

## CURRICULUM VITAE

### David C. Mowery

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### Personal Data

Date of Birth: August 2, 1952  
Citizenship: U.S.A.

### Current Position

William A. and Betty H. Hasler Professor of New Enterprise Development  
Walter A. Haas School of Business  
University of California at Berkeley

Deputy Director, Institute for Management, Innovation, and Organization

Research Associate, National Bureau of Economic Research

### Education

A.B., Economics, Stanford University, 1974.  
A.M., Economics, Stanford University, 1976.  
Ph.D., Economics, Stanford University, 1981.

### Academic Honors and Fellowships

A.B. with Honors and Distinction; Phi Beta Kappa, 1974.

Postdoctoral Research Fellow, Harvard Graduate School of Business, 1981-82.

Visiting Scholar, Center for Economic Policy Research, Stanford University, 1984-86.

Newcomen Prize, Business History Review, 1984.

Fritz Redlich Prize, Economic History Association, 1987.

Raymond Vernon Prize, Journal of Policy Analysis and Management, 1992.

Council on Foreign Relations International Affairs Fellow, 1987-88.

Earl F. Cheit Outstanding Teaching Award, Haas School of Business, 1996, 2001.

Marvin Bower Fellow, Harvard Business School, 2003-2004.

## **Employment History**

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| 1982-88 | Assistant and Associate Professor of Economics and Social Sciences, Social and Decision Sciences Department, Carnegie-Mellon University. |
| 1986-87 | Study Director, Panel on Technology and Employment, National Academy of Sciences.  |
| 1987-88 | Assistant to the Counselor, Office of the United States Trade Representative.  |

## **Publications**

### **Books**

Alliance Politics and Economics: Multinational Joint Ventures in the Commercial Aircraft Industry, Ballinger Publishing Company, 1987.

Technology and Employment: Innovation and Growth in the U.S. Economy (co-editor with R.M. Cyert), National Academy Press, 1987.

The Impacts of Technological Change on Employment and Economic Growth (co-editor with R.M. Cyert), Ballinger Publishing Company, 1988.

International Collaborative Ventures in U.S. Manufacturing (editor), Ballinger Publishing Company, 1988.

The Future of Technology and Work: Research and Policy Issues (co-editor with B.E. Henderson), National Academy Press, 1988.

The Challenge of New Technologies to Labor-Management Relations (co-editor with B.E. Henderson), U.S. Department of Labor, 1989.

Technology and the Pursuit of Economic Growth (with Nathan Rosenberg), Cambridge University Press, 1989; Spanish translation, 1993.

Technology and the Wealth of Nations (co-editor with Nathan Rosenberg and Ralph Landau), Stanford University Press, 1992.

Science and Technology Policy in Interdependent Economics, Kluwer Academic Publishers, 1994.

The International Computer Software Industry: A Comparative Study of Industry Evolution and

Structure (editor), Oxford University Press, 1996.

Paths of Innovation: Technological Change in 20<sup>th</sup>-Century America (with N. Rosenberg), Cambridge University Press, 1998; Swedish translation, 1999; Chinese translation, 2000; Portuguese translation, 2004.

The Sources of Industrial Leadership (co-editor, with R.R. Nelson), Cambridge University Press, 1999.

U.S. Industry in 2000: Studies in Competitive Performance (editor), National Academy Press, 1999.

Ivory Tower and Industrial Innovation: U.S. University-Industry Technology Transfer Before and After the Bayh-Dole Act (with R.R. Nelson, B.N. Sampat, and A.A. Ziedonis), Stanford University Press, 2004.

U.S. Technology and Innovation Policies: Lessons for Climate Change (with J.A. Alic and E.S. Rubin), Pew Center for Global Climate Change, 2003.

Oxford Handbook of Innovation and Policy (co-editor with J. Fagerberg and R. Nelson), Oxford University Press, 2004.

### **Journal Articles and Chapters in Edited Volumes**

"The Influence of Market Demand Upon Innovation: A Critical Review of Some Recent Empirical Studies" (with Nathan Rosenberg), Research Policy, 1979; reprinted in N. Rosenberg, Inside the Black Box: Technology and Economics (Cambridge University Press, 1982). Chosen as a "Significant Article" for the 20th anniversary issue of Research Policy, 1993.

"Industrial Research and Firm Size, Survival and Growth in American Manufacturing, 1921-46: An Assessment," Journal of Economic History, 1983.

"Technical Change in the Commercial Aircraft Industry, 1925-75," Technological Forecasting and Social Change, 1981.

