Curriculum Vitae
Erica R.H. Fuchs

1. Biographical Data

1.A Education

Degree	Discipline	University	Date
Ph.D.	Engineering Systems	M.I.T.	2006
S.M.	Technology Policy	M.I.T.	2003
S.B.	Materials Science & Engineering	M.I.T.	1999

1.B Positions

July 2021-Present
Director, Critical Technology Strategy Initiative. (October 2022-present)
Director, Moonshot, National Technology Strategy: Critical Technologies, Supply Chains, and Infrastructure. (July 2021-October 2022)
10 core faculty plus seed funding from the School of Engineering, School of Computer Science, and Heinz School of Information Systems and Public Policy.
Carnegie Mellon University.

September 2022-December 2023
Director, pilot National Network for Critical Technology Assessment. (22 project leads from 13 leading Tier I Research universities)

May 2019-Present
Research Associate, National Bureau of Economic Research

July 2007-Present
By courtesy, Department of Materials Science and Engineering (2021-present)
By courtesy, Heinz School of Information Systems and Public Policy (2017-present)
Professor (2016-Present), Associate (2012-2016), Assistant (2007-2012),
Department of Engineering and Public Policy
Carnegie Mellon University, Pittsburgh, PA

January 2017-August 2017
Faculty Director, Manufacturing Future Initiative
Carnegie Mellon University, Pittsburgh, PA

1999-2000
Research Fellow United Nations Industrial Development Organization, Beijing, China

2. Publications

2. A Archival Papers Critically Reviewed Before Publication

1. Cotterman, T., Combemale, C., Whitefoot, K, Fuchs, E. The transition to electrified vehicles: Evaluating the labor demand of manufacturing conventional versus battery electric vehicle powertrains. 2024. Accepted. *Energy Policy*. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4128130
2. Cheng, A., Fuchs, E., Karplus, V., Michalek, J. Electric vehicle battery chemistry affects supply chain disruption vulnerabilities. 2024. Accepted. *Nature Communications*.
3. Hoffman, E. Karplus, V., and Fuchs, E. Complete and Accurate? The Role of Profit Orientation in the Production of Public Health Data. 2024. Accepted. *Business & Society*.
4. Kalathil, N., Morgan, G., Fuchs, E. Short-term economic dynamism as a policy tool to address supply shortages during crises. *Industrial and Corporate Change*. 23 June 2023. https://doi.org/10.1093/icc/dtad028
5. Amaral, A., Mendoca, J., Morgan, G., Fuchs, E. National core competencies and dynamic capabilities in times of crisis: Regulation of ventilators and new market entrants in Portugal and Spain, *Research Policy*. Vol. 53 No. 104715, 2023. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3952788
6. Combemale, C., Whitefoot, K., **Fuchs, E.** 2021. Not all Technologies are Equal: Disentangling Labor Demand Effects of Automation and Parts Consolidation. *Industrial and Corporate Change*. 30 (6). **Editor's Choice. Industry Studies Best Paper Award. Christopher Freeman and Richard R. Nelson Prize.** https://academic.oup.com/icc/article/30/6/1361/6359465?login=true
7. Bonnin-Roca, J., Vaishnav, P., Mendoca, J., Morgan, G., **Fuchs, E.** 2021. Technology Forgiveness: Why emerging technologies differ in their resilience to institutional stability. *Technology Forecasting and Social Change*. 166: 120599 https://www.sciencedirect.com/science/article/abs/pii/S0040162521000317
8. Funk, P., Vaishnav, P., White, B., Davis, A., **Fuchs, E.** 2020. Individual inconsistency and aggregate rationality: Overcoming inconsistencies in expert judgment at the technical frontier. *Technology Forecasting and Social Change*. 155: 119984 https://doi.org/10.1016/j.techfore.2020.119984
9. Bonnin-Roca, J., Vaishnav, P., Mendoca, J., **Fuchs, E.** 2019. Technology cost drivers for a potential transition to decentralized manufacturing. *Additive Manufacturing*. 28: p136-151 https://doi.org/10.1016/j.addma.2019.04.010
10. Laureijs, R., **Fuchs, E.** Whitefoot, K. 2019. Is More Less: Benefits and Costs of High Variety Production in Non-Assembled Production Environments. *ASME Journal of Mechanical Design.* doi:10.111.5/1.4041943
11. Helveston, J., Karplus, V., Wang, Y., and **Fuchs, E**. 2019. Institutional Complementarities: The (Unlikely) Origins of Experimentation in China's Plus-In Electric Vehicle Industry. *Research Policy*. Vol 48. Issue 1. February 2019, 206-222 **Industry Studies Association Best Paper Award**. http://dx.doi.org/10.2139/ssrn.2817052
12. Khan, H., Hounshell, D. and **Fuchs, E.** 2018. Science Policy for the End of Moore's Law. *Nature Electronics*. Vol. 1. January 2018, 14-21. (Accepted Nov 15, 2017)

