

## 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, 1983 - present

Professor of Economics

UNIVERSITY OF CALIFORNIA, BERKELEY, 1997 - present

Affiliated Professor of Business Administration

CHAIR, BERKELEY COMPETITION POLICY CENTER, 2006- present

SENIOR ECONOMIST, COMPETITION POLICY ASSOCIATES, 2006 - present

### **PROFESSIONAL EXPERIENCE**

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

Listed in *Who's Who*

## PROFESSIONAL ACTIVITIES

President, *Industrial Organization Society*, 1994-1995

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

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

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

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

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

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

Review Panel, National Science Foundation, 1985-1986

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

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

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

Member of the Advisory Board, American Antitrust Institute, 2007-

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

Conference Organizer: 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

Referee for: *American Economic Review*, *Econometrica*, *International Economic Review*, *Journal of Political Economy*, *Quarterly Journal of Economics*, *Rand Journal*, *Review of Economic Studies*. Occasional referee for other journals

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

## PUBLICATIONS

### Articles

- 1) "Analytical Screens for Electricity Mergers," (with David Newbery), forthcoming, *Review of Industrial Organization*.
- 2) "Holding Innovation to an Antitrust Standard," *Competition Policy International*, vol. 3, No. 1, Spring, 2007, pp. 3-33.
- 3) "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.
- 4) "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>
- 5) "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.
- 6) "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.
- 7) "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.
- 8) "Converging Doctrines? U.S. and EU Antitrust Policy for the Licensing of Intellectual Property," *Antitrust*, vol. 19, no. 1, Fall 2004, pp. 51-57.
- 9) "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/).
- 10) "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.
- 11) "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.
- 12) "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.

- 13) "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.
- 14) "The Analysis of Professional Sports Leagues as Joint Ventures," with Michael Flynn, *The Economic Journal*, vol. 111, no. 469, February 2001, pp. 27-46.
- 15) "Exclusive Dealing, Preferential Dealing, and Dynamic Efficiency," *Review of Industrial Organization*, vol. 16, no. 2, March 2000, pp. 167-184.
- 16) "An Economic Model of Rationing," with Paul Klemperer, *Rand Journal of Economics*, vol. 31, no. 1, Spring 2000, pp. 1-21.
- 17) "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.
- 18) "Competition Policy," with Oliver Williamson, *The New Palgrave Dictionary of Law and Economics*, Macmillan, 1998.
- 19) "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.
- 20) "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.
- 21) "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.
- 22) "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.
- 23) "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.
- 24) "Regulating Complementary Products: A Comparative Institutional Analysis," with Michael Riordan, *Rand Journal of Economics*, vol. 26, no. 2, Summer, 1995, pp. 243-256.
- 25) "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.
- 26) "The Dynamic Efficiency of Regulatory Constitutions," with David Newbery, *Rand Journal of Economics*, vol. 25, no. 4, Winter, 1994, pp. 538-554.

- 27) "A Review and Analysis of Utility Conservation Incentive Programs," with Steven Stoft, *The Yale Journal on Regulation*, Winter, 1994, pp. 1-42.
- 28) "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.
- 29) "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.
- 30) "Product Line Rivalry with Brand Differentiation," with Carmen Matutes, *The Journal of Industrial Economics*, September, 1993, pp. 223-240.
- 31) "Alternative Entry Paths: The Build or Buy Decision," with David Newbery, *Journal of Economics, Management, and Strategy*, Spring, 1992, pp. 129-150.
- 32) "Introduction to Symposium on Compatibility: Incentives and Market Structure," *The Journal of Industrial Economics*, March 1992, pp. 1-8.
- 33) "Legal and Economic Issues in the Commercialization of New Technology," *Journal of Institutional and Theoretical Economics*, March 1991, pp. 155-181.
- 34) "Multiproduct Competition," with Carmen Matutes, *Annales d'Economie et de Statistique*, vol. 18, April/June 1990, pp. 151-163.
- 35) "Optimal Patent Length and Breadth," with C. Shapiro, *Rand Journal of Economics*, vol. 21, no. 1, Spring 1990, pp. 106-112.
- 36) "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.
- 37) "Investment and Coordination in Oligopolistic Industries," with M. Lieberman, *Rand Journal of Economics*, vol. 18, no. 1, Spring 1987, pp. 17-33.
- 38) "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.
- 39) "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.
- 40) "Efficient Pricing During Oil Supply Disruptions," with K. Mork, *Energy Journal*, vol. 7, no. 2, April 1986, pp. 51-68.
- 41) "Entry Deterrence and the Free Rider Problem," with X. Vives, *Review of Economic Studies*, vol. LIII(1), no. 172, January 1986, pp. 71-84.
- 42) "Competition with Lumpy Investment," with R. Harris, *Rand Journal of Economics*, vol. 15, no. 2, Summer 1984, pp. 197-212.