"Innovation, Market Structure and Government Policy in the American Semiconductor Industry: A Survey," Research Policy, 1983.

"The Relationship between the Contractual and In-House Forms of Industrial Research in American Manufacturing, 1900-1940," Explorations in Economic History, 1983; reprinted in C. Freeman, ed., The Economics of Industrial Innovation (Edward Elgar, 1990).

"Economic Theory and Government Technology Policy," Policy Sciences, 1983.

"Firm Structure, Government Policy, and the Organization of Industrial Research: Great Britain and the United States, 1900-1950," Business History Review, 1984 (awarded the Newcomen Prize for the best paper published in the Review during 1984; Fritz Redlich Prize from the Economic History Association for the best paper in business history, 1987).

"Commercial Aircraft: Cooperation and Competition between the U.S. and Japan" (with Nathan Rosenberg), California Management Review, 1985.

"R&D, Appropriability, Opportunity, and Market Structure: New Evidence on Some Schumpeterian

Hypotheses" (with W.M. Cohen and R.C. Levin), American Economic Review, 1985.

"Firm Size and R&D Intensity: A Re-Examination" (with W.M. Cohen and R.C. Levin), Journal of Industrial Economics, 1987; reprinted in T. Bresnahan and R. Schmalensee, eds., The Empirical Renaissance in Industrial Economics (Basil Blackwell, 1988).

"Technological Change: Helping Workers Adjust," Issues in Science and Technology, Autumn 1987.

"Assessing the Effects of Divestiture on Bell Telephone Laboratories," Technovation, 1988.

"Collaborative Ventures Between U.S. and Foreign Manufacturing Firms," Research Policy, 1989.

"Technology, Employment, and U.S. Competitiveness" (with R.M. Cyert), Scientific American, May 1989.

"Technology's Effects on Employment in the Future Economy," Siemens Review, 1988 (German and Spanish translations published, 1989).

"New Developments in U.S. Technology Policy: Implications for Competitiveness and International Trade Policy" (with N. Rosenberg), California Management Review, 1989.

"The Japanese Commercial Aircraft Industry: Déjà Vu All Over Again?", Technovation, 1990.

"The Development of Industrial Research in U.S. Manufacturing," American Economic Review, 1990.

"The U.S. National Innovation System: Origins and Prospects for Change," Research Policy, 1992.

"L'Integration de la R&D Industrielle: Nouvelles Perspectives d'Analyse" (with D. Foray), Revue Economique, 1990.

"New Plans for Joint Ventures: The Results May be an Unwelcome Surprise" (with R.G. Harris), The American Enterprise, 1990.

"Finance and Corporate Evolution in Five Industrial Economies, 1900-1950," Journal of Industrial and Corporate Change, 1992; reprinted in D. Audretsch, ed., Industrial Policy and Competitive Advantage (Edward Elgar, forthcoming).

"Public Policy Influences on the Formation of International Joint Ventures," International Trade Journal, 1991.

"Aerospace" (with T. H. Moran), Daedalus, "Searching for Security in a Global Economy," 1991; also published in E. Kapstein and R. Vernon, eds., Defense and Dependence in a Global Economy (Congressional Quarterly Press, 1992).

"Analyzing the Economic Payoffs from Basic Research" (with P. A. David and W. E. Steinmueller), Economics of Innovation and New Technology, 1992.

"The McDonnell Douglas-Taiwan Aerospace Agreement: A Modest Extension of Current Trends toward Globalization in the Aerospace Industry," Journal of Policy Analysis and Management, 1992.

"The Commercialization of RISC: Strategies for the Creation of Dominant Designs" (with J. Khazam), Research Policy, 1993.

"Japan's Growing Capabilities in Industrial Technology: Implications for U.S. Managers and Policymakers" (with D. Teece), California Management Review, 1993.

"Upsetting National Priorities? The Impact of Ronald Reagan on the Federal Budget, 1981-84" (with M.S. Kamlet and T.T. Su), American Political Science Review, 1989.

"The First Decade of the Congressional Budget Act: Legislative Imitation and Adaptation in Budgeting" (with M.S. Kamlet), Policy Sciences, 1985.

"Economic, Political, and Institutional Influences on Executive and Congressional Budgetary Priorities, 1953-81" (with M.S. Kamlet), American Political Science Review, 1987.

"Whom Do You Trust? The Role of Economic Forecasts in Budgetary Formulation" (with M.S. Kamlet and T. Su), Journal of Policy Analysis and Management, 1987.