13. Bonnin-Roca, J., Vaishnav, P., Mendoca, J., Morgan, G., **Fuchs, E.** 2017. When Risks Cannot be Seen: Fostering the (safe) introduction of Metal Additive Manufacturing in Commercial Aviation. *Research Policy*. vol. 46, issue 7, 1215-1233 https://doi.org/10.1016/j.respol.2017.05.010
14. Fuchs, P., Xue, L., Zheng, P., Gallagher, K., Cowhey, P., Fuchs, E. 2017. Why China Needs Data Sharing to Address It's Air Quality Challenge. *National Science Review*. nwx059, https://doi.org/10.1093/nsr/nwx059
15. Sakti, A., Azevedo, I., **Fuchs, E.**, Michalek, J., Gallagher, K., and Whitacre, J. 2017. Consistency and robustness of forecasting for emerging technologies: The case of Li-ion batteries for electric vehicles. *Energy Policy.* Vol 106, July 2017, p. 415-426. https://doi.org/10.1016/j.enpol.2017.03.063
16. Laureijs, R., Bonnin-Roca, J., Prabha Narra, S., Montgomery, C., Beuth, J., **Fuchs, E.** 2017. Metal Additive Manufacturing: Cost Competitive Beyond Low Volumes. ASME *Journal of Manufacturing Science and Engineering.* 139(8), 081010 (May 10, 2017) (9 pages) doi: 10.1115/1.4035420
17. Bonnin-Roca, J., Vaishnav, P., Fuchs, E., and Morgan, G. 2016. Additive Manufacturing: Policy Needed. *Nature Materials*. **15**, 815–818. doi:10.1038/nmat4658
18. Engelman, C., Epple, D., Argote, L., and **Fuchs, E.** 2016. Learning by Doing in a Multi-Product Manufacturing Environment: Product Variety, Customizations, and Overlapping Product Generations. NBER Working paper No 19674. http://www.nber.org/papers/w19674 *Management Science.* 63(2):405-423. http://dx.doi.org/10.1287/mnsc.2015.2352
19. Yang, C., Nugent, R., and **Fuchs, E.** 2016. Gains from Other's Losses: Technology Trajectories and the Global Division of Firms. *Research Policy.* 54(3): 724-745. https://doi.org/10.1016/j.respol.2015.12.005
20. Ventura, S., Nugent, R., and **Fuchs, E.** 2015. Seeing the Non-Stars: (Some) Sources of Bias in Past Disambiguation Approaches and a New Public Tools Leveraging Labeled Records. *Research Policy*. **Special Issue on Data.** 44(9): 1672-1701. http://dx.doi.org/10.1016/j.respol.2014.12.010
21. Helveston, J., Liu, Y., Feit, E., **Fuchs, E.,** Klampfl, E., and Michalek, J. 2015. Will subsidies drive electric vehicle adoption in China and the U.S.? *Transportation Research Part A: Policy and Practice.* 73: March 2015 pp. 96-112.
22. Sakti, A., Michalek, J., **Fuchs, E.**, and Whitacre, J. 2014. A techno-economic analysis and optimization of Li-ion batteries for personal vehicle electrification. *Journal of Power Sources*. 273: January 2015 pp. 966-980. 10.1016/j.jpowsour.2016.09.072
23. **Fuchs, E.** 2014. Global Manufacturing and the Future of Technology. *Science.* 345(6196): 519-520.
24. Woolley, A. and **Fuchs, E.** 2011. Collective Intelligence in the Organization of Science, Invited Paper. Special Issue on New Directions in Organization Science. *Organization Science.* 22(5): 1359-1367.
25. **Fuchs, E.**, Kirchain, R., and Liu, S. 2011. The Future of Silicon Photonics – Not So Fast?: Insights from 100G Ethernet LAN Transceivers. *Journal of Lightwave Technology.* 29(15): 2319-2326.

