

The Decline in Corporate Research: Should We Worry?

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SPEAKERS

ASHISH ARORA

Ashish Arora is the Rex D. Adams Profess of Business Administration at the Fuqua School of Business at Duke University. Arora received his Ph.D. in Economics from Stanford University in 1992, and was on the faculty at the Heinz School, Carnegie Mellon University, where he held the H. John Heinz Professorship, till 2009.

His research focuses on the economics of technology and technical change. Arora's research has included the study of technology intensive industries such as software, biotechnology and chemicals, the economics of information security, and the role of patents and licensing in promoting technology startups. He has studied the rise of the software industry and the pharmaceutical industry in emerging economies. His current research focuses on the management of intellectual property and licensing in corporations, and innovation based entrepreneurship.

He served as co-editor, Research Policy, 2008-2014, and is currently Department Editor for Management Science (Innovation and Entrepreneurship) and is on the editorial board of Strategic Management Journal. In the past, he has served on advisory panels to the Secretary of Commerce, the National Academy of Sciences, and The Association for Computing Machinery.

He has consulted to the Chemical Manufacturing Association, National Science Foundation, Chemical Heritage Foundation, Intellectual Ventures, UK Intellectual Property Office, the Brattle Group, Intel Capital and Tata Consultancy Services, and to startups including SCA Technologies, Upswing, and Mindseed Education (advisory board).

SHARON BELENZON

Sharon Belenzon is a tenured Associate Professor of Strategy at the Fuqua School of Business of Duke University. His research explores the conditions under which firms in developed nations coalesce into groups, and how different attributes of such groups are related to resource reallocation, innovation, and firm performance. Professor Belenzon's research is dedicated to advance the understanding of how firm organizational structure mediates, and is mediated by, firm strategy, and of how structure conditions the way in which resources are mobilized across different units of the organization, focusing on financial resources, innovation and managerial talent. His research has been featured in top academic journals, such as Management Science, Strategic Management Journal, American Economic Review, Review of Economics and Statistics, Economic Journal, and Journal of Law and Economics. Professor Belenzon received his PhD from the London School of Economics, and completed post-doctorate work at the University of Oxford, Nuffield College. He has also been the recipient of the Kauffman foundation post-doctorate fellowship at the National Bureau of Economic Research. He earned MA and BA degrees in Economics from Tel-Aviv University. At Fuqua, he has been teaching the core strategy course, Emerging Markets strategy and the PhD strategy seminar, and is engaged in advising PhD students.

KATRINE BOSLEY

Katrine Bosley is the Chief Executive Officer of Editas Medicine (NASDAQ: EDIT) and has been part of the biotechnology industry for over 25 years. Through her career she has led innovative organizations (Avila Therapeutics – CEO; Adnexus Therapeutics – VP Business Development) and worked to advance innovative products and technologies (Tysabri (natalizumab), covalent drugs, genome editing). Her experiences include being the Entrepreneur-in-Residence at The Broad Institute; acquisitions; initial public offerings; business development and licensing; commercial operations; portfolio strategy; and venture capital. She is a graduate of Cornell University where she pursued studies as a College Scholar.

In addition to her role at Editas, Katrine currently serves as Chairman of the Board of Genocera Biosciences (NASDAQ: GNCA) and is a Board member of Galapagos NV (EURONEXT and NASDAQ: GLPG), of Scholar Rock, LLC, and of BIO – the Biotechnology Innovation Organization.

WESLEY COHEN

Wesley M. Cohen (Ph.D., Economics, Yale University, 1981) is Professor of Economics and Management and the Frederick C. Joerg Distinguished Professor of Business Administration in the Fuqua School of Business, Duke University. He also holds secondary appointments in Duke's Department of Economics and School of Law, is a Research Associate of the National Bureau of Economic Research, and serves as the Faculty Director of the Fuqua School's Center for Entrepreneurship and Innovation. Before coming to Duke in 2002, Professor Cohen taught at Carnegie Mellon University for 20 years after a year as Postdoctoral Fellow in Industrial Organization at the Harvard Business School.

