

# MIT Industrial Liaison Program Faculty Knowledgebase Report

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Work of the Future @MIT

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April 29, 2021 10:00 am - 12:00 pm

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10:00 AM

Welcome and Introduction

10:05 AM

Jump Start America  
Simon Johnson

Ronald A Kurtz (1954) Professor of Entrepreneurship  
Professor of Global Economics and Management  
MIT Sloan School of Management

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Simon Johnson is the Ronald A. Kurtz (1954) Professor of Entrepreneurship at the MIT Sloan School of Management, where he is also head of the Global Economics and Management group and chair of the Sloan Fellows MBA Program Committee. He cofounded and currently leads the popular Global Entrepreneurship Lab (GLAB) course – over the past 16 years, MBA students in GLAB have worked on more than 500 projects with start-up companies around the world.

He also works closely with Joi Ito, head of MIT's Media Lab, on the Digital Currency Initiative (DCI). Specifically, Johnson supervises research projects related to blockchain technology, and teaches a course (with Michael Casey and Brian Forde) on this fast developing business sector. Johnson is not an investor in bitcoin or any bitcoin-related startups, but he works closely with MIT students and others who want to build better companies.

Johnson is a senior fellow at the Peterson Institute for International Economics in Washington, D.C., a cofounder of BaselineScenario.com, and a member since inception of the FDIC's Systemic Resolution Advisory Committee. In July 2014, Johnson joined the Financial Research Advisory Committee of the U.S. Treasury's Office of Financial Research (OFR); he chairs the recently formed Global Vulnerabilities Working Group.

Johnson has been a member of the private sector Systemic Risk Council since it was founded by Sheila Bair in 2012; this group is now chaired by Sir Paul Tucker. From April 2009 to April 2015, he was a member of the Congressional Budget Office's Panel of Economic Advisers. In March 2016, Johnson was the third Distinguished Visiting Fellow at the Central Bank of Barbados.

"For his articulate and outspoken support for public policies to end too-big-to-fail", Johnson was named a Main Street Hero by the Independent Community Bankers of America (ICBA) in 2013. In April 2015, the Washington Examiner placed Johnson at #11 on their list of New Voices for 2015. In November 2015, Johnson joined the advisory council of Intelligence2 Debates.

Over the past seven years, Johnson has published more than 300 high impact pieces in the New York Times, Bloomberg, The Washington Post, The Wall Street Journal, The Atlantic, The New Republic, BusinessWeek, The Huffington Post, The Financial Times, and Project Syndicate.

"The Quiet Coup" received over a million views when it appeared in The Atlantic in early 2009. His book 13 Bankers: the Wall Street Takeover and the Next Financial Meltdown (with James Kwak), was an immediate bestseller and has become one of the mostly highly regarded books on the financial crisis. Their follow-up book on U.S. fiscal policy, White House Burning: The Founding Fathers, Our National Debt, and Why It Matters for You, won praise across the political spectrum. Johnson's academic research on economic development, corporate finance, and political economy is widely cited.

From March 2007 through the end of August 2008, Johnson was the International Monetary Fund's Economic Counsellor (chief economist) and Director of its Research Department. He also helped to found and run the NBER Africa Project; four volumes are forthcoming from the University of Chicago Press.

Johnson holds a B.A. in economics and politics from the University of Oxford, an M.A. in economics from the University of Manchester, and a Ph.D. in economics from MIT.

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10:20 AM

Changing workforce and economy  
Thomas Kochan  
George Maverick Bunker Professor of Management  
Professor, Work and Organization Studies  
Co-Director, Sloan Institute for Work and Employment Research  
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Thomas Kochan is the George Maverick Bunker Professor of Management, a professor of work and employment research, and the co-director of the MIT Sloan Institute for Work and Employment Research at the MIT Sloan School of Management. Kochan focuses on the need to update America's work and employment policies, institutions, and practices to catch up with a changing workforce and economy. His recent work calls attention to the challenges facing working families in meeting their responsibilities at work, at home, and in their communities. Through empirical research, he demonstrates that fundamental changes in the quality of employee and labor-management relations are needed to address America's critical problems in industries ranging from healthcare to airlines to manufacturing. His most recent book is *Shaping the Future of Work* (2016). Kochan holds a BBA in personnel management, as well as an MS and a PhD in industrial relations, from the University of Wisconsin.

