” in *Acoustical Holography*, vol. 4, Plenum Press, 1972.

### **Working Papers**

- 1) “Licensing and Innovation with Imperfect Contract Enforcement,” with Eirik Kristiansen
- 2) “Stepwise Innovation by an Oligopoly,” with Christian Riis and Erlend Riis

### **INVITED LECTURES AND COMMENTARY (Since 2000)**

Comments on Innovation Policy for Mergers, Roundtable on M&A, Antitrust and the Board Room in 2017, San Francisco, CA, January 30, 2017.

“IP Licensing: A Fireside Chat with Rich Gilbert,” ABA Section of Antitrust Law, December 15, 2016.

Panel discussion on “Simplifying Expert Evidence to Achieve Better Results,” ABA Section of Antitrust Law Spring Meeting, April 6, 2016.

Panel discussion on “Distinguishing Product Innovation from Predation; An Examination of US and EU Antitrust Laws,” ABA Antitrust Section’s Unilateral Conduct committee, November 18, 2015.

“Licensing and Innovation with Imperfect Contract Enforcement,” presented at the Conference on A Just Society, Honoring Joseph Stiglitz, Columbia University, October 17, 2015.

“Merging Innovation into Antitrust Agency Enforcement of the Clayton Act,” presented at the Eighth Annual Searle Center Conference on Antitrust Economics and Competition Policy, Chicago, September 18, 2015.

“Merger Enforcement for Innovation,” presented at the University of California, Berkeley Innovation Seminar, September 9, 2015. Also presented at the Workshop on Industrial Organization and Competition Policy, University of International Business and Economics, Beijing, China, March 21, 2015; the University of California, Berkeley Industrial Organization Seminar, March 3, 2015.

“Licensing and Innovation with Imperfect Enforcement,” presented at the 2016 Peder Sather Conference on Industrial Organization and Health Economics, Bergen, Norway.

Panel discussion on “Innovation: Can It Ever be Anticompetitive?,” ABA Section of Antitrust Law Spring Meeting, April 16, 2015.

Discussion of “Economic Power in Firms and Markets,” Roosevelt Institute, Washington, D.C., April 1, 2015

“Merging Innovation into the Clayton Act’s §7,” presented at the Clayton Act 100<sup>th</sup> Anniversary Symposium, December 4, 2014.

“Comments on ‘Cooperation, R&D Spillovers and Antitrust Policy’,” presented at the Searle Conference on Antitrust & Competition, Chicago, September 19, 2014.

“Licensing and Innovation with Imperfect Contract Enforcement,” presented at the International Workshop on Standards, Intellectual Property, and Innovation, Hitotsubashi University, Japan, July 29, 2014.

“The Search for Reasonable in Patent Licensing,” presented at the Research Institute of Economy, Trade and Industry (RIETI), Tokyo, Japan, July 25, 2014.

ABA Section of Antitrust Law brownbag presentation on “Antitrust in Agency Distribution,” May 9, 2014.

“Probabilistic Enforcement of Licensing Agreements,” presented at the Peder Sather Workshop on Industrial Organization, November 18, 2013.

“Mergers in a Bidding Market,” presented at the UC Berkeley IOFest, Berkeley, CA, November 16, 2013

Debate moderator on “Should Holders of FRAND-Encumbered SEPs be Able to Seek Injunctions?,” Antitrust and Intellectual Property Conference, Stanford Law School, Stanford, CA, October 10, 2013.

“The Many Faces of FRAND,” presented at Microsoft Redmond WA, October 8, 2013.

Comments on “Strategic Patent Acquisitions” by Fiona Scott-Morton and Carl Shapiro, Sixth Annual Searle Center Conference on Antitrust Economics and Competition Policy, Chicago, IL, September 20, 2013.

Antitrust enforcement for standard-essential patents, University of Texas Technology Law Conference, May 23, 2013.

Roundtable on Merger Enforcement and Monopolization, “Antitrust in the Technology Sector: Policy Perspectives and Insights from the Enforcers,” Palo Alto, CA, January 28, 2013.