With a research focus on the economics of technological change and R&D, Professor Cohen has published numerous scholarly articles on the determinants of innovative activity and performance. He has received funding from the National Science Foundation, the Kauffman Foundation, the Sloan Foundation, the National Institutes of Health, among other sources. He has also taught courses on the economics of technological change, industrial organization economics, policy analysis, organizational behavior, corporate strategy, entrepreneurship, technology strategy and the management of intellectual capital.

CAROL CORRADO

Carol Corrado is senior advisor and research director in economics at The Conference Board and senior policy scholar at the Center for Business and Public Policy, McDonough School of Business, Georgetown University. Her primary research focus is measuring intangible capital and digital innovation and analyzing their role in economic growth. Corrado coauthored key papers on the macroeconomic analysis of intangible investment and capital, including one that won the International Association of Research on Income and Wealth's 2010 Kendrick Prize ("Intangible Capital and U.S. Economic Growth"). Recent work has also studied prices for IT investment goods and consumer digital services; she received the American Statistical Association's prestigious Julius Shiskin Award for Economic Statistics in 2003 for work on high-tech price measurement. Corrado holds a PhD in economics from the University of Pennsylvania and a BS in management science from Carnegie-Mellon University.

MARY CUMMINGS

Mary “Missy” Cummings received her B.S. in Mathematics from the US Naval Academy in 1988, her M.S. in Space Systems Engineering from the Naval Postgraduate School in 1994, and her Ph.D. in Systems Engineering from the University of Virginia in 2004.

A naval officer and military pilot from 1988-1999, she was one of the Navy’s first female fighter pilots.

Cummings is currently a Professor in the Duke University Pratt School of Engineering, the Duke Institute of Brain Sciences, and is the director of the Humans and Autonomy Laboratory and Duke Robotics. Her research interests include human-unmanned vehicle interaction, human-autonomous system collaboration, human-systems engineering, public policy implications of unmanned vehicles, and the ethical and social impact of technology.

STEVEN FREILICH

Steven C. Freilich recently retired from DuPont after a 33 year career spanning both research and business leadership. For the last 12 years of his career, he served as the Director of Materials Science in DuPont Central Research and Development. In that role, Dr. Freilich was responsible for both developing and implementing the corporate growth strategies in such rapidly moving technology areas as solar energy, energy storage, materials for displays, biomaterials, and electronic materials. He used his business and scientific experience to impact corporate growth through his knowledge of the interaction of technology with market dynamics in aiding innovation.

Dr. Freilich joined DuPont in 1983 after receiving a Ph.D. in Chemistry from Harvard University. Prior to his Director role, he led research organizations in the fields of thin film physics, materials for information storage, organic photochemistry, scientific computing, and particle science. He also held various business roles, including Global Business Manager for DuPont Titanium Technologies.

While serving as Director of Materials Science, Dr. Freilich held the additional position of Chief Technology Officer of the DuPont Electronics and Communication Platform from 2008 to 2009, and from 2009 through 2012, was appointed as the Chief Technology Advocate for North Asia. He has served on the boards of the United States Display Consortium, DuPont Photonics Technologies, and was the Vice Chair of the Advisory Panel for the Center for Revolutionary Solar Photoconversion. He has also served on the advisory boards for Sandia National Laboratory, the National Renewable Energy Laboratory, and the National Research Council of Canada. He currently is Vice Chair of the Advisory Committee for the Clean Energy Manufacturing Analysis Center at National Renewable Energy Laboratory.

Dr. Freilich resides in Kennett Square, Pennsylvania.

RALPH GOMORY

Ralph Gomory, a well-known mathematician, is currently a Research Professor at the Stern School of Business at New York University. Before joining NYU he was for many years the President of the Alfred P. Sloan foundation and before that Senior Vice President for Science and technology at IBM.