- 43) "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.
- 44) "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.
- 45) "Preemptive Patenting and the Persistence of Monopoly: Reply," with D. Newbery, *American Economic Review*, vol. 74, no. 1, March 1984, pp. 251-253.
- 46) "Uncertain Innovation and the Persistence of Monopoly: Comment," with D. Newbery, *American Economic Review*, vol. 74, no. 1, March 1984, pp. 238-242.
- 47) "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.
- 48) "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.
- 49) "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.
- 50) "Preemptive Patenting and the Persistence of Monopoly," with D. Newbery, *American Economic Review*, vol. 72, no. 2, June 1982, pp. 514-526.
- 51) "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.
- 52) "Reducing Uranium Resource Uncertainty: Is it Worth the Cost?" with R. Richels, *Resources and Energy*, vol. 3, 1981, pp. 13-37.
- 53) "Optimal Depletion of an Uncertain Stock," *Review of Economic Studies*, vol. 46, no. 142, January 1979, pp. 47-58.
- 54) "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.
- 55) "Dominant Firm Pricing with Exhaustible Resources," *Bell Journal of Economics*, Autumn, vol. 9, no. 2, 1978, pp. 385-395.
- 56) "Factor Price Stabilization with Flexible Production," *Annals of Economic and Social Measurement*, vol. 5, no. 5, 1978, pp. 521-533.
- 57) "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.

- 58) "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.
- 59) "Resource Extraction with Differential Information," *American Economic Review*, Papers and Proceedings, February 1977, pp. 250-254.
- 60) "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) "Market Power in US and EU Electricity Generation," forthcoming in F. Lévêque and H. Shelanski (eds.), *Antitrust and Regulation in Network Industries: EU and US perspectives*, Edward Elgar.
- 2) "Intellectual Property Rights and Competition Law," forthcoming in Paolo Buccirossi (ed.), *Handbook of Antitrust Economics*, MIT Press
- 3) "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.
- 4) "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.
- 4) Interview with Professor Richard J. Gilbert, in *Antitrust: Promoting Competition and Innovation*, vol. 16, no. 3., Summer 2002, pp. 15-21.

- 5) "California Gasoline: The Return of Refiner Profits," in *Controller's Quarterly*, Summer, 2001.
- 6) "Networks, Standards, and the Use of Market Dominance: Microsoft (1995)," in Kwoka, J. and L. White (eds.), *The Antitrust Revolution: The Role of Economics*, 3<sup>rd</sup> edition, Oxford University Press, 1998.
- 7) "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.
- 8) "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.
- 9) "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.
- 10) "Mobility Barriers and the Value of Incumbency," Chapter 8 in Schmalensee, R. and R. Willig (eds.), *Handbook of Industrial Organization*, North-Holland, 1989.
- 11) "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.
- 12) "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.
- 13) "Coping with Major Oil Disruptions," in J. Plummer, editor, *Energy Vulnerability*, Ballinger Press, 1982.
- 14) "Patents, Sleeping Patents, and Entry Deterrence," in S. Salop, editor, *Strategy, Predation, and Antitrust Analysis*, Federal Trade Commission, 1981.
- 15) "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.
- 16) "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.
- 17) "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.

