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CURRICULUM VITA

**Paul Robert Milgrom**

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*Personal*

Born April 20, 1948 in Detroit, Michigan  
U.S. Citizen  
Married with two children

*Academic Employment*

- 1987-        **Stanford University**  
Shirley R. and Leonard W. Ely, Jr. Professor of Humanities and Sciences (1993-)  
Professor of Economics (1987-)  
Director, Stanford Institute for Theoretical Economics (1989-91)
- 1986-87     **University of California - Berkeley**  
Ford Visiting Professor of Economics
- 1982-87     **Yale University**  
Williams Brothers Professor of Management Studies and Professor of Economics  
                  1985-87  
Professor of Economics and Management 1983-85  
Visiting Professor 1982-83
- 1979-83     **Northwestern University**  
Kellogg Graduate School of Management  
Department of Managerial Economics and Decision Sciences  
Professor 1982-83  
Associate Professor 1981-82  
Assistant Professor 1979-81
- 1981        **Stanford University**  
Visiting Research Associate in Economics

### *Pre-Academic Employment*

- 1972-75      **Nelson and Warren, Inc.**  
Consulting Actuary
- 1970-71      **Metropolitan Life Insurance Co.**  
Actuarial Trainee

### *Education*

- 1975-78      **Stanford University**  
Ph.D. in Business, January 1979  
M.S. in Statistics, April 1978
- 1966-70      **University of Michigan**  
A.B. in Mathematics with high honors, May 1970

### *Honors, Awards, Prizes, Fellowships, Chairs and Grants*

- 1997          Alberto Bailleres Founder's Lecture at Instituto Tecnológico Autonomo de Mexico (ITAM). Plenary lecturer, Econometric Society Far Eastern Meeting. Plenary lecturer, Australian Industry Economics Meeting.
- 1996          Nobel prize memorial lecture (honoring deceased Nobel laureate William Vickrey), at the Royal Swedish Academy of Sciences.
- 1995          Churchill lectures at Cambridge University. Political Economy Special Lecture at Harvard University.
- 1994          National Science Foundation research grant "Comparative Statics, Complementarities, Coordination and Change," covering 1994-1997. Woytinsky distinguished lecturer, University of Michigan.
- 1993          Senior Research Fellow, Institute for Policy Reform. Shirley R. and Leonard W. Ely, Jr. Professor of Humanities and Sciences.
- 1992          Fellow, American Academy of Arts and Sciences. International Guest Scholar, Kyoto University.
- 1991          Fellow, Center for Advanced Study in the Behavioral Sciences. National Science Foundation research grant "Theories of the Firm - 2" covering 1991-1994.
- 1990          Center for Economic Policy Research grant to study "The Economics of Modern Manufacturing."

- 1989 National Science Foundation grant to direct programs for the Stanford Institute for Theoretical Economics; National Academy of Sciences award to lecture in China on economics of organizations.
- 1988 Olin Distinguished Lecturer, Princeton University; National Science Foundation research grant “Theories of the Firm” covering 1988-91; Center for Economic Policy Research grant.
- 1987 Prize for Best Paper of the Year in the Transactions of the Society of Actuaries.
- 1986 Ford Visiting Professor of Economics, University of California-Berkeley; John Simon Guggenheim Fellowship to study “Economic Theories of Organization.”
- 1985 Williams Brothers Chair in Management Studies, Yale University; National Science Foundation research grant “On the Formal Economic Theory of Organizations”; Fellow of the Institute for Advanced Studies, Hebrew University of Jerusalem; plenary lecturer at the Fifth World Congress of the Econometric Society.
- 1984 Fellow of the Econometric Society; Fellow of Morse College (of Yale University)
- 1983 Research Award, Actuarial Education and Research Fund; Honorary Master of Arts degree, Yale University
- 1982 National Science Foundation research grant to study “The Structure of Information in a Productive Organization.”
- 1981 IBM Research Chair at Northwestern University
- 1980 Leonard J. Savage Memorial Thesis Award; National Science Foundation research grant: “Information and Uncertainty in Competitive Bidding.”
- 1976 Society of Actuaries Triennial Paper Prize for best paper by an actuary within five of membership, for the period 1973-75.
- 1974 Fellow of the Society of Actuaries