26. **Fuchs, E.**, Field, F., Roth, R., and Kirchain, R. 2011. Plastic Cars in China? The Signifiance of Production Location over Markets for Technology Competitiveness in the United States versus the People's Repulic of China. *International Journal of Production Economics*. 132(2011): 79-92.
27. **Fuchs, E.**, and Kirchain, R. 2010. Design for Location?: The Impact of Manufacturing Off-Shore on Technology Competitiveness in the Optoelectronics Industry. *Management Science,* 56(12): 2323-2349.
28. **Fuchs, E.** 2010. Rethinking the Role of the State in Technology Development: DARPA and the Case for Embedded Network Governance, **Lead article.** *Research Policy,* 39(2010): 1133-1147.
29. **Fuchs, E.**, Field, F., Roth, R., and Kirchain, R. 2008. Strategic Materials Selection in the Automotive Body: Economic Opportunities for Polymer Composite Design. *Composite Science and Technology.* 68(9): 1989-2002.
30. **Fuchs, E.**, Bruce, E., Ram, R., and Kirchain, R. 2006. Process-Based Cost Modeling of Photonics Manufacture: The Cost-Competitiveness of Monolithic Integration of a 1550nm DFB Laser and an Electro-Absorptive Modulator on an InP Platform. *Journal of Lightwave Technology*. 24(8): 3175-3186.
31. Veloso, Francisco and **Fuchs, E.** 2002. The Future of the Asian Auto Industry: Regional Integration, Alternative Designs, and Chinese Leadership. *International Journal of Vehicle Design*. 35(1): 111-136.
32. **Fuchs, E.** and Johnsson, P. 2000. Inclusion Characteristics in Bearing Steel and During Ingot Casting. *High Temperature Materials and Processes*. 19(5): 333-344

2.B Papers in Symposium or Conference Proceedings Fully Reviewed Prior to Publication

33. Ventura, S., Nugent, R., and Fuchs, E. 2014. Hierarchical Linkage Clustering with Distributions of Distances for Large-Scale Record Linkage. *Privacy in Statistical Databases*. (Lecture Notes in Computer Science 8744), ed. J. Domingo-Ferrer, Springer, pp. 283-298.

2.C Sections or Chapters in Edited Monographs or Similar Volumes

34. **Fuchs, E.**, Combemale, C., Glennon, B., Whitefoot, K. 2022. The Weighty Manufacturing Sector: Challenges Transforming from Raw Materials to Physical Products in the Innovation Economy. Beyond 140 Characters: The Role of Innovation and Entreprenuership in Economic Growth. Edited Volume. Eds Scott Stern, Aaron Chatterji, and Josh Lerner. National Bureau of Economic Research. University of Chicago Press. https://www.nber.org/chapters/c14373
35. Azoulay, P, Goldstein, A., Kearney, M., Fuchs, E. 2018. Funding Breakthrough Research: Promises and Challenges of the "ARPA Model." National Bureau of Economic Research (NBER). Innovation Policy and the Economy Series. Editors Scott Stern and Josh Lerner. MIT Press. Volume 19.
36. Argote, L. Dennome, C. and **Fuchs, E.** 2011. Organization Learning across Boundaries: The Effect of Geographic Distribution on Organizational Learning and Knowledge Transfer. *Handbook on Organizational Learning and Knowledge Management.* Wiley-Blackwell.