- 18) "A 1.1 GHz Scanned Acoustic Microscope," in *Acoustical Holography*, vol. 4, Plenum Press, 1972.

### **Working Papers**

- 1) "Efficient Division of Profits for Complex Innovations," (with Michael Katz)
- 2) "Competition Policy for Intellectual Property: Balancing Competition and Reward," (with Alan Weinschel)
- 3) "Competition and Innovation"

### **INVITED LECTURES AND TESTIMONY (Since 1990)**

"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 Trade 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, KZYY, 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.

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

“Technology, Antitrust, and the Presidency,” The Presidency and Macroeconomic Policy Conference, Miller Center of Public Affairs, University of Virginia, October 16, 1999.

“A Rent-Grabbing Theory of Tying,” Fifth Annual Berkeley-Stanford Conference in Industrial Organization, University of California, October 9, 1999.

“Antitrust Policy in a Small Open Economy,” Tel Aviv University, May 27, 1999.

“Exclusive Dealing, Preferential Dealing, and Dynamic Efficiency,” Conference on Antitrust and Regulation, Tel Aviv University, May 26, 1999.

“Merger Reviews in the Telecommunications and Media Industries,” Annual Spring Meeting of the ABA Section of Antitrust Law, Washington, D.C., April 14, 1999.

“Defining the Boundary Between Legitimate Cooperation and Illegal Collusion,” The Conference Board 1999 Antitrust Conference, New York, N.Y., March 4, 1999.

“The Intersection of Antitrust and Intellectual Property,” Conference on Antitrust Issues in High-Tech Industries, Scottsdale, AZ, February 26, 1999.

“Economic Analysis of Antitrust Rules and Intellectual Property,” Conference on Antitrust in the High-Tech Industry, Menlo Park, CA, February 23, 1999.

“Evaluating the Loss of Potential Competition From ILEC Mergers,” FCC Roundtable on the Economics of Mergers Between Large ILECs, Washington, D.C., February 5, 1999.

“Economic Factors in the Production, Dissemination, and Use of Scientific Databases,” National Research Council Workshop on Promoting Access to Scientific and Technical Data for the Public Interest,” Washington, D.C., January 14-15, 1999.

“Exclusive Dealing, Preferential Dealing, and Dynamic Efficiency,” 25<sup>th</sup> Anniversary Seminar of the Economic Policy Office/Economic Analysis Group, Antitrust Division, U.S. Department of Justice, Washington, D.C., November 6, 1998.

“The Microsoft Case: Antitrust for the 21<sup>st</sup> Century?” San Diego Business Round Table, San Diego, CA, October 23, 1998.

“Exclusive Dealing and Antitrust Policy,” Department of Economics, University of California at San Diego, San Diego, CA, October 22, 1998.

“Antitrust Policy for the Computer Industry,” Microprocessor Forum, San Jose, CA, October 14, 1998.

“Incorporating Economic Principles in Intellectual Property Damages,” conference on The Economic Analysis of Intellectual Property Damages, San Francisco, CA, October 2, 1998.

“Antitrust Issues in the Licensing of Intellectual Property,” (paper presentation and roundtable discussion leader), European Summer Symposium in Economic Theory, Gerzensee, Switzerland, June 29-July 4, 1998.

“Antitrust Issues in the Licensing of Intellectual Property: Microsoft Meets Contract Theory,” (paper presentation and roundtable discussion leader), Conference on Regulation and Competition in Network Industries, June 5-6, 1998, Barcelona, Spain.

Discussant of Licensing in the Chemical Industry, Conference on Intellectual Property, Stanford University, April 17-18, 1998.

“Antitrust in High Technology Markets,” speech before the Peninsula Intellectual Property Law Association, Palo Alto, CA, March 24, 1998.

Session Moderator on the Current Regulatory Environment, Conference on Telecommunications Incentives to Invest in Advanced Infrastructure, University of California at Berkeley, March 20, 1998.