"Presidential Management of Budgetary and Fiscal Policymaking" (with J. P. Crecine and M.S. Kamlet), Political Science Quarterly, 1980.

"The Budgetary Base in Federal Resource Allocation" (with M.S. Kamlet), American Journal of Political Science, 1980.

"Coming Apart: Fiscal and Budgetary Policy Processes During the Johnson Years" (with M.S. Kamlet), Journal of Public Budgeting and Finance, 1982.

"Budgetary Side Payments and Government Growth, 1953-68" (with M.S. Kamlet), American Journal of Political Science, 1983.

"Games Presidents Do and Do not Play: Presidential Circumvention of the Executive Branch Budgetary Process" (with M.S. Kamlet), Policy Sciences, 1984.

"The Influence of the Gramm-Rudman-Hollings Act on Federal Budgetary Outcomes, 1986-89" (with S. Hahm, M. Kamlet, and T. Su), Journal of Policy Analysis and Management, 1992; awarded the Raymond Vernon Prize as the best paper in the 1992 volume of Journal of Policy Analysis and Management.

"U.S. Defense Spending Under the Gramm-Rudman-Hollings Act: 1986-1989" (with S. Hahm and M. Kamlet), Public Administration Review, 1992.

"Modelling U.S. Budgetary and Fiscal Policy Outcomes: A Disaggregated, System-wide Perspective" (with M.S. Kamlet and T. Su), American Journal of Political Science, 1992.

The Japanese Commercial Aircraft Industry since 1945: Government Policy, Technical Development, and Industrial Structure (with Nathan Rosenberg), Occasional Paper, Northeast Asia-United States Forum on International Policy, Stanford University, 1985.

"Government Policy and Innovation in the Commercial Aircraft Industry, 1925-75" (with Nathan

Rosenberg), in R.R. Nelson, ed., Government and Technical Progress: A Cross-Industry Analysis (Pergamon Press, 1982).

"Industrial Research, 1900-1950," in W.A. Lazonick and B. Elbaum, eds., The Decline of the British Economy (Oxford University Press, 1986).

"Firm Heterogeneity and R&D: An Agenda for Research" (with W.M. Cohen), in B. Bozeman, M. Crow, and A. Link, eds., Strategic Management of Industrial R&D: Interdisciplinary Perspectives (D.C. Heath, 1984).

"United States Science and Technology Policy: An Assessment of Its Structure and Implications for Developing Nations," in Improving Productivity Through Macro-Micro Linkages (Asian Productivity Organization, 1985).

"Market Structure and Innovation: A Critical Survey," in G.D. Libecap, ed., Advances in the Study of Entrepreneurship, Innovation, and Economic Growth (JAI Press, 1987).

"Collaborative Ventures Between U.S. and Foreign Manufacturing Firms: An Overview," in Mowery, ed., International Collaborative Ventures in U.S. Manufacturing (Ballinger Publishing Company, 1988).

"Joint Ventures in the U.S. Commercial Aircraft Industry," in Mowery, ed., International Collaborative Ventures in U.S. Manufacturing (Ballinger Publishing Company, 1988).

"Conclusions and Policy Implications," in Mowery, ed., International Collaborative Ventures in U.S. Manufacturing (Ballinger Publishing Company, 1988).

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"The Diffusion of New Manufacturing Technologies," in Cyert and Mowery, eds., The Impacts of Technological Change on Employment and Economic Growth: Papers Commissioned by the Panel on Technology and Employment (Ballinger Publishing Company, 1988).

"Collaborative Research and High Temperature Superconductivity," in A. Link and G. Tassej, eds., Cooperative Research and Development: The Industry-University-Government Relationship (Kluwer, 1989).

"The Role of the U.S. Office of Management and Budget in Executive Branch Budgetary Decision Making" (with J.P. Crecine, M.S. Kamlet, and M.D. Winer), in J.P. Crecine, ed., Research in Public Policy and Management, vol. 1 (JAI Press, 1981).

"Congressional Emulation and Innovation: The Congressional Budget Act" (with M.S. Kamlet), in S. Nagel, ed., Research in Public Policy and Management, vol. 5 (JAI Press, 1986).

"Federal Funding of Research and Development in Transportation: The Case of Aviation," presented at the Symposium on the Effects of Federal R&D, National Academy of Sciences, November 1985; published in The Effects of Federal Research Funding (Publication on Demand Program, National Academy Press, 1986).

"International Collaboration in the Commercial Aircraft Industry," in L. Mytelka, ed., Strategic Partnerships: States, Firms and International Competitiveness (London: Frances Pinter, 1991).