“Oxford debate on the LIBOR antitrust case,” ABA Antitrust Section Mid-Winter Leadership Meeting, Maui, HI, January 21, 2013.

“Merger in a Bidding Market: Quantifying the Unilateral Effect,” presented at Conference on Merger Control, Bergen Center for Law and Economics, Bergen, Norway, November 30, 2012.

“Standard-Essential Patents,” presented at Symposium on Management of Intellectual Property in Standard-Setting Processes,” National Academy Board on Science, Technology, and Economic Policy, Washington, D.C., October 3, 2012; also presented at Peder Sather Center Inaugural Conference, University of California, Berkeley, October 25, 2012.

“Competition Policy for Industry Standards,” Keynote Speech, 8<sup>th</sup> Annual Conference of the Asian Law and Economics Association, Jinan, China, July 12, 2012.

“Calculating Antitrust Damages,” Sidley Austin, San Francisco, May 2, 2012.

“Patent Pools for Biotech Patents,” Stanford IP-Bio Science Conference, Stanford Law School, April 27, 2012.

“The Strategic Use of Patents,” ABA Section of Antitrust Law Spring Meeting, Washington, D.C., March 29, 2012

“Issues in Calculating Patent Infringement Damages,” Stanford-Samsung Conference on Patent Enforcement, Stanford Law School, February 24, 2012.

“Standards Issues in Technology Markets,” presented at Skadden – Compass Lexecon Conference on Antitrust in the High Tech Sector: Mergers, Enforcement and Standardization, Menlo Park, CA, January 31, 2012.

“The Antitrust Economics of Bundling,” presented at Antitrust/IP 276.2, Boalt Law School, October 24, 2011.

“Deal or No Deal: Licensing Negotiations By Standard Development Organizations,” presented at UniSA Competition and Consumer Workshop, Adelaide, Australia, October 15, 2011.

“Are Patent Acquisitions Different?,” presented at Antitrust and IP in Silicon Valley and Beyond, Stanford, CA, October 6, 2011.

Roundtable on the FTC’s *Report on The Evolving IP Marketplace*, ABA Antitrust Section Spring Meeting, Washington, D.C., March 30, 2011.

“FRAND v. Negotiation by Standard Development Organizations,” presented at The Pros and Cons of Standard Setting, Swedish Competition Authority, Stockholm, November 12, 2010; Also presented at Microsoft Corporation, Redmond, WA, January 30, 2011.

“Antitrust for Patent Pools: Progress and Pitfalls,” presented at Better Technologies for Better Tomorrow: The Convergence of Technology Licensing Programs and Fair Trade Policy, National Chengchi University, Taipei, Taiwan, October 21, 2010 and Taiwan Fair Trade Commission, October 22, 2010.

“Deal or No Deal: Licensing Negotiations By Standard Setting Organizations,” Law and Economics Seminar, University of California, Berkeley, October 18, 2010.

“Antitrust for Patent Pools: Progress and Pitfalls,” presented at the Searle Research Symposium on Antitrust Economics and Competition Policy, Chicago, September 24, 2010.

“Comments on U.S. PTO Economic Research Agenda,” presented at Launching the USPTO Economics Research Agenda, University of California, September 10, 2010.

“Efficient Division of Profits from Complementary Innovations,” presented at the 5<sup>th</sup> Annual Conference on Industrial Economics and Economic Theory, Jinan, China, June 20, 2010.

“Mergers in a Bidding Market,” presented at the 2<sup>nd</sup> Asian Competition Policy Workshop, Hong Kong, June 17, 2010.

“Promoting Good Patent Pools,” presented at the ABA Antitrust and Innovation Symposium, Stanford Law School, May 21, 2010.

“Mergers in a Bidding Market,” presented at the Research Institute of Industrial Economics, Stockholm April 21, 2010.

“Efficient Division of Profits from Complementary Innovations,” presented at the Research Institute of Industrial Economics, Stockholm April 14, 2010.

Panel discussion on single firm behavior in the IP context, USC Gould School of Law – 2010 Intellectual Property Institute, March 23, 2010.