“Identifying Limits on Relations Among Rivals,” presented at the Conference Board 1998 Antitrust Conference, New York, NY, March 5, 1998.

“The DOJ/FTC Antitrust Guidelines for the Licensing of Intellectual Property,” invited lecture, Boalt School of Law, University of California at Berkeley, February 4, 1998.

“Antitrust in High Technology Markets,” speech before the Intellectual Property Institute, San Francisco, CA, January 26, 1998.

“Comments on the Antitrust Treatment of Joint Ventures,” invited participant in Federal Trade Commission Roundtable on per se illegality and rule of reason analysis of joint ventures, Washington D.C., December 12, 1997.

“Standards for Evaluating Market Power in Electricity,” California ISO Market Power and Monitoring Workshop, Oakland, CA, November 18, 1997.

“Antitrust Issues in the Licensing of Intellectual Property,” invited lecture, Boalt School of Law, University of California at Berkeley, November 13, 1997.

“Antitrust Issues and the Licensing of Intellectual Property,” Third Annual Berkeley-Stanford Conference in Industrial Organization, Berkeley, CA, October 18, 1997.

“The Microsoft Antitrust Wars,” invited lecture, Public Policy School, University of California at Berkeley, October 14, 1977.

“Electricity Merger Analysis: Does the FERC Follow the Merger Guidelines?” IAEE Annual Conference, San Francisco, CA, September 8, 1997.

“Networks and Bottlenecks,” conference on Bridging Digital Technologies and Regulatory Paradigms, University of California at Berkeley, June 27, 1997.

“Unilateral Effects Analysis: Vertical Competition Issues in Telecommunications,” conference on Competition Policy in Communications Industries: New Antitrust Approaches, Washington, D.C., March 10-11, 1997.

“Can Electricity Markets Be Competitive?” conference on Market Power and Competition in Electricity, Washington, D.C., February 27-28, 1997.

“An Economic Analysis of Unilateral Refusals to License Intellectual Property,” New York University School of Law, February 6, 1997.

“Competition Policy in the High-Tech, Global Marketplace,” Meeting of the American Economics Association, New Orleans, January 5, 1997.

“The Role of the State Public Utilities Regulatory Commission in Competition Policy,” remarks before the Staff Subcommittee for NARUC on Strategic Issues, San Francisco, November 18, 1996.

“Economic Issues Copyright Protection: the Lotus v. Borland Case,” National Bureau of Economic Research Summer Institute, Cambridge, MA, July 23, 1996.

“Unilateral Refusals to License Intellectual Property and International Competition Policy,” conference on “Competition Policies for an Integrated World Economy,” Oslo, Norway, June 14, 1996.

“Applying the Merger Guidelines to Electricity Mergers,” Conference of Public Utility Counsel, San Francisco, CA, May 17, 1996.

“The US DOJ/FTC Intellectual Property Guidelines,” invited address at the conference on “Competition Policy, Intellectual Property Rights, and International Economic Integration,” Ottawa, Canada, May 12, 1996.

“Competition Issues Related to Software Patents,” Berkeley Roundtable on Software Innovation, Berkeley, CA, April 26, 1996.

Moderator, “Panel on *Image Technical Services v. Eastman Kodak*,” San Francisco Bar Association, San Francisco, CA, April 26, 1996.

“Economic Perspectives on Compulsory Licensing of Intellectual Property,” American Bar Association Spring Antitrust Meeting, March 27, 1996, Washington, D.C.

Panel Discussant, “The 1995 Guidelines for the Licensing of Intellectual Property,” High Technology Section of the Santa Clara Bar Association, Santa Clara, CA, February 7, 1996.

“Microeconomic Analysis in Government Policy,” American Economic Association Annual Meeting, San Francisco, CA, January 5, 1996.

“Analysis of Market Power in the Computer Industry,” Chinese Government Official Training Program, Biltmore Hotel, Santa Clara, CA, December 8, 1995.

“Antitrust Evaluation of Electric Utility Mergers,” The Third DOE-NARUC National Electricity Forum, Washington, D.C., December 5, 1995.