### *Major Professional Activities and Affiliations*

- 1997- Editorial Consultant, MIT Press
- 1997- Editorial Board, *Journal of Comparative Economics*
- 1996 Nemmers Prize Selection Committee, Northwestern University
- 1996- Advisory Board, *Microeconomics Abstracts*
- 1995- Advisory Board, *Economics Research Network*
- 1994-95 Program Committee, 1995 World Congress of the Econometric Society
- 1993-95 Senior Research Fellow, Institute for Policy Reform
- 1993- Associate Editor, *American Economic Review*
- 1992- Fellow, American Academy of Arts and Sciences
- 1990-93 Co-Editor, *American Economic Review*
- 1990- Associate Editor, *Games and Economic Behavior*
- 1989-92 Associate Editor, *Journal of Financial Intermediation*
- 1987-90 Associate Editor, *Econometrica*
- 1985-89 Associate Editor, *Rand Journal of Economics*
- 1983-87 Associate Editor, *Journal of Economic Theory*
- 1984 Chair, Program Committee, Econometric Society Winter Meetings
- 1984- Fellow, Econometric Society
- 1980- Member, American Economic Association
- 1979- Numerous lectures and visiting scholar positions at universities, research institutes and policy centers in Argentina, Australia, Belgium, Canada, China, Czech Republic, England, France, Germany, Hong Kong, Israel, Italy, Japan, Mexico, Spain, Sweden, Switzerland, the United States, Uruguay and Venezuela.

## Publications

### Books

*The Structure of Information in Competitive Bidding* (Ph.D. Dissertation), New York: Garland Press, 1979.

*Economics, Organization and Management* (with John Roberts), Englewood Cliffs: Prentice-Hall, 1992. (Also, *Instructor's Manual for Economics, Organization and Management* (with John Roberts, assisted by Nicolaj Siggelkow), Englewood Cliffs: Prentice-Hall, 1992).

*Putting Auction Theory to Work*, Cambridge University Press (in preparation).

*Robust Comparative Statics* (with Susan Athey and John Roberts), Princeton University Press (in preparation).

### Articles by Topic

#### Actuarial Science

1. On Understanding the Effects of GAAP Reserve Assumptions, *Transactions of the Society of Actuaries*, 27, 1975, 71-88.
2. Measuring the Interest-Rate Risk, *Transactions of the Society of Actuaries*, XXXVII, 1985: 241-57.
3. Reply to the Comments on "Measuring the Interest Rate Risk," *Transactions of the Society of Actuaries*, XXXVII, 1985: 297-302.

#### Auctions and Competitive Bidding

1. A Convergence Theorem for Competitive Bidding with Differential Information, *Econometrica*, 47, 1979, 679-88.
2. Rational Expectations, Information Acquisition, and Competitive Bidding, *Econometrica*, 49, 1981, 921-43.
3. The Value of Information in a Sealed Bid Auction (with Robert Weber), *Journal of Mathematical Economics*, 10, 1982, 105-14.
4. A Theory of Auctions and Competitive Bidding (with Robert Weber), *Econometrica*, 50, 1982, 1089-1122. (Reprinted in (1) *Game Theory in Economics*, edited by Ariel Rubinstein, London: Edward Elgar Publishing, 1990 and in (2) *The Economics of Information*, edited by Steven A. Lippman and John E. Anderson, London: Edward Elgar Publishing, 1994.)
5. Competitive Bidding with Proprietary Information (with Richard Engelbrecht-Wiggans and Robert Weber), *Journal of Mathematical Economics*, 11, 1983, 161-69.

6. The Economics of Competitive Bidding: A Selective Survey, *Social Goals and Social Organization: A Volume in Honor of Elisha Pazner*, edited by L. Hurwicz, D. Schmeidler and H. Sonnenschein, London: Cambridge University Press, 1985, Chapter 9, 261-89.
7. Auction Theory, *Advances in Economic Theory: Fifth World Congress*, edited by Truman Bewley, London: Cambridge University Press, 1987, 1-32.
8. Auctions and Bidding: A Primer, *Journal of Economic Perspectives*, 3, Summer 1989, 3-22. (Reprinted in *Readings in Microeconomic Theory*, edited by Manfredi La Manna, London: Dryden Press, 1997, 95-113.)
9. Procuring Universal Service: Putting Auction Theory to Work, in *Le Prix Nobel: The Nobel Prizes, 1996*, Nobel Foundation, 1997, 382-392.
10. Game Theory and the Spectrum Auctions, forthcoming in the *European Economic Review*, 1998.
11. Procuring Universal Telephone Service, in *1997 Industry Economics Conference*, Industry Commission (ed), Conference Proceedings, 10-11 July, AGPS, Canberra.