Gomory is a member of the National Academy of Science and The National Academy of Engineering. He was has awarded the National Medal of Science, and many prizes and honorary degrees in recognition of both his individual research and his technology leadership

He has served on the Science Advisory Councils of three U.S. Presidents and has been a director of a number of major corporations.

Gomory has written extensively about industrial competitiveness, about technology development, and on the nature and role of research in industry.

DAVID HOUNSHELL

David A. Hounshell is David M. Roderick Professor of Technology and Social Change at Carnegie Mellon University (Pittsburgh, Pennsylvania, USA), where he is a member of the Department of Social and Decision Sciences. He is also on the faculty of CMU's Department of Engineering and Public Policy. His research is focused at the locus of science, technology, business, and government—i.e., innovation, broadly conceived. Author of the prize-winning books *From the American System to Mass Production, 1800-1932* ((1984) and *Science and Corporate Strategy: DuPont R&D, 1902-1980* (1988), Hounshell is currently at work on a comprehensive study of industrial R&D from its origins in nineteenth-century Germany to its globalization in the twenty-first century. He is also presently engaged in a study of how the U.S. semiconductor industry is responding to the pending end to Moore's Law.

Hounshell resides in Pittsburgh and is a fan of the Pittsburgh Pirates.

WILLIAM JANEWAY

William H. Janeway is a Senior Advisor and Managing Director of Warburg Pincus. He joined Warburg Pincus in 1988 and was responsible for building its information technology investment practice. He is a Visiting Lecturer in Economics at Cambridge University and the author of *Doing Capitalism in the Innovation Economy: Markets Speculation and the State*, published by Cambridge University Press in November 2012. Dr. Janeway received his doctorate in economics from Cambridge University where he was a Marshall Scholar.

MICHAEL KATZ

Michael L. Katz is the Sarin Chair Emeritus in Strategy and Leadership at the University of California, Berkeley's Haas School of Business. Dr. Katz is also Professor Emeritus in the Department of Economics. He has published numerous articles on the economics of networks industries (particularly telecommunications and payment networks), intellectual property, and antitrust enforcement.

Dr. Katz served in the Bush Administration as Deputy Assistant Attorney General for Economic Analysis in the Antitrust Division of the U.S. Department of Justice from September 2001 through January 2003. He served in the Clinton Administration as Chief Economist of the Federal Communications Commission from January 1994 through January 1996. Dr. Katz has consulted for both governmental and private entities on competition and regulatory policy issues involving payment networks, telecommunications and information services, healthcare products, and tobacco control policy.

Dr. Katz holds an A.B. summa cum laude from Harvard University and a D.Phil. from Oxford University. Both degrees are in economics.

JAMES MCGRODDY

Jim McGroddy is a consultant and advisor to firms, universities and government on a wide variety of technical and management subjects, with a focus on telecommunications and information technology and the use of these technologies in national security, healthcare and education. McGroddy has served as an advisor to a number of government agencies. He has chaired several National Academy panels on defense and national security issues and served on other National Academy studies, including the study of DoD basic research.

McGroddy retired from IBM as a Senior Vice President, Research at the end of 1996, after leading its research laboratories from 1989 to 1995. During his tenure, he led a major restructuring of its research efforts, building a model and management system which is now widely emulated because of its effectiveness in enhancing the return on research and development investment.

Starting as a "bench scientist" at IBM, McGroddy's later career at the company focused on new methodologies to enhance the linkage of the research/development/manufacturing systems. These efforts led to accelerated introduction of new products, technologies and service offerings, including flat panel displays, parallel supercomputers, and silicon-germanium chip technology, and ultimately aided the resurgence of IBM in the early '90s.