“Responding to Structural Change: A Call for a Review of the Competitive Consequences of Hospital Mergers,” en banc testimony before the Federal Trade Commission Hearings on Global and Innovation-Based Competition, Washington, D.C., November 14, 1995.

“Economic Perspectives on Compulsory Licensing of Intellectual Property,” presented at the 3rd Annual Golden State Antitrust and Trade Regulation Institute, San Francisco, CA, October 27, 1995.

“Comments on the Use and Misuse of Innovation Market Analysis,” en banc testimony before the Federal Trade Commission Hearings on Global and Innovation-Based Competition, Washington, D.C., October 25, 1995.

“An Economic Analysis of Unilateral Refusals to License Intellectual Property,” presented at the National Academy of Sciences Colloquium on Science, Technology and the Economy, Irvine, CA, October 20-22, 1995.

“Discussion of ‘Restructuring and Regulatory Reform in Network Industries; from Hierarchies to Markets’,” by Paul Joskow, presented at the conference on Firms, Markets and Hierarchies, Berkeley, CA, October 6-8, 1995.

“Compulsory Licensing: Practical Facts and Economic Musings,” American Bar Association Section of Antitrust Law, Annual Meeting, Chicago, IL, August 8, 1995. Also presented at Intellectual Property Antitrust 1995, Practising Law Institute, San Francisco, CA, July 20, 1995.

“Joint Venture Access Rules: An Antitrust Evaluation,” American Bar Association Section of Antitrust Law, Annual Meeting, Chicago, IL, August 7, 1995.

“Competition in Electric Power Generation: Market Power and Market Pricing,” Harvard Electricity Policy Group, Cambridge, MA, April 18, 1995.

“The 1995 Antitrust Guidelines for the Licensing of Intellectual Property: New Signposts for the Intersection of Intellectual Property and the Antitrust Laws,” American Bar Association Section of Antitrust Law Spring Meeting, Washington, D.C., April 4, 1995. Also presented at The Aerospace Industries Association, Washington, D.C., April 20, 1995; The Fordham International Antitrust Conference, New York, NY, April 21, 1995.

“The Antitrust Agenda in the Clinton Administration,” American Bar Association Business Law Section, March 24, 1995.

“The New Federal Antitrust Licensing Guidelines: The Music Behind the Words,” Price Waterhouse Intellectual Property Conference, Tucson, AZ, February 23, 1995.

“Intellectual Property and the Antitrust Laws: Protecting Innovators and Innovation,” Annual Winter Meeting of the Licensing Executives Society, Phoenix, AZ, February 17, 1995. Also presented at The Conference Board, New York, NY, March 2, 1995; The Antitrust '95 Conference, Washington, D.C., March 15, 1995.

“Traditional Antitrust for Non-Traditional Markets: The Case of High-Tech and Intellectual Property,” American Bar Association Conference, Washington, D.C., November 17, 1994.

Interview in *Competition*, The Journal of the Antitrust and Trade Regulation Law Section of the State Bar of California, Vol. 4, No. 2, Fall 1994.

“The Antitrust Division Guidelines for Intellectual Property,” Licensing Executives Society Annual Meeting, Crystal City, VA, September 12, 1994. Also presented at the Federal Bar Association, Washington, D.C., September 13, 1994; The Golden State Antitrust and Trade Regulation Institute, Los Angeles, CA, October 6, 1994; The Antitrust Conference, Washington, D.C., October 12, 1994; The American Intellectual Property Law Association, Washington, D.C., October 28, 1994; The Intellectual Property Owners Association, Washington, D.C., December 5, 1994; The New York State Bar Association, New York, NY, January 26, 1995.

“The Antitrust Division 1994 Intellectual Property Guidelines,” ABA Antitrust Section, Amelia Island, FL, August 11, 1994.

“Emerging Issues in Intellectual Property Antitrust: Recent Antitrust Division Guidelines for Intellectual Property,” ABA Annual Meeting, Antitrust Section, New Orleans, LA, August 9, 1994.