### **Pricing Strategies**

1. Limit Pricing and Entry Under Incomplete Information: An Equilibrium Analysis (with John Roberts), *Econometrica*, 50, 1982, 443-59. (Reprinted in (1) *Industrial Organization*, edited by Oliver Williamson, London: Edward Elgar Publishing, 1990, and in (2) *The Economics of Information*, edited by Steven A. Lippman and John E. Anderson, London: Edward Elgar Publishing, 1994.)
2. Predation, Reputation, and Entry Deterrence (with John Roberts), *Journal of Economic Theory*, 27, 1982, 280-312.
3. Price and Advertising Signals of Product Quality (with John Roberts), *Journal of Political Economy*, 94, 1986, 796-821. Reprinted in *The Economics of Marketing*, Martin Carter, Mark Casson and Vivek Suneja (eds.), Cheltenham: Edgar Elgar Publishing, Ltd., forthcoming.
4. Predatory Pricing, *The New Palgrave: A Dictionary of Economic Theory and Doctrine*, J. Eatwell, M. Milgate, and P. Newman (eds.), London: MacMillan Press Ltd., 1988.
5. Informational Asymmetries, Strategic Behavior and Industrial Organization (with John Roberts), *AEA Papers and Proceedings*, 77, May 1987, 184-93.
6. An Essay on Price Discrimination, *The Economics of Imperfect Competition and Employment: Joan Robinson and Beyond*, edited by George Feiwel, New York: MacMillan and New York: New York University Press, 1989, 365-86.
7. New Theories of Predatory Pricing (with John Roberts), *Industrial Structure in the New Industrial Economics*, Giacomo Bonanno and Dario Brandolini (eds.), Oxford: Oxford University Press, 1990: 112-37.

8. Detering Predation in Telecommunications: Are Line-of-Business Restraints Needed? (with Susan Gates and John Roberts), *Managerial and Decision Economics*, 16 (July-August, 1995), 427-438. Reprinted in *Deregulating Telecommunications: The Baby Bells' Case for Competition*, R.S. Higgins and P.H. Rubin, eds. Chichester: John Wiley & Sons, 1995, 151-162.

### **Incentives and Organization**

1. Aggregation and Linearity in the Provision of Intertemporal Incentives (with Bengt Holmstrom), *Econometrica*, 55(2) March 1987, 303-28.
2. Relying on the Information of Interested Parties (with John Roberts), *Rand Journal of Economics*, 17, 1986, 18-32.
3. Job Discrimination, Market Forces, and the Invisibility Hypothesis (with Sharon Oster), *Quarterly Journal of Economics*, 102, August 1987, 453-476.
4. Employment Contracts, Influence Activities and Efficient Organization Design, *Journal of Political Economy*, 96(1), February 1988, 42-60.
5. An Economic Approach to Influence Activities and Organizational Responses (with John Roberts), *American Journal of Sociology*, 94 (Supplement), July 1988, S154-S179.
6. Economic Theories of Organization: Past, Present and Future (with John Roberts), *Canadian Journal of Economics*, 21, August 1988, 444-58. Reprinted in *The Economics of Contracts and Industrial Organization: A Reader*, Peter Buckley and Jonathan Michie, eds, Oxford University Press, forthcoming.
7. The Efficiency of Equity in Organizational Decision Processes (with John Roberts), *American Economic Review Papers and Proceedings*, May 1990, 154-9.
8. Short Term Contracts and Long Term Agency Relationships (with Drew Fudenberg and Bengt Holmstrom), *Journal of Economic Theory*, 51(1), June 1990, 1-31.
9. Bargaining Costs, Influence Costs and the Organization of Economic Activity (with John Roberts), *Perspectives on Positive Political Economy*, edited by James E. Alt and Kenneth A. Shepsle, Cambridge: Cambridge University Press, 1990, 57-89. Reprinted in *Transaction Cost Economics*, edited by Oliver Williamson and Scott Masten, London: Edward Elgar Publishing Co., 1994.
10. Regulating Trade Among Agents (with Bengt Holmstrom), *Journal of Institutional and Theoretical Economics*, 146(1), March 1990, 85-105. (Reprinted in *The New Institutional Economics*, edited by Eirik G. Furubotn and Rudolph Richter, College Station: Texas A&M University Press, 1991.)
11. A Theory of Hierarchies Based on Limited Managerial Attention (with John Geanakoplos), *Journal of Japanese and International Economics*, 5, 1991, 205-225.
12. Multitask Principal-Agent Analyses: Incentive Contracts, Asset Ownership and Job Design (with Bengt Holmstrom), *Journal of Law, Economics and Organization*, VII Sp, 1991,