37. **Fuchs, E.** 2011. DARPA Does Moore's Law: The Case of DARPA and Optoelectronic Interconnects. Invited chapter in *State of Innovation: The U.S. Government's Role in Technology Development*. Ed. by Fred Block and William Keller. Paradigm Publishers.

2.D. Other Writings (Technical reports, Testimony, and Published policy briefs)

38. Berger, A., Khan, H., Schrank, A., Fuchs, E. A new policy toolbox for semiconductor supply chains. Issues in Science and Technology. Policy Brief.
39. **Fuchs, E.** Building the Analytic Capacity to Support Critical Technology Strategy. Policy Proposal. The Hamilton Project. Brookings Institute. September 2022. Policy Proposal.
40. **Fuchs, E.,** Testimony. Hearing on Building a Resilient Economy: Shoring up Supply. Senate Committee on Banking, Housing, and Urban Affairs. March 22, 2022. Written Testimony | Oral Remarks | Video
41. Blanton, S., **Fuchs, E.** (Corresponding), Hovy, E., Mai, K. (Corresponding), Pileggi, L., Zhang, P. October 21, 2021. Innovation and Chip Redesign to Address Semiconductor Shortages in the Automotive Industry. Carnegie Mellon University Policy Brief created for the White House National Economic Council. (Corresponding) after the name indicates lead and corresponding authors. Policy Brief
42. **Fuchs, E.** and Karplus, V. 2021. A New Approach to Coordinate U.S. Critical Supply Chains in Crisis. Policy Brief. Insights derived from: "Lessons from COVID medical supply chains for critical technologies: Real-time situational data infrastructure and adaptive manufacturing ecosystems." Chatham House Rule Workshop. Carnegie Mellon University. September 10, 2021. Policy Brief | Rapporteurs Report
43. **Fuchs, E.** While missions are important, even more important are new institutions that will cut a path across them. Forum. Industrial Policy's Comeback. Boston Review | MIT Press. September 15, 2021. Policy Brief
44. **Fuchs, E.,** Testimony. Hearing on Building Regional Innovation Economies. House Committee on Science, Space, and Technology. Subcommittee on Research and Technology. June 9, 2021. Written Testimony | Oral Remarks | Video
45. **Fuchs, E.** What is a National Technology Strategy and Why the U.S. Needs One. *Issues in Science and Technology*. Next 75 Years of Science Policy Series. September 9, 2021. Policy Brief
46. **Fuchs, E.**, Karplus, V., Kalathil, N., Morgan, G. 2020. To respond to the pandemic, the government needs better data on domestic companies that make critical medical supplies. *Issues in Science and Technology*. December 18, 2020. Policy Brief.
47. **Fuchs, E.**, Karplus, V., Kalathil, N., Morgan, G. 2020. Inadequate Data on Manufacturers of Critical Medical Supplies Weakens U.S. Capabilities for Pandemic Response. Testimony. U.S. International Trade Commission. Investigation No. 332-580. COVID-19 Related Goods: The U.S. Industry, Market, Trade, and Supply Chain Challenges. September 23, 2020. Prehearing Brief | Oral Remarks | Technical Report
48. **Fuchs, E.**, Testimony. Hearing on Trade, Manufacturing, and Critical Supply Chains: Lessons from COVID-19. House Ways & Means Committee. Subcommittee on trade. July 23, 2020. Written Testimony | Oral Remarks | Video Recording of Full Hearing
49. Funk, P., Cowhey, P., Gallagher K.S., and **Fuchs, E.** Benefits and Costs of International Data Sharing: The Case of the Environment and Policy to Reduce Air Pollution. US Expert Memo

from Peter Cowhey, Erica Fuchs, and Kelly Sims Gallagher. *US-China Innovation Dialogue*. June 5, 2016.