“Antitrust Issues Confronting High-Technology Companies in a Converging Industries Information Age: Mergers, Joint Ventures, Strategic Alliances,” ABA Annual Meeting, Antitrust Section, New Orleans, LA, August 8, 1994.

“The Clinton Administration's Views on the Application of the Antitrust Laws to Intellectual Property, Technology Exploitation, and Innovation,” Practising Law Institute, San Francisco, CA, July 15, 1994.

“Antitrust Policy in High Technology Markets: A View from the Antitrust Division,” D.C. Bar Trade Regulation and Intellectual Property Committees, Washington, D.C., June 15, 1994; also presented at the D.C. Bar Association's Patent, Trademark, Copyright Section Annual Luncheon, Washington, D.C., June 21, 1994.

“The Use of Innovation Markets in Merger Analysis,” Conference on Post-Chicago Economics, Washington, D.C., May 26, 1994.

“Antitrust and Regional Electricity Transmission Groups,” Program on Workable Energy Regulation Annual Conference, Oakland, CA, May 19, 1994.

“The Antitrust Division Intellectual Property Task Force,” American Intellectual Property Law Association, Cleveland, OH, April 22, 1994.

“Antitrust Issues in Patent Infringement Litigation: The Antitrust Counterattack,” ABA Section of Antitrust Law 42nd Annual Spring Meeting, Washington, D.C., April 7, 1994.

“The Licensing of Intellectual Property,” presented at San Francisco Patent and Trademark Law Association, San Francisco, CA, March 19, 1994.

“Intellectual Property,” Law & Technology Seminar Workshop, Boalt School of Law, University of California, Berkeley, CA, March 16, 1994.

Statement submitted to the Subcommittee on Patents, Copyrights and Trademarks, Committee of the Judiciary, United States Senate, Concerning the Patent Term Publication Reform Act of 1994, March 9, 1994.

“Product Distribution Arrangements: Legal and Economic Issues,” The Conference Board, New York, NY, March 3, 1994.

“Intellectual Property Licensing Issues: A View from the Antitrust Division,” Practising Law Institute, New York, NY, March 1, 1994; also presented at San Francisco, CA, April 8, 1994.

“Mergers in High Technology Industries,” presented at the Antitrust Practice Group, San Francisco, CA, February 4, 1994.

“Antitrust Policy in High Technology Markets,” presented at the Conference of the Association of American Law Schools, Orlando, FL, January 7, 1994.

“An Equilibrium Theory of Rationing,” presented at the Federal Trade Commission, Washington, D.C., November 17, 1993.

“Electric Power Regulatory Developments in the U.S.,” presented at the POWER Conference on International Comparisons of Electricity Regulation, Toulouse, May 1993.

“A Review and Analysis of Electric Utility Conservation Incentives,” presented at the POWER Conference on the Economics of Energy Conservation, Berkeley, June 1992.

“Asymmetric Gasoline Price Responses to Crude Oil Price Changes,” presented at the NBER Conference on Industrial Organization, Boston, December 6, 1991.

“Do We Need a National Energy Strategy?” invited comments before the Subcommittee on Economic Stabilization, Committee on Banking, Finance and Urban Affairs, U.S. House of Representatives, October 17, 1991.

“Developments in Electricity Regulation,” presented at the Latin American Meetings of the Econometrics Society, Montevideo, Uruguay, August 28, 1991.

Comments on the outlook for petroleum prices, KPIX-TV, January 15, 1991.

Comments on the petroleum industry, Public Radio Broadcasting Network, September 3, 1990.

“Developments in Energy Regulation,” Conference on Bidding for Electric Power, Davis, Ca, March 1990.

“Pricing Delegation in Shared ATM Networks,” Annenberg Conference on Electronic Service Networks, February 1990.

“Outlook for Competition in Electric Power Markets,” California Public Utility Commission, February 1990.

## **BACKGROUND**

Born January 14, 1945

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

U.S. citizen

June 2007