Panel discussion on competition policy in the sports industry, U.C. Berkeley Boalt Law School, February 4, 2010.

“Are Patents a Threat to Innovation?”, III Lisbon Conference on Competition Law and Economics, January 15, 2010.

Panel discussion on potential revisions to the Merger Guidelines, FTC/DOJ Workshop on the Horizontal Merger Guidelines Review Project, NYU School of Law, December 8, 2009.

Panel discussion of intellectual property damages, FTC Hearings on the Evolving IP Marketplace, Berkeley, CA, May 5, 2009.

Panel discussion on patent pools, ABA conference on Antitrust and Intellectual Property in a Changing Political Climate, Berkeley, CA, February 5, 2009.

- “International Antitrust Cooperation: Exploring the Limits of the Possible,” Forbes-FTI Conference on Capitalism Without Borders, New York, October 21, 2008.
- “Sky Wars: The Attempted Merger of EchoStar and DirecTV (2000),” George Mason Conference on Merger Analysis in High Tech Markets, Arlington, VA, February 1, 2008.
- “The Game Theory Legacy of Thomas Schelling,” Symposium in Honor of Thomas C. Schelling, Berkeley, CA, March 4, 2008
- “Comments on Martin Hellwig: Competition Policy and Sector-Specific Regulation for Network Industries”, IESE Conference: Fifty Years of the Treaty, Barcelona, November 19-20, 2007.
- “Patent Reform for Complementary Innovations”, presented at the Bologna-Tilburg Workshop on Patent Policy and Innovation Bologna, Facoltà di Economia, November 16-17, 2007.
- “Managing Complex Merger Cases”, presented at OECD Working Party 3 Roundtable, Paris, October 16, 2007.
- “Market Definition for Intellectual Property: Lamp Posts v. Guideposts,” presented at ABA conference on Antitrust and Intellectual Property Law, San Francisco, CA, June 14, 2007.
- “The Economics of Patent Pools,” presented at conference on Working Within the Boundaries of Intellectual Property, La Pietra, Italy, June 5, 2007.
- Invited Lectures on the Economics of Research and Development, U.S. Federal Communications Commission, Washington, D.C., May 17-18, 2007.
- “Disclosure Rules for Standards Development Organizations,” presented at U.C. Berkeley Industrial Organization Workshop, May 8, 2007.
- “Efficient Division of Profits for Complex Innovations,” presented at the International Industrial Organization Conference, Savannah, GA, April 14, 2007.
- Invited Lecture on Merger Analysis, Boalt Law School, U.C. Berkeley, Berkeley, CA, March 23, 2007.
- “Efficient Division of Profits for Complex Innovations,” U.C. Berkeley Industrial Organization Seminar, Berkeley, CA, March 20, 2007.
- “Technology Markets,” invited testimony presented at joint DOJ/FTC Hearings on Market Definition, Washington, DC, March 7, 2007.
- “Analytical Screens for Electricity Mergers,” presented at the American Antitrust Institute 7<sup>th</sup> Annual Energy Roundtable Workshop, Arlington, VA, March 5, 2007.
- “Antitrust Standards for Innovation,” invited testimony presented at joint DOJ/FTC Hearings on Section 2, Berkeley, CA, January 31, 2007.



“Efficient Division of Profits for Complex Innovations,” Berkeley/Stanford IO Fest, Stanford University, November 11, 2006.

“Vertical Integration in Gasoline Supply: An Empirical Test of Raising Rivals’ Costs” (with Justine Hastings), presented at the Norwegian School of Economics and Business Administration, May 10, 2006, the University of Cambridge Energy Studies Seminar, May 8, 2006, the London Business School, May 5, 2006, and the University of Alberta, March 7, 2006.

“Dollars for Genes: Revenue Generation by the California Institute for Regenerative Medicine,” presented at the Conference on California’ Stem Cell Initiative, Berkeley, CA, March 2, 2006.

“Electricity Competition In the Shadow of Antitrust Policy” (with David Newbery), presented at conference on Balancing Antitrust and Regulation, Paris, January 13, 2006.