24-52. Reprinted in *Transaction Cost Economics*, edited by Oliver Williamson and Scott Masten, London: Edward Elgar Publishing Co., 1994. Condensed and reprinted in *The Economic Nature of the Firm*, edited by Louis Putterman and Randall Kroszner, Cambridge University Press, 1996.

13. Organizational Prospects, Influence Costs and Ownership Changes (with Margaret Meyer and John Roberts), *Journal of Economics and Management Strategy*, 1(1), 1992, 9-35.
14. Pay, Perks and Parachutes: Do They Pay? (with John Roberts), *Stanford Business*, 1992.
15. The Firm as an Incentive System (with Bengt Holmstrom), *American Economic Review*, 84(4), September 1994, 972-991.
16. The Internal Politics of the Firm (with John Roberts), 1993, forthcoming in *The Politics of Exchange and the Economics of Power*, Samuel Bowles, Maurizio Franzini and Ugo Pagano (eds.), Routledge, 1998.

### **Economics of Manufacturing**

1. Communication and Inventories as Substitutes in Organizing Production (with John Roberts), *Scandinavian Journal of Economics*, 90, 1988, 275-89.
2. The Economics of Modern Manufacturing: Technology, Strategy and Organization (with John Roberts), *American Economic Review*, 80(3), June 1990, 511-28. Translated and reprinted in *Vestnik St. Petersburgskogo Universiteta, Economics seria* (the Journal of the Economics Faculty of St. Petersburg University) 5(2), 1993. Reprinted in *Economics of the Firm: Lessons in Business Organization* edited by Andrei Demin and Valery Katkalo, St. Petersburg, Russia: 1994. Reprinted in *The Economics of Communications and Information* edited by Donald Lamberton, Cheltenham: Edgar Elgar Publishing.
3. Complementarities, Momentum, and the Evolution of Modern Manufacturing (with Yingyi Qian and John Roberts), *American Economic Association Papers and Proceedings*, May 1991, 85-89.
4. Johnson Controls, Inc – Automotive Systems Group: The Georgetown Kentucky Plant (with John Roberts). Case #S-BE-9, Stanford Graduate School of Business, November 1993.
5. Complementarities and Fit: Strategy, Structure and Organizational Change in Manufacturing (with John Roberts), *Journal of Accounting and Economics*, 19(2-3), March-May, 1995: 179-208.
6. “The Economics of Modern Manufacturing: Technology, Strategy and Organization: Reply,” *American Economic Review*, 85 (September, 1995) 997-999.

### **Comparative Economic Systems**

1. Complementarities and Systems: Understanding Japanese Economic Organization (with John Roberts), *Estudios Economicos*, 9(1), 1994: 3-42.
2. Continuous Adjustment and Fundamental Change in Business Strategy and Organization (with John Roberts), *Trends in Business Organization: Do Participation and Cooperation Increase Competitiveness?*, Horst Siebert, ed., Tübingen: J.C.B. Mohr (Paul Siebeck), 1995.
3. Complementarities in the Transition from Socialism: A Firm-Level Analysis (with Susan Gates and John Roberts), *Reforming Asian Socialism: The Growth of Market Institutions*, John McMillan and Barry Naughton (eds), Ann Arbor: University of Michigan Press, 1996.