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10:35 AM

Wage and earnings inequality  
Nathan Wilmers  
Sarofim Family Career Development Professor  
Assistant Professor, Work and Organization Studies  
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Assistant Professor, Work and Organization Studies

Nathan Wilmers is the *Sarofim Family Career Development Professor* and an Assistant Professor of Work and Organization Studies at the MIT Sloan School of Management. He is a member of the Institute for Work and Employment Research and affiliated with the Economic Sociology program. For the most up-to-date information on his research, please see his personal website at [www.nathanwilmers.com](http://www.nathanwilmers.com).

Wilmers researches wage and earnings inequality, economic sociology, and the sociology of labor. In his empirical research, he studies how wage stagnation and rising earnings inequality result from weakening labor market institutions, changing market power, and job restructuring. More broadly, he is interested in bringing insights from economic sociology to the study of labor markets and the wage structure. His research has been published in the *American Sociological Review*, the *American Journal of Sociology*, and *Social Forces*.

Wilmers holds a BA in philosophy from the University of Chicago and an MA and PhD in sociology from Harvard University.

10:50 AM

WFH, workers' voice and strategies  
Erin Kelly  
Sloan Distinguished Professor of Work and Organization Studies  
Professor, Work and Organization Studies  
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Sloan Distinguished Professor of Work and Organization Studies  
Professor, Work and Organization Studies

Erin L. Kelly is the *Sloan Distinguished Professor of Work and Organization Studies* at the MIT Sloan School of Management and CoDirector in the Institute for Work and Employment Research. She is also Faculty Director of the the Good Companies, Good Jobs Initiative.

Kelly's research has been published in many top sociology, management, and interdisciplinary journals and twice recognized with the Rosabeth Moss Kanter Award. [Her new book with Phyllis Moen, \*Overload: How Good Jobs Went Bad and What to Do About It\*, was published by Princeton University Press in March 2020.](#)

Kelly investigates the implications of workplace policies and management practices for firms, workers, and families with a joint focus on equity, wellbeing, and organizational performance. Previous research has examined scheduling and work-family supports, family leaves, harassment policies, and diversity initiatives in a variety of organizations and industries. Kelly's early research contributed to our understanding of which diversity policies and programs seem to change organizations and which are primarily "window dressing."

As part of the Work, Family, and Health Network, Kelly evaluated innovative approaches to work redesign with group-randomized trials in professional/technical and health care workforces. A current project with MIT Sloan colleagues investigates how schedules and staffing strategies in e-commerce warehouses impact workers' experiences, productivity, and turnover. Kelly is also interested in workers' voice on the job, and strategies for engaging workers and learning together in different work contexts. Ongoing projects explore different facets of wellbeing and engagement in low- and moderate-wage jobs, including [warehouse work](#), with the goal of identifying promising practices and designing evaluation projects that advance both scholarly and organizational goals.

Kelly is a sociologist and received her PhD from Princeton University and her BA from Rice University. She previously taught at the University of Minnesota.

11:05 AM

Workforce education  
Sanjay Sarma  
Vice President for Open Learning  
Fred Fort Flowers (1941) and Daniel Fort Flowers (1941) Professor of Mechanical Engineering



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Sanjay Sarma is the Fred Fort Flowers (1941) and Daniel Fort Flowers (1941) Professor of Mechanical Engineering at MIT. He is the first Dean of Digital Learning at MIT. He co-founded the Auto-ID Center at MIT and developed many of the key technologies behind the EPC suite of RFID standards now used worldwide. He was also the founder and CTO of OATSystems, which was acquired by Checkpoint Systems (NYSE: CKP) in 2008. He serves on the boards of GS1, EPCglobal and several startup companies including Senaya and ESSESS.