"Technology and Organizations: An Economic/Institutional Perspective," in P. Goodman and L. Sproull, eds., Technology and Organizations (San Francisco: Jossey-Bass, 1990).

"Strategies for Innovation: An Overview" (with R.G. Harris), Introduction to special issue of the California Management Review on "Strategic Management and Innovation," 1990.

"L'Analyse Economique des Rendements de la Recherche de Base" (with P. A. David and W. E. Steinmueller), in L'Evaluation Economique de la Recherche et du Changement Technique, eds. J. de Bandt and D. Foray (Paris: Editions du CMRS, 1991).

"State Government Funding of Science and Technology: Lessons for Federal Programs?", invited paper presented at the Science and Technology Policy Colloquium of the American Association for the Advancement of Science, Washington, D.C., April 11-12, 1991; published in the Science and Technology Policy Yearbook (AAAS, 1991).

"International Collaborative Ventures and Technology Commercialization Strategies of U.S. Firms," in Vestnik Leningradskogo Universiteta, 1993 (in Russian).

"International Collaborative Ventures and U.S. Firms' R&D Strategies," in O. Granstrand and S. Sjolander, eds., Technology Management and International Business (John Wiley, 1992).

"Techno-Globalism and U.S. Technology and Trade Policies," presented at the OECD symposium, Towards Techno-Globalism, March 5-9, 1990, Tokyo, Japan; in the Business Review, Institute of Business Research, Hitotsubashi University (in Japanese).

"The U.S. National Innovation System" (with N. Rosenberg), in R. R. Nelson ed., National Innovation Systems: A Comparative Study (Oxford University Press, 1993).

"Introduction" (with N. Rosenberg and R. Landau), in Technology and the Wealth of Nations.

"International Collaborative Ventures and Technology Commercialization," in Technology and the Wealth of Nations.

"The Challenges of International Trade to U.S. Technology Policy," in M. Harris and G. Moore, eds., Linking Trade and Technology Policies: An International Comparison (National Academy Press, 1992).

"New Technologies and the Aging Workforce" (with M. Kamlet), in Achieving a Productive Aging Society, eds. S. Bass, F. Caro, and Y.-P. Chen (Auburn House, 1992).

"Survey of Technology Policy," in P. Stoneman, ed., Handbook of the Economics of Innovation and Technical Change (Basil Blackwell, 1995).

"Does Airbus Industrie Yield Lessons for EC Collaborative Research Programs?," in M. Humbert, ed., The Impact of Globalisation on European Firms and Industries (London: Frances Pinter, 1993).

"The Changing Structure of U.S. Industrial Research: Implications for the Russian Federation," International Journal of Technology Management, 1994.

"The Boundaries of the U.S. Firm in R&D," in N. Lamoreaux and D. Raff, eds., The Coordination of Economic Activity Within and Between Firms (University of Chicago press for the NBER, 1995).

"Strategic Alliances and Industrial Research" (with D.J. Teece), in W.J. Spencer and R.S. Rosenbloom, eds., Engines of Innovation: U.S. Industrial Research at the End of an Era (Harvard Business School Press, 1996).

"Getting the Right Products to Market: A Study of Product Definition in the Electronics Industry" (with S. Beckman), Design Management Journal, 1993.

"Comment," in M.B. Wallerstein, M.E. Magee, and R.A. Schoen, eds., Global Dimensions of Intellectual Property Rights in Science and Technology (National Academy Press, 1993).

"Japanese Technology and Global Influence," in D. Unger and P. Blackburn, eds., Japan's Emerging Global Role (Lynne Rienner, 1993).

"Sematech and Collaborative Research: Lessons in the Design of High-Technology Consortia" (with P. Grindley and B. Silverman), Journal of Policy Analysis and Management, 1994.

"Cross-Border Linkages and the U.S. Defense Industry: Outlook and Policy Challenges" (with M. W. Chinworth), Technovation, 1995.

"Managing Product Definition in High-Technology Industries: A Pilot Study" (with G. Bacon, S. Beckman and E. Wilson), California Management Review, 1994.

"Introduction" and "Conclusion" in Mowery, ed., The International Computer Software Industry: A Comparative Study of Industry Evolution and Structure, Oxford University Press, 1996.

"The Federal Government Role in the Development of the U.S. Software Industry: An Assessment" (with R.N. Langlois), in Mowery, ed., The International Computer Software Industry: A Comparative Study of Industry Evolution and Structure, Oxford University Press, 1996.