50. **Fuchs, E.** Why the future of manufacturing matters. Blog. World Economic Forum. September 11, 2013.
51. **Fuchs, E.** (with contributions by J. Andersen, R. Laureijs, J. Chuang, S. Kurup, W. Chang, P. Bissert, K. Chow, C. LaMontagna, and X. Yan) Man or Machine? A Strategic Toolset to Quantify and Accelerate the Economic Viability of U.S. Science and Technology Adaptive Make Capabilities. Year 1 Interim Progress Technical Report. Prepared for the Defense Advanced Research Projects Agency. July 8, 2013.
52. **Fuchs, E**. Help Startups Be Gardens of Innovation. Room for Debate. Should the U.S. Seek More Tech Manufacturing? The Opinion Pages. *The New York Times*. August 6, 2012.
53. **Fuchs, E.** 2009. Remembering Comparative Advantage: Leveraging National Differences in Technology Competitiveness. Report by CMU and the Atlantic Council to the G-20 Leaders.
54. **Fuchs, E.** 2009. Cloning DARPA Successfully. *Issues in Science and Technology*. Volume XXVI. Number 1. Fall 2009.

National Academies Reports and Other Similar Peer-Reviewed Reports

55. (Director and Lead Editor) 2023. Securing America's Future: A Framework for Critical Technology Assessment. Director and lead editor: Fuchs, E.. Review moderator and editor at large: Jaffee, A. Editor and technical writer: Fletcher, C.; Special advisor for D.C. Communications: Bonvillian, B. National Network for Critical Technology Assessment.
56. (Committee Member.) 2017. *An Assessment of ARPA-E.* Science Technology and Economic Policy (STEP) Board. National Academy of Sciences.
57. (Committee Member.) 2013. *Optics and Photonics: Essential Technologies for Our Nation*. Board of Manufacturing and Engineering Design, National Materials Advisory Board, National Academy of Sciences.

Working Papers

58. Ales, L., Combemale, C., Fuchs, E., Whitefoot, K. How It's Made: A General Theory of the Labor Implications of Technological Change. Submitted to *Restud*. https://www.andrew.cmu.edu/user/ales/acfw.pdf
59. Amaral, A. Morgan, G., Mendoca, J. Fuchs, E., Should innovation-focused regulatory adaptations be centralized or decentralized? Lessons from COVID on knowledge complexity, local context, and speed. *Submitted to Research Policy.*
60. Cheng, A., Fuchs, E., Michalek, J. Power Play: Evaluating the Effect of Inflation Reduction Act Subsidies on Electric Vehicle Battery Technology Choices and Supply Chain Vulnerabilities. Target: *Nature Energy*.
61. Laureijs, R., Syversen, C., Fuchs, E., and Whitefoot, K. Mix and Match: Exploring Person-Product Match Effects in High Variety Manufacturing. Target: *American Economic Review*.
62. Cotterman, T., Fuchs, E., Small, M., Whitefoot, K. The Transition to Electrified Vehicles: Implications for the Future of Automotive Manufacturing and Worker Skills and Occupations. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4169404

63. Khan, H., Hounshell, D. and **Fuchs, E.** Scaling Moore's Wall: A Public Private Partnership in Search of a Technological Revolution. http://ssrn.com/abstract=2497218 *Revise and Resubmit. Industrial and Corporate Change.*
64. Treado, C. and **Fuchs, E.** Manufacturing Variety: Scale Economies in a Low-Volume High Mix Environment. http://ssrn.com/abstract=2619490