“Unilateral Refusals to Deal and Technological Tying in Markets for Systems,” presented at conference on Antitrust and the New Economy, University of Washington Economic Policy Center, December 9, 2005.

Discussion forum on energy futures, organized by student chapter of Delta Phi Epsilon, University of California at Berkeley, November 30, 2005.

“New Antitrust Laws for the ‘New Economy’”?, Testimony before the Antitrust Modernization Commission, Washington, D.C., November 8, 2005. Also presented at Wilson Sonsini Antitrust Panel, Santa Clara, CA, December 6, 2005.

“Merger Analysis in a Sophisticated World,” presented at the Golden State Antitrust Institute, October 20, 2005, San Francisco, CA,

“Vertical Integration in Gasoline Supply: An Empirical Test of Raising Rivals’ Costs” (with Justine Hastings), presented at the Columbia University Industrial Organization Seminar, October 4, 2005.

“Unilateral Refusals to Deal and Technological Tying in Markets for Systems,” presented at the Competition Policy Research Center 5<sup>th</sup> Open Seminar, Japan Fair Trade Commission, Tokyo, Japan, September 20, 2005

Interview on public radio, KZYX, Mendocino County, re gasoline prices, August 11, 2005.

“Intellectual Property Rights and Competition Policy,” presented at the Lear conference on Advances in the Economics of Competition Law, Rome, June 24, 2005.

“Regulating for Innovation and Technology Adoption,” Workshop of Energy and Sustainable Growth in California, April 22, Berkeley, CA.

“Antitrust Risks Raised by Standard Setting Activities,” roundtable discussion at USC Gould School of Law 2005 Intellectual Property Institute, March 25, 2005.

“Market Structure and Innovation – What Do We Know?”, presented at NBER Conference on Innovation and the Economy, Washington D.C., April 19, 2005.

Forum program on gasoline prices, KQED radio, April 13, 2005.

Panel presentation on the Oracle-PeopleSoft merger, Los Angeles County Bar Association, April 6, 2005.

Comments on gasoline prices, KCBS radio, March 19, 2005.

Moderator, Symposium on Social Security Reform, University of California at Berkeley, March 11, 2005.

“The California Electricity Experiment: Lessons for Market-Based Pricing Authority,” presented at conference on Gas and Electricity: Towards a European Energy Regulator?, Barcelona, Spain, September 22, 2004.

Panelist on the Oracle-PeopleSoft case, National Public Radio, September 15, 2004.

Session Chair, “Firms and Inventors in the 19th and 20th Centuries,” Economic History Association 2004 Meeting, September 11, San Jose, CA.

“Industrial Regulation: Paradigms and Politics,” presented at the Journal of Comparative Studies, Beijing China, May 26, 2004. Also presented at Zhejiang University, Hangzhou, China, May 28, 2004; Jiao Tong University, Xi’an, China, May 30, 2004.

“The California Electricity Experiment,” presented at the Chinese State Electricity Regulatory Commission, Beijing, China, May 24, 2004.

Panelist on gasoline prices, National Public Radio, May 19, 2004.

“Does California Have a Functioning Competitive Market for Motor Fuels?,” testimony before the California State Select Committee on Gasoline Competition, Marketing, and Pricing, Sacramento, CA, April 28, 2004.

“Converging Doctrines? US and EU Antitrust Policy for the Licensing of Intellectual Property,” presented at the 2004 Spring Antitrust Meeting of the American Bar Association, April 1, 2004, Washington, D.C.

Discussion of “Efficient Patent Pools,” by Lerner and Tirole, American Economic Association Annual Meetings, January 3, 2004

“A Welfare Analysis of Intellectual Property Bundling,” University of British Columbia Industrial Organization Conference, Vancouver, July 11, 2003

“A Welfare Analysis of Intellectual Property Bundling,” Workshop on Licensing, Università Cattolica del Sacro Cuore, Milan Italy, June 6, 2003

CNBC television network: discussion of gasoline pricing, August 26, 2003.

“A Taxonomy of Copyright Infringement,” International Industrial Organization Conference, Boston, April 4, 2003.