Dr. Sarma received his Bachelors from the Indian Institute of Technology, his Masters from Carnegie Mellon University and his PhD from the University of California at Berkeley. Sarma also worked at Schlumberger Oilfield Services in Aberdeen, UK, and at the Lawrence Berkeley Laboratories in Berkeley, California. He has authored over 75 academic papers in computational geometry, sensing, RFID, automation and CAD, and is the recipient of numerous awards for teaching and research including the MacVicar Fellowship, the Business Week eBiz Award and Informationweek's Innovators and Influencers Award. He advises several national governments and global companies.

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11:20 AM

Workforce Development for Advanced Manufacturing  
Lionel Kimerling

Thomas Lord Professor of Materials Science and Engineering  
Director, Microphotonics Center  
MIT Department of Materials Science and Engineering

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MIT Department of Materials Science and Engineering

Lionel Kimerling is the Thomas Lord Professor of Materials Science and Engineering at MIT and the Director of the MIT Microphotonics Center. After a PhD at MIT, he served as Captain in the USAF. He was Head, Materials Physics Research at AT&T Bell Laboratories when he joined the faculty of MIT as Professor. He has authored more than 550 technical articles, and he holds more than 75 patents in the fields of integrated photonics and semiconductor processing. At AT&T, he led the corporate-wide Silicon Materials R,D&M Technology Forum. At MIT, Kimerling was Director of the Materials Processing Center for 15 years, establishing it as the industry portal for faculty across all materials-related disciplines. The MIT Microphotonics Center brings together faculty from eight departments in the Schools of Engineering, Science, Business, and Humanities for large industry-sponsored research programs and the Communication Technology Roadmap (CTR). More than 300 industrial, academic, and government organizations have contributed to Roadmap releases, which are now merged under the Integrated Photonics System Roadmap, International (IPSR-I). Kimerling's research teams have enabled long-lived telecommunications lasers; developed semiconductor inspection and root cause diagnostic methods such as DLTS, SEM-EBIC and RF-PCD; and pioneered silicon microphotonics.

Kimerling was President, TMS; Chairman, Editorial Board of the Journal of Electronic Materials; and he has served on the Advisory Board, National Center for Photovoltaics, DOE and the National Materials Advisory Board, NRC. Kimerling is the recipient of the ECS Electronics Division award, the TMS John Bardeen Award, the MIT Perkins Award for Excellence in Graduate Advising, and the Humboldt Senior Scientist Research Award. He is a Fellow of the American Physical Society, AAAS, TMS, MRS and the U Tokyo School of Engineering.

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The 2020-2030 decade presents a significant opportunity to establish leadership in manufacturing semiconductor chips and the associated supply chain elements for subsystems and systems. Communication, computation, imaging and sensing systems are undergoing a major technology transition to distributed architectures that gather and process information and actuate responses. Application performance has scaled with aggregate improvements in "the 3 Ps", performance, power and programming, at a rate of 1000x every 10 years.

Populating the workforce with enthusiastic value generators is the most critical element in the advanced manufacturing supply chain, because manufacturing has been outsourced for two generations of workers. 'Establishing leadership' means harnessing the intellectual fervor, work intensity and commercial innovation baked into the character of the workforce and focusing it on well-defined, strategic goals. This presentation will highlight work products and best practices developed by MIT's Initiative for Knowledge and Innovation in Manufacturing (IKIM) for national, regional and company specific workforce development.

The AIM Academy project at MIT is the headquarters for the education, workforce development and technology roadmap for AIM Photonics Institute, one of the national Advanced Manufacturing Institutes. It is one of the most active programs within IKIM. Integrated Photonics is a transformative manufacturing technology, but the path to adoption and diffusion into the supply chain is fragmented. Three skill development areas consistently appear as a primary concern: technician-level test and data analysis, engineer-level design into standard foundry processes, and teaming to achieve system optimization. A hierarchy of delivery modes are required to effectively reach K-12 through industry executives; and the IKIM portfolio features TED-Ed videos, on-line courses, in-person academies, bootcamps, and prototyping labs.

11:35 AM

MIT Startup Exchange Lightning Talks

- [IQ3Connect](#) - Ali Merchant
- [Coding Dojo](#): Transforming lives through programming literacy
- [SplitSage](#) – Joshua Sarmir

Richard Wang  
CEO  
[Coding Dojo](#)