"Tails that Wag Dogs: The Influence of Software-Based 'Network Externalities' on the Creation of Dominant Designs in RISC Technologies" (with J. Khazam), in Mowery, ed., The International Computer Software Industry: A Comparative Study of Industry Evolution and Structure, Oxford University Press, 1996.

"Institutional Structure and Innovation in the Emerging Russian Software Industry" (with V. Katkalo), in Mowery, ed., The International Computer Software Industry: A Comparative Study of Industry Evolution and Structure, Oxford University Press, 1996.

"Inward Technology Transfer and Competitiveness: The Role of National Innovation Systems" (with J. Oxley), Cambridge Journal of Economics, 1995; reprinted in D. Archibulgi and J. Michie, eds., Technology, Globalisation and Economic Performance (Cambridge: Cambridge University Press, 1997).

"The Strength of National Fiscal Bureaucracies and Deficit Spending: A Comparative Test" (with S.



Hahm and M. Kamlet), Comparative Political Studies, 1996.

"La Politique Technologique de l'Administration Clinton: Une Evaluation a Mi-Parcourse" (with R.M. Ham), Politique Etrangere, 1995.

"The Design of High-Technology Consortia: Lessons from SEMATECH" (with P. Grindley and B. Silverman), in M. Teubal, D. Foray, M. Justman, and E. Zuscovitch, eds., Technological Infrastructure Policy: An International Perspective (Kluwer Academic Publishers, 1996).

"The U.S. Corporation and Technical Progress" (with R.R. Nelson), in C. Kaysen, ed., The American Corporation Today (MIT Press, 1996).

"Enduring Dilemmas in U.S. Technology Policy and the Clinton Administration" (with R.M. Ham), California Management Review, 1995; also published in G. Koopmann and H. Scharrer, eds., The Economics of High-Technology Competition and Cooperation in Global Markets (Baden-Baden, Germany: Nomos Verlagsgesellschaft, 1996).

"Joint Ventures Between US and Pacific Rim Firms: Problems and Prospects," in D.F. Simon, ed., Corporate Strategies in the Pacific Rim (Routledge, 1995).

"Improving the Reliability of U.S. Vaccine Supply: An Evaluation of Alternatives" (with V. Mitchell), Journal of Health Politics, Policy, and Law, 1996.

"An Assessment of the Feasibility and Market Impact of Expanded Foreign-Firm Participation in the U.S. Vaccine Market" (with V. Mitchell), in M.V. Pauly, C.A. Robinson, S.J. Sepe, M. Sing, and M.K. Willian, eds., Supplying Vaccines: An Economic Analysis of Critical Issues (Amsterdam: IOS Press, 1996).

"Improving Industry-Government Cooperative R&D" (with R.M. Ham), Issues in Science & Technology, 1995.

"Institutions Matter: Postwar Deficit Spending in Japan and the United States" (with S. Hahm and M.S. Kamlet), Journal of Public Administration Research and Theory, 1995.

"Influences on Deficit Spending in the Industrial Economies" (with S. Hahm and M.S. Kamlet), Journal of Public Policy, 1996.

"Spinning Off and Spinning On(?): The Federal Government Role in the Development of the U.S. Computer Software Industry" (with R.N. Langlois), Research Policy, 1996.

"Technological Overlap and Interfirm Cooperation: Implications for the Resource-Based View of the Firm" (with J.E. Oxley and B.S. Silverman), Research Policy, 1998.

"Improving the Effectiveness of Public-Private R&D Collaboration: Case Studies at a US Weapons Laboratory" (with R.M. Ham), Research Policy, 1998.

"Technology Transfer and Collaboration Between Industry and National Laboratories" (with R.M. Ham), International Journal of Industrial Engineering, 1998.

"The Commercialization of National Lab Technology Through the Formation of 'Spinoff' Firms: Evidence from Lawrence Livermore National Laboratory" (with A.A. Ziedonis), International Journal of Technology Management, 2001.

"The U.S. Policy Response to Globalization: Looking for the Keys Under the Lamp Post" (with R.M. Ham), in J. Dunning, ed., Governments and Globalization (Oxford University Press, 1999).

"Managing the Development and Introduction of New Manufacturing Processes in the Global Semiconductor Industry" (with M. Appleyard and N. Hatch), in G. Dosi, R. Nelson, and S. Winter, eds., The Nature and Dynamics of Organizational Capabilities (Oxford University Press, 2000).

"Strategic Alliances and Interfirm Knowledge Transfer" (with J.E. Oxley and B.S. Silverman), Strategic Management Journal, 1997.