Book Draft

65. Michalek, J. and **Fuchs, E.** *Quantitative Entrepreneurship: Analysis for New Technology Commercialization.*

5. Grants and Contracts Awarded to Date

5.A Principal Investigator

1. **Central Intelligence Agency.** ICWERX. $74,000
2. A policy toolkit for technology transitions: Lessons from Semiconductors. **Schmidt Futures**. $300K
3. With co-PIs Brynjolfsson, Evans, Murdick, Khan, Moran, Conti, Mosinska, Reynolds, Olivetti, Whitefoot, Sugimoto, Husbands-Fealing. Building a National Capacity for Critical Technology Assessment:Fostering Multilateral Problem-Solving around Critical Technology Policy Challenges **Alfred P. Sloan Foundation.** $250K
4. With co-PIs Brynolfsson, Evans, and Sugimoto. A National Network for Critical Technology Assessment: A Pilot. **National Science Foundation, Technology Innovation and Partnerships Directorate**. September 15, 2022-Septembr 14, 2023. $3,998,952.
5. With co-PIs Hovy, Mai, Rose and Zhang. Launching a Critical Technology Analytics Collective: Roadmapping technical pathways to supply resilience in safety-critical robust semiconductors. **Lockheed Martin Corporation**. $50,000 gift.
6. Building a National Capacity for Cross-Mission Critical Technology Analytics: Timely situational awareness of U.S. and global technology capabilities Proposal for a Center-Planning Workshop. **Alfred P. Sloan Foundation.** $48,745
7. With co-PIs Karplus, Hovy, Blanton, Mai, Whitacre, Krishnan, Zhang. And technical advisors Pileggi, Nock. Engineering Competitiveness: Critical Technologies, Supply Chains, and Infrastructure. **College of Engineering Moonshot** with seed funding from the Schools of Engineering (4 departments), Computer Science (1 department), and the Heinz College of Information Systems and Public Policy. **Carnegie Mellon University.** July 1, 2021-June 30, 2023. $1,300,000
8. With co-PIs Valerie Karplus and Granger Morgan. An Open-Source Decision Tool to Identify and Support Responses to Emergent Constraints in the Medical Supply Chain. **Block Center for Technology and Society. Carnegie Mellon University**. $60,000.
9. Accelerating U.S. Competitiveness in Integrated Photonics: Quantifying Workforce Training Needs. **SUNY (Albany) / U.S. Air Force Research Lab (AFRL).** Contract funded through AIM Photonics. $100,000