“Should Good Patents Come in Small Packages? A Welfare Analysis of Intellectual Property Bundling,” University of California at Berkeley Industrial Organization Seminar, February 18, 2003. Also presented at the International Industrial Organization Conference, Boston, April 4, 2003; University of British Columbia Industrial Organization Conference, Vancouver, July 11, 2003; Milan Workshop on Licensing, June 5, 2003.

Comments on a “Global Patent System for Pharmaceuticals: Avenues for Moving Forward”, joint AEI and Brookings Conference, Washington, D.C., January 6, 2003.

Discussion of “Cartel Pricing Dynamics in the Presence of an Antitrust Authority,” presented at the American Economic Association Meetings, Washington, D.C., January 5, 2003.

“Patent Pools: 100 Years of Law and Economic Solitude,” presented at Competing Monopolies: Challenges at the Intersection of Competition and Intellectual Property Laws,” University of Toronto, May 10, 2002.

“Product Improvement and Technological Tying,” presented at Hong Kong University of Science and Technology, April 16, 2002 and Peking University, April 19, 2002.

“Should Innovation Have a Role in Merger Policy?,” presented at the FTC/DOJ Hearings on Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy, Berkeley, CA, February 25, 2002.

“The Evolution of Guidelines,” presented at the opening session of the FTC/DOJ Hearings on Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy, Washington, D.C., February 6, 2002.

“Review of OECD Proposals to Study Product Market Competition,” OECD Workshop on Product Market Competition and Economic Performance, Paris, France, January 21, 2002.

“Antitrust Issues Involving Intellectual Property,” Fall ABA Antitrust Forum on New Technologies/ New Administrations, Washington, D.C., November 14, 2001.

“Innovation Issues in U.S. Merger Policy,” Fordham Corporate Law Institute, New York, NY, October 25, 2001.

“The Future of Energy: Policy and Use in the 21<sup>st</sup> Century,” World Conference Group, University of Chicago, Chicago, October 13, 2001.

“Economics, Law, and History of Patent Pools and Cross-Licensing Arrangements,” Franco-American Conference on the Economics, Law, and History of Intellectual Property Rights, University of California, Berkeley, October 6, 2001.

“Vertical Integration in Gasoline Supply: An Empirical Test of Raising Rivals' Costs” (with Justine Hastings), presented at the University of California Industrial Organization

Seminar, April 10, 2001. Also presented at the conference of the International Society for New Institutional Economics, Berkeley, CA, September 15, 2001.

“Is Innovation ‘King’ at the Antitrust Agencies?,” American Bar Association Spring Antitrust Conference, Washington, D.C., March 28, 2001.

“Is Innovation ‘King’ at the Antitrust Agencies?,” Conference on Beyond Microsoft: Innovation and Intellectual Property, University of California at Berkeley, March 2-3, 2001.

“Mutually Assured Destruction: Implications for Ag-Bio Licensing,” Conference on Intellectual Property Clearinghouse Mechanisms for Agriculture,” University of California at Berkeley, February 16, 2001.

Moderator, Panel on Economic and Regulatory Issues, Conference on Regulating on the Technological Edge, University of California at Berkeley, October 19-20, 2000.

Live interview with Joe Oliver on gasoline prices, KRON Bay TV, October 9, 2000.

“Antitrust and Innovation Post-IP Guidelines, Conference on Antitrust and Intellectual Property” The Crossroads,” San Francisco, June 1, 2000.

“Innovation and Foreclosure in a Market for Systems,” Industrial Organization Workshop, Cornell University, Ithaca, NY, April 26, 2000.

“Competition Issues in Biotechnology,” Conference on Intellectual Property and Global Biotechnology, Rockefeller Foundation, Bellagio, Italy, March 30, 2000.

“Intellectual Property and Competition Policy,” National Research Council Science, Technology and Economic Policy Conference, Washington, D.C., February 2-3, 2000.

Interview with Michael Krazny on the Microsoft case, KQED Forum, January 17, 2000.

## **BACKGROUND**

Born January 14, 1945

Married (Sandra), two children (Alison, David)

U.S. citizen

May 2017