"U.S. Postwar Technology Policy and the Creation of New Industries," in Creativity, Innovation, and Job Creation (Paris: OECD, 1997).

"The Bush Report After 50 Years: Blueprint or Relic?," in C. Barfield, ed., The Endless Frontier After 50 Years (Washington, D.C.: American Enterprise Institute, 1997).

"Postwar Deficit Spending in the United States" (with S.D. Hahn and M.S. Kamlet), American Politics Quarterly, 1997.

"University-Industry Research Relationships: Historical and Policy Perspectives", presented at the U.C. President's Retreat on University-Industry Relationships, January 1997; published in The University of California's Relationships with Industry in Research and Technology Transfer (UCOP, 1997).

"The Evolution of Strategy in the World's Largest Chemicals Firms" (with A.D. Chandler and T. Hikino), in A. Arora, R. Landau, and N. Rosenberg, eds., Strategy for Competitiveness: The Global Chemicals Industry (John Wiley & Sons, 1998).

"Collaborative R&D: How Effective Is It?," Issues in Science and Technology, 1998.

"Origins, Definitions, and Consequences of Offsets," in C.W. Wessner and A.W. Wolff, eds., Policy Issues in Aerospace Offsets (Washington, D.C.: National Academy Press, 1997).

"Offsets in Commercial and Military Aerospace: An Overview," in C. Wessner, ed., Offsets in the Aerospace Industry (National Academy Press, 1999).

"The Global Computer Software Industry," in D.C. Mowery and R.R. Nelson, eds., The Sources of Industrial Leadership (Cambridge University Press, 1999).

"The Sources of Industrial Leadership: Introduction" (with R.R. Nelson), in D.C. Mowery and R.R. Nelson, eds., The Sources of Industrial Leadership (Cambridge University Press, 1999).

"Conclusion: Explaining Industrial Leadership" (with R.R. Nelson), D.C. Mowery and R.R. Nelson, eds., The Sources of Industrial Leadership (Cambridge University Press, 1999).

"Technological Innovation in a Multipolar System: Analysis and Implications for US Policy,"

Technological Forecasting and Social Change, 2000.

“Process Innovation and Learning by Doing in Semiconductor Manufacturing” (with N. Hatch), Management Science, 1998.

“Market Failure or Market Magic? Structural Change in the U.S. National Innovation System” (with A. Ziedonis), STI Review, 1998.

“America’s Industrial Resurgence (?): An Overview,” in D.C. Mowery, ed., U.S. Industry in 2000: Studies in Competitive Performance (National Academy Press, 1999).

“Performance and Innovation in the U.S. Semiconductor Industry, 1980-1996” (with J. Macher and D. Hodges), in D.C. Mowery, ed., U.S. Industry in 2000: Studies in Competitive Performance (National Academy Press, 1999).

“The Changing Structure of the U.S. National Innovation System: Implications for International Conflict and Cooperation in R&D Policy,” Research Policy, 1998.

“Reversal of Fortune: The Revival of the U.S. Semiconductor Industry” (with J. Macher and D. Hodges), California Management Review, 1998.

“America’s Industrial Resurgence: How Strong, How Durable?,” Issues in Science and Technology, 1999.

“The Effects of the Bayh-Dole Act on U.S. University Research and Technology Transfer: An Analysis of Data from Columbia University, the University of California, and Stanford University” (with R.R. Nelson, B. Sampat, and A.A. Ziedonis), in L. Branscomb, R. Florida, and M. Ishii, eds., Industrializing Knowledge (MIT Press, 1999).

“The Growth of Patenting and Licensing by U.S. Universities: An Assessment of the Effects of the Bayh-Dole Act” (with R.R. Nelson, B. Sampat, and A.A. Ziedonis), Research Policy, 2001.

“Twentieth-Century Technological Change” (with N. Rosenberg), in S. Engerman and R. Gallman, eds., The Cambridge Economic History of the United States, vol. 3 (Cambridge University Press, 2000).

“The Global Environment of U.S. Science and Technology Policies,” in Harnessing Science & Technology for America’s Economic Future (Washington, D.C.: National Academy Press, 1999).

“The Evolving Structure of University-Industry Collaboration in the United States: Three Cases,” in Research Teams and Partnerships: Trends in the Chemical Sciences (Washington, D.C.: National Academy Press, 1999).

“National Technology Policy in Global Markets: Developing Next-Generation Lithography in the Semiconductor Industry” (with G. Linden and R. Ziedonis), Business & Politics, 2000.

“Academic Patent Quality and Quantity Before and After the Bayh-Dole Act in the United States” (with A. Ziedonis), Research Policy, 2002.