10. Worker Resilience and Innovation in U.S. Manufacturing. **The Keystone Research Center.** $40,000 gift.
11. EPP Project Course on Technology Development Zones: The Case of Neighborhood 91. **The Barnes Group Advisors.** $5000 gift.
12. EPP Project Course on Technology Development Zones: The Case of Neighborhood 91. **Allegheny County Airport Authority.** $20,000 gift. (university unable to accept gift)
13. With Co-PIs Laurence Ales, Brian Kovak, Katie Whitefoot. Not all Technologies are Equal: Measuring and Disentangling the Labor Effects of Technology Change in Manufacturing. **NSF Science of Science and Innovation Policy Program.** $649,959
14. With co-PIs Alex Davis, Parth Vaishnav, and Aarti Singh. Accelerating Navy Readiness: Expert Guided Machine Learning Algorithms for AM Candidates. **U.S. Navy (NAVSUP)** Sole Source Agreement funded through America Makes. July 2019-November 2019. $250,000. ($200,000 to CMU, $50,000 to America Makes.)
15. With co-PI Katie Whitefoot. The Cost of Complexity and the Value of Simplification. **Kennametal Corporation.** September 2018-August 2019. $140,000 gift.
16. With co-PIs Laurence Ales, Brian Kovak, and Katie Whitefoot. Technology Change in Manufacturing and Labor Outcomes: Not all Technologies are Equal. **National Bureau of Economic Research** (funds from the Kaufmann Foundation). July 2018-June 2019. $20,000
17. With co-PIs Alex Davis and Parth Viashnav. Identifying Product Opportunities: Expert heuristics in scientific decision-making. CMU **Manufacturing Futures Initiative**. September 2017-August 2018. $107,091.
18. With co-PI Katie Whitefoot. Technology Change in Manufacturing: Implications for the Magnitude & Nature of Work. CMU **Manufacturing Futures Initiative**. September 2017-August 2018. $99,434
19. With co-PI Katie Whitefoot. The Cost of Complexity and the Value of Simplification. **Kennametal Corporation**, July 2017-June 2018. $105,067 gift.
20. With co-PI Katie Whitefoot. Is More Less? Firm and Workforce Implications of High-Variety Production in the Greater Pittsburgh Region. **PITA.** January 2016-December 2017. $69,679.
21. With co-PI Katie Whitefoot. The Cost of Complexity and the Value of Simplification. **Kennametal Corporation**, July 2016-June 2017. $105,067.
22. With co-PI Katie Whitefoot. Science Policy Research Report: On the Relationships between Manufacturing, Innovation, National Competitiveness, and the Magnitude and Nature of Work. **NSF Science of Science and Innovation Policy Program**, July 2017 – June 2018, $50,000.
23. With Vice Provost Gary Fedder. Founding Faculty Director and Lead on Research and Engagement. Manufacturing Futures Initiative. July 2017-July 2020. $9,250,000. (Part of a larger $20,000,000 grant given to the university, as listed under the next section.)
24. CAREER: Rethinking National Innovation Systems – Economic Downturns, Offshoring, and the Global Evolution of Technology. **NSF Science of Science and Innovation Policy Program**, May 2011 – May 2016, $624,517.
25. With co-PI D. Hounshell. Beyond SEMATECH as the Model for Public-Private Partnerships: Insights from the Semiconductor Research Corporation (SRC). **National Institute of Standards and Technology (NIST)**. Sept. 2012-Aug. 2015. $311,405.

26. Man or Machine? A Strategic Toolset to Quantify and Accelerate the Economic Viability of Emerging U.S. Science & Technology Adaptive Make Capabilities. **Defense Sciences Office (DSO)**, **Defense Advanced Research Projects Agency (DARPA).** Collaborative Grant with the Army Research Office. June 2012 – May 2015. Year 1: $188,034, Year 2: $231,626.
27. With co-PI D. Hounshell. RAPID: What Model for Public-Private Partnerships?: Lessons from Existing Consortia for Administration of the U.S. National Network for Manufacturing Innovation. **NSF Science of Science and Innovation Policy Program.** October 2012 – September 2013. $83,974
28. With co-PI J. Michalek. Institutionalizing & Disseminating Engineering Entrepreneurship **Dean's Innovation Across the Curriculum Development Fund. Carnegie Institute of Technology**. Carnegie Mellon University. Sept. 2012 – Aug. 2013. $63,265.
29. Global Entrepreneurship and the Future of Advanced Manufacturing. **Corporate Sponsorship. Ciena Corporation.** $25,000 gift.
30. Global Entrepreneurship and the Future of Advanced Manufacturing. **Corporate Sponsorship. Kennametal Corporation.** $15,000 gift.
31. With co-PIs J. Michalek and Y. Liu. GOALI: Think Globally, Act Locally: China and the Future of Energy-Saving Vehicle Technologies. **NSF Science of Science and Innovation Policy Program** and **NSF Grants Opportunities for Academic Liason with Industry (GOALI).** June 2011 – June 2013. $192,816.
32. With co-PIs L. Argote, and D. Epple. Learning Across Product, Workgroup, and Geographic Boundaries, **NSF Science of Science and Innovation Policy** & **Innovation and Organization Science Programs**, January 2010 – January 2013, $707,807
33. The Role of DARPA in Seeding and Encouraging New Technology Trajectories, Robert W. Gore Materials Innovation Case Study Project, **Chemical Heritage Foundation**, June 2009 – May 2010, $9000
34. Quantifying the Resilience of Innovation Ecosystems: The Impact of Manufacturing Offshore on Firm Technology Trajectories and the Institutional Locus of Innovation, **NSF Science of Science and Innovation Program**, September 2008 – September 2010, $208,068; *2009 NSF Research Highlight; August 2010 Feature in SciSIP newsletter.*
35. The Global Disintegration of Firm Activities: Understanding the Managerial and Technological Underpinnings of Firm Outsourcing, **Berkman Faculty Development Fund**, June 2008 – May 2010, $10,000
36. An Innovation Ecosystem in Flux: Innovation Trajectories and Institutional Shifts in the Optoelectronics Industry, **Oak Ridge Associated Universities (ORAU) Ralph E. Powe Junior Faculty Enhancement Award**, June 2008 – May 2010, $10,000
37. The Global Disintegration of Firm Activities: Understanding the Managerial and Technological Underpinnings of Firm Outsourcing, **Sloan Industry Studies Site Visit Grant**, The Sloan Foundation, June 2008 - May 2009, $5000
38. INFORMS session: Knowledge Networks & the Emergence of New Technologies, **Sloan Industry Studies Travel Grant**, Sloan Foundation, Oct. 12-15, 2008, Speakers' travel.
39. Decision Tools for Engineering Design and Entrepreneurship, **Corporate Sponsorship. RHM International**, January 2008 – May 2010, $5000 gift plus all-expense trip for three-student project team to collect data on-site at the company in China (~$10,000).