McGroddy received a PhD in Physics from the University of Maryland and earned a BS in Physics from St. Joseph's University in Philadelphia. He is a member of the U.S. National Academy of Engineering, and is a fellow of the American Physical Society and of the IEEE.

STEPHEN MERRILL

Stephen Merrill, the longtime head of the National Academies Board on Science, Technology, and Economic Policy (STEP), has joined the Center for Innovation Policy as its first Executive Director. Merrill's extensive work on innovation policy during his 23-year-tenure as STEP Executive Director included a 2004 report on patent system reform that served as a blueprint for the America Invents Act of 2011 and the STEP program under Merrill became an important discussion forum and authoritative voice on innovation, competitiveness, intellectual property, human resources, tax, standards, research and development, and related policies. Prior to that, Merrill served as a fellow in International Business at the Center for Strategic and International Studies (CSIS), where he specialized in technology trade issues. He earlier served on various congressional staffs including that of the U.S. Senate Commerce, Science, and Transportation Committee, where he organized the first congressional hearings on international competition in the semiconductor and biotechnology industries and contributed to the Stevenson-Wydler Technology Innovation Act of 1980 and other legislation. Merrill is also a Senior Fellow at Duke University's Innovation and Entrepreneurship Initiative.

EDUARDO PORTER

Eduardo Porter writes the Economic Scene column for The New York Times. Formerly he was a member of The Times' editorial board, where he wrote about business, economics, and a mix of other matters.

Mr. Porter began his career in journalism over two decades ago as a financial reporter for Notimex, a Mexican news agency, in Mexico City. He was deployed as a correspondent to Tokyo and London, and in 1996 he moved to São Paulo, Brazil, as editor of América Economía, a business magazine.

In 2000, Mr. Porter went to work at The Wall Street Journal in Los Angeles to cover the growing Hispanic population. He joined The New York Times in 2004 to cover economics.

Mr. Porter was born in Phoenix and grew up in the United States, Mexico and Belgium.

He graduated with a degree in physics from the Universidad Nacional Autónoma de México and has an M.Sc. in quantum fields and fundamental forces from the Imperial College of Science and Technology in London. He has a son, Mateo, and lives in New York.

WILLIAM RADUCHEL

WILLIAM J. RADUCHEL is the chair of LiquidSky and Originate, a director at LiveIntent and an executive advisor to DMGT. He teaches corporate strategy at Georgetown University and formerly was chairman of Opera Software, CTO of AOL Time Warner and chief strategy officer of Sun. He is a member of the Conference of Business Economists and was chair of the Committee on Copyright and Innovation in the Digital Era for the National Academy of Sciences. He has 30 issued patents. Extensive board experience has made him an expert on corporate governance and executive compensation. After attending Michigan Technological University, which gave him an honorary D.B.A. in 2002, Raduchel received his B.A. in economics from Michigan State University in 1966 and earned his A.M.(1968) and Ph.D. (1972) degrees in economics at Harvard.

ARTI RAI

Professor Rai, Elvin R. Latty Professor of Law at Duke Law School, is an internationally recognized expert in intellectual property law, innovation policy, and administrative law. Rai has also taught at Harvard, Yale, and Penn law schools. Rai's research on innovation law and policy in biotechnology, pharmaceuticals, and software has been funded by a variety of government groups and foundations. Her numerous publications have appeared in both peer-reviewed journals and law reviews, including *Science*, *NEJM*, *Nature Biotechnology*, and the *Columbia*, *Georgetown*, and *Northwestern* law reviews. She is the editor of *Intellectual Property Law and Biotechnology: Critical Concepts* (Edward Elgar, 2011) and the co-author of a 2012 Kauffman Foundation monograph on cost-effective health care innovation.

From 2009–2010, Rai served as the Administrator of the Office of External Affairs at the U.S. Patent and Trademark Office. In that role, she led policy analysis of the patent reform legislation that ultimately became the America Invents Act and worked to establish the USPTO's Office of the Chief Economist. Prior to entering academia, Rai clerked for the Hon. Marilyn Hall Patel; was a litigation associate at Jenner & Block (patent and other litigation); and was a litigator at the U.S. Department of Justice's Civil Division. In 2011, Rai won the World Technology Network Award for Law.