“Patenting and Licensing University Inventions: Lessons from the History of the Research Corporation”

(with B. Sampat), Industrial and Corporate Change, 2001.

“Numbers, Quality, and Entry: How has the Bayh-Dole Act Affected US University Patenting and Licensing?” (with A. Ziedonis), in A. Jaffe, J. Lerner, and S. Stern, Innovation Policy and the Economy (MIT Press, 2001).

“University Patents and Patent Policy Debates: 1925-1980” (with B. Sampat), Industrial and Corporate Change, 2001.

“Introduction to the Special Issue in Honor of Richard R. Nelson” (with W. Cohen, F. Malerba, and S. Winter), Industrial and Corporate Change, 2001.

“National Technology Policy in Global Markets” (with G. Linden and R. Ziedonis), in M.P. Feldman and A.N. Link, eds., Innovation Policy in the Knowledge-Based Economy (Kluwer, 2001).

“The History and Evolution of the Internet” (with T. Simcoe), in B. Steil, R. Nelson, and D. Victor, eds., Technological Innovation and Economic Performance (Princeton University Press, 2002).

“Learning to Patent: Institutional Experience, Learning, and the Characteristics of US University Patents After the Bayh-Dole Act, 1981-1992” (with B. Sampat, and A. Ziedonis), Management Science, 2002.

“The Commercialization of national laboratory technology through the formation of “spin-off” firms: Evidence from Lawrence Livermore National Laboratory” (with A. Ziedonis), International Journal of Manufacturing and Technology Management, 2001.

“The changing role of universities in the 21<sup>st</sup>-century US R&D system,” in Science and Technology Policy Yearbook: 2002 (American Association for the Advancement of Science, 2002).

“The Two Faces of Partner-Specific Absorptive Capacity: Learning and Cospecialization in Strategic Alliances” (with J.O. Oxley and B. Silverman), in F. Contractor and P. Lorange, eds., Cooperative Strategies and Alliances (Elsevier).

“Is the Internet a U.S. Invention? – An Economic and Technological History of Computer Networking” (with T. Simcoe), Research Policy, 2002.

“The U.S. National Innovation System after the Cold War,” in P. Laredo and P. Mustar, eds., Research and Innovation Policies in the New Global Economy (Elgar, 2001).

“Post-Issue Patent ‘Quality Control’: A Comparative Study of U.S. Patent Re-Examinations and European Patent Oppositions” (with S. Graham, B. Hall, and D. Harhoff), NBER Working Paper #8807; revised version published in W. Cohen and S. Merrill, eds., Patents in the Knowledge-Based Economy (National Academies Press, 2003).

“Intellectual Property Protection in the U.S. Software Industry” (with S. Graham), in W. Cohen and S. Merrill, eds., Patents in the Knowledge-Based Economy (Washington, D.C.: National Academy Press, 2003).

“The Geographic Reach of Market and Non-Market Channels of Technology Transfer: Comparing Citations and Licenses of University Patents” (with A. Ziedonis), NBER Working Paper #8568.

“eBusiness and the Semiconductor Industry Value Chain: Implications for Vertical Specialization and Integrated Semiconductor Manufacturers” (with J. Macher and T. Simcoe), Industry and Innovation, 2002.

"Submarines and Technological Innovation: U.S. Continuation Patenting in Software and Biotechnology Technologies in the 1980s and 1990s." (with S. Graham), in G. Libecap, ed., Advances in the Study of Entrepreneurship, Innovation, and Economic Growth, Volume 15 (Elsevier, 2003).

“Using Cooperative Research and Development Agreements as S&T Indicators: What do We Have and What Would We Like?”, Technology Assessment and Strategic Management, 2003.

“Comment on Martin Campbell-Kelly,” in U. Hashagen, R. Keil-Slawik, and A. Norberg, eds., History of Computing: Software (Springer, 2002).

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“Managing’ Learning by Doing: An Empirical Study of Semiconductor Manufacturing” (with J. Macher), Journal of Product Innovation Management, 2003.

“Prospects for Improving U.S. Patent Quality via Post-Grant Opposition” (with S. Graham, B. Hall, and D. Harhoff), in Innovation Policy and the Economy, vol 4 (MIT Press for NBER, 2004).

“Submarines in Software? Continuations in U.S. Software Patenting during the 1980s and 1990s” (with S. Graham), Economics of Innovation and New Technology, 2004.

“Public and Private Participation in the Development and Governance of the Internet” (with T. Simcoe), in R.R. Nelson, ed., The Limits and Complexities of Market Organization, forthcoming, Russell Sage Foundation Press.