5.B Co-Principal Investigator

40. PI: Anthony Rollett, co-PIs Fuchs, E., Beuth J., Holm, L. Shimada, Wicker, To, Lewandowski, Stebner, Narra. Development of an Ecosystem for Qualification of Additive Manufacturing Processes and Materials in Aviation. **NASA-ULI.** September 2019-August 2022. $5,975,829
41. PI: Kovak, Brian, Co-PIs Ales, L., Fuchs, E., Whitefoot, K. Emerging Manufacturing Technologies and the Demand for Skills. **Russell Sage Foundation**. Grant # 1808-07627. April 1, 2019 – December 31, 2022. $149,244
42. PI: Kovak, Brian, Co-PIs Ales, L., Fuchs, E., Whitefoot, K. Emerging Manufacturing Technologies and the Demand for Skills. **CMU Manufacturing Futures Initiative**. September 2018-August 2019. $132,931.
43. PI: Davis, Alex, Co-PIs Fuchs, E., Kara, B., Poczos, B., Singh, A., Whitefoot, K. Accelerating Metal Additive Manufacturing Commercialization and Military Readiness: Expert guided machine learning to identify candidate parts and subassemblies for additive manufacturing. **CMU Manufacturing Futures Initiative**. September 2018-August 2019. $177,799
44. PI: Whitefoot, Katie, Co-PI Fuchs, E. Cost-competitive Mass Customization for Non-Assembly Manufacturing Environments in the Greater Pittsburgh Region. **PITA.** January 1, 2018-December 31, 2018. $70,000.
45. PI: Fedder, Gary (Vice Provost of Research), co-PI Fuchs, E. Manufacturing Futures Initiative. **Richard King Mellon Foundation.** July 2017 – June 2020, $20,000,000. (Founding Faculty Director and Lead on $9.25M for research and engagement listed in the previous section, the remaining $10,750,000 was for a building for the initiative.)
46. PI: Mendonca, Joana, CMU Co-PIs: Morgan, G., Fuchs, E., Apt, J, Fischbeck, P. Innovation Dynamics in aeronautics and Embraer in Evora: towards a distributed platform for entrepreneurial initiatives, new employment, and skills development. **Portugal Science and Technology Foundation.** June 2014-