### **Securities Markets**

1. Information, Trade and Common Knowledge (with Nancy Stokey), *Journal of Economic Theory*, 26, 1982, 17-27.
2. Private Information in an Auction-Like Securities Market, *Auctions, Bidding and Contracting: Uses and Theory*, edited by R. Engelbrecht-Wiggans, M. Shubik and R. Stark, New York: New York University Press, New York, 1983.
3. Bid, Ask and Transactions Prices in a Specialist Market with Insider Trading (with Larry Glosten), *Journal of Financial Economics*, 14, 1985, 71-100. Reprinted in *Financial Intermediaries*, Mervyn Lewis (ed), London: Edward Elgar Publishing, 1984. Reprinted in *Microstructure: The Organization of Trading and Short Term Price Behavior*, edited by Hans R Stoll, London: Edward Elgar Publishing, forthcoming.
4. The Real Output of the Stock Exchange (with Timothy F. Bresnahan and Jonathan Paul), *Output Measurement in the Services Sectors*, edited by Zvi Griliches, 1992, 195-216.

### **Economic History**

1. The Role of Institutions in the Revival of Trade: The Medieval Law Merchant (with Douglass North and Barry Weingast), *Economics and Politics*, 2, March 1990, 1-23. Reprinted in *Trade in the Pre-Modern Period: 1400-1700*, edited by Douglas Irwin, London: Edward Elgar Publishing, forthcoming.
2. Coordination, Commitment and Enforcement: The Case of the Merchant Guild (with Avner Greif and Barry Weingast), *Journal of Political Economy*, 102(3), August 1994, 745-776. Reprinted in *Explaining Social Institutions*, edited by Jack Knight and Itai Sened, Ann Arbor: University of Michigan Press, 1995.

### **Mathematical Economics and Game Theory**

1. An Axiomatic Characterization of Common Knowledge, *Econometrica*, 49, 1981, 219-22.

2. Good News and Bad News: Representation Theorems and Applications, *Bell Journal of Economics*, 12, 1981, 380-91.
3. Topologies on Information and Strategies in Normal-Form Games with Incomplete Information (with Robert Weber), *Game Theory and Mathematical Economics*, edited by O. Moeschlin and D. Pallaschke, New York: North Holland, 1981.
4. Rational Cooperation in the Finitely-Repeated Prisoners' Dilemma (with David Kreps, John Roberts and Robert Wilson), *Journal of Economic Theory*, 27, 1982, 245-52. (Reprinted in *Game Theory in Economics*, edited by Ariel Rubinstein, London: Edward Elgar Publishing, 1990.)
5. Distributional Strategies for Games with Incomplete Information (with Robert Weber), *Mathematics of Operations Research*, 10, 1985, 619-32.
6. Rationalizability, Learning and Equilibrium in Games With Strategic Complementarities (with John Roberts), *Econometrica*, 58, 1990, 1255-78.
7. Adaptive and Sophisticated Learning in Repeated Normal Form Games, (with John Roberts), *Games and Economic Behavior*, February 1991, 82-100.
8. Information and Timing in Repeated Partnerships (with Dilip Abreu and David Pearce), *Econometrica*, 59(6), 1991, 1713-1733.
9. Monotone Comparative Statics (with Chris Shannon), *Econometrica*, 62, 1994, 157-180.
10. Comparing Equilibria (with John Roberts), *American Economic Review*, 84(3), June 1994: 441-459.
11. Comparing Optima: Do Simplifying Assumptions Affect Conclusions?, *Journal of Political Economy*, 102(3), June 1994: 607-615.
12. The LeChatelier Principle (with John Roberts), *American Economic Review*, 86(1), March 1996: 173-179.
13. Coalition-Proofness and Correlation with Arbitrary Communication Possibilities (with John Roberts), *Games and Economic Behavior* 17, 1996: 113-128.

### **Welfare Economics**

1. Is Sympathy an Economic Value? Philosophy, Economics and the Contingent Valuation Method. *Contingent Valuation: A Critical Assessment*. Elsevier-North Holland, 1993, Jerry Hausman (ed), 417-441.

### *Book Reviews*

Axelrod's *The Evolution of Cooperation*, *Rand Journal of Economics*, 15, 1984, 305-9.

### **Unpublished Manuscripts**

1. Benefit-Cost Analysis, Bounded Rationality and the Contingent Valuation Method, Stanford CEPR Publication #316, 1992.
2. Learning to Bid. Working paper, 1993.
3. Monotonicity and the Core in Generalized Convex Games (with Chris Shannon), 1995.
4. Putting Auction Theory to Work: The Simultaneous Ascending Auction, 1997.