“Universities in national innovation systems” (with B. Sampat), in J. Fagerberg, D. Mowery, and R. Nelson, eds., Oxford Handbook of Innovation and Policy, Oxford University Press, 2004.

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### **Congressional and other Public Testimony**

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U.S. Federal Trade Commission, hearings on "High-Technology Competition and Antitrust," October 24, 1995.

U.S. House of Representatives, Committee on Science, Science Policy Study, hearings on AR&D Cooperation, @ March 11, 1998.

U.S. Federal Trade Commission, hearings on "Intellectual Property Rights and Competition Policy," U.C. Berkeley, February 27, 2002.

### **Other Activities**

Member, National Academy of Engineering Panel on the Competitive Status of the U.S. Civil Aviation Manufacturing Industry, 1983-84; panel report, The Competitive Status of the U.S. Civil Aviation Manufacturing Industry (National Academy Press, 1985).

Member, National Research Council Manufacturing Studies Board Panel on Electronics Automation, 1986-87.

Member, National Research Council Manufacturing Studies Board Panel on the Causes and Consequences of the Internationalization of American Manufacturing, 1988-89; panel report, The Causes and Consequences of Internationalization in U.S. Manufacturing (National Academy Press, 1990).

Member, National Research Council Energy Engineering Board Panel on National Energy Policy and Global Climate Change, 1989-90; panel report, Confronting Climate Change: Strategies for Energy Research and Development (National Academy Press, 1990).

Member, National Academy of Sciences panel on the Federal Government's Role in Civilian Technology, 1990-92; panel report, Building A New Alliance (National Academy Press, 1992).

Member, Editorial Boards, Research Policy; Economics of Innovation and New Technology; Journal of Industrial and Corporate Change; California Management Review.

North American editor, "Studies in Global Competition," Harwood Academic Publishers.

Organizer, Conference on "The Future of Technology and Work: Research and Policy Issues," sponsored by the Panel on Technology and Employment, Washington, D.C., 10/28/87.

Organizer, Conference on "The Challenge of New Technologies to Labor-Management Relations," sponsored by the Panel on Technology and Employment and the Bureau of Labor-Management

Cooperation and Related Programs, U.S. Department of Labor, Washington, D.C., 10/19-20/88.

Member, Organizing Committee, NBER conference on Science and Technology Policy, August, 1995.

Member, Institute of Medicine/National Research Council Study Committee on "The Children's Vaccine Initiative: Planning Alternative Strategies Towards Full U.S. Participation," 1992-93; panel report, The Children's Vaccine Initiative: Achieving the Vision (National Academy Press, 1993).

Member, Institute of Medicine/National Research Council Committee on Applications of Biotechnology to Contraceptive Research and Development, 1994-96; panel report, Contraceptive Research and Development: Looking to the Future (National Academy Press, 1996).

Member, Institute of Medicine/National Research Council subcommittee on Implant Contraceptives; panel workshop report, Contraceptive Research, Introduction, and Use (National Academy Press, 1998).

Member, National Research Council panel on Review of the Portfolio of the National Science Foundation=s Science Resources Studies Division, 1998-99.

Member, National Research Council panel on Review of the Department of Energy's R&D Programs in Fossil Energy and Energy Efficiency, 2000-2001.

Member, National Commission on the Use of Offsets in Defense Trade, 2000-2001.

Member, National Research Council panel on Review of the Aeronautics R&D Programs of the National Aeronautics & Space Administration, 1999.

Member, Committee on Science, Engineering, and Public Policy, American Association for the Advancement of Science, 1997-2003.

Member, Organizing Committee, National Academy of Engineering workshop on "The Feasibility of Prizes in Federal Science and Technology Programs," May 1999.

Member, National Research Council Committee on Benefits of DOE R&D in Energy Efficiency and Fossil Energy, 2000-2001.

Member, National Research Council Committee on New Approaches to Breast Cancer Detection and Diagnosis, 2003-04.

Co-Editor, California Management Review, special issue on "Strategic Management and Innovation," 1990.

Co-Editor, Economics of Innovation and New Technology, special issue on "Management of Technology," 1992.

Co-Editor, Research Policy, "Special Issue in Honor of Nathan Rosenberg," 1994.

Co-Editor, Industrial and Corporate Change, "Special Issue in Honor of Richard Nelson," 2001.

Co-Editor, Management Science, "Special Issue on University Technology Transfer and Entrepreneurship," Management Science, 2002.

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