Rai graduated from Harvard College, magna cum laude, with a degree in biochemistry and history (history and science), and received her J.D., cum laude, from Harvard Law School.

SHIVARAM RAJGOPAL

Shiva Rajgopal is the Kester and Byrnes Professor of Accounting and Auditing at the Graduate School of Business, Columbia University. He is incoming vice dean of research at the Columbia Business School. He is the recipient of 2006 and 2016 American Accounting Association (AAA) Notable Contribution to the Literature award, the 2006 Best Paper award from Financial Accounting Research Section of the AAA, and the 2006 and 2016 Graham and Dodd Scroll Prize given by the Financial Analysts Journal. He is the Departmental Editor of the accounting track of Management Science and an Associate Editor at the Journal of Accounting and Economics. He is widely published in accounting and finance journals and his work is frequently cited in the popular press.

HOWARD SHELANSKI

Howard Shelanski is a Professor of Law and Georgetown University and a partner in the law firm of Davis, Polk & Wardwell. From July 2013 through January 2017 he served as Administrator of the White House office of Information of Regulatory Affairs, a position to which President Obama nominated him in April 2013 and the United States Senate confirmed him in June 2013. Mr. Shelanski previous government positions include serving as Director of the Bureau of Economics at the Federal Trade Commission, as Chief Economist of the Federal Communications Commission, and as a Senior Economist to the President's Council of Economic Advisers. From 1997 through 2009 he taught at the University of California at Berkeley before moving to the Georgetown University faculty. Before beginning his academic and government career Mr. Shelanski was a law clerk to Justice Antonin Scalia of the United States Supreme Court. He earned his Ph.D. in economics and his J.D. from the University of California at Berkeley and his B.A. from Haverford College.

PIAN SHU

Pian Shu is currently a visiting scholar at MIT Sloan School of Management and an assistant professor of business administration at Harvard Business School. Her current research focuses on the origin, development, and deployment of innovative and entrepreneurial talent. She received a Ph.D. in economics from the Massachusetts Institute of Technology and a BA in mathematics and mathematical economics from Colgate University.

JEFFREY SMITH

Dr. Jeffrey Smith is a Partner in McKinsey & Company's healthcare practice in Boston. He works with biopharma companies on topics spanning R&D and commercialization of innovative new products and leads McKinsey's Center for Asset Optimization which creates R&D strategies for innovative new drugs in development. He also leads McKinsey's public health practice in the US where he works with the federal government and a range of public health organizations. Dr. Smith received his Ph.D. in biophysics from the University of Cambridge where he researched protein folding. He also holds an MBA from the Wharton School. He was a post-doctoral researcher at the National Institutes of Health where he studied protein misfolding and aggregation. Dr. Smith also founded a biotechnology company that focuses on the discovery of novel therapeutics to treat hemoglobinopathies, including sickle cell disease.

ERIC TODER

Eric Toder is an Institute Fellow at the Urban Institute and co-director of the Urban-Brookings Tax Policy Center. In this position, he oversees the Center's modeling activities and directs research on corporate and international taxation, energy taxation, tax compliance, and other tax policy issues. Dr. Toder has authored and co-authored numerous papers on tax policy, tax administration, and retirement policy issues. Prior to joining the Urban Institute, he held a number of positions in tax policy offices in the U.S. government and overseas, including service as Deputy Assistant Secretary for Tax Analysis at the U.S. Treasury Department, Director of Research at the Internal Revenue Service, Deputy Assistant Director for Tax Analysis at the Congressional Budget Office, and consultant to the New Zealand Treasury. He received his Ph.D. in economics from the University of Rochester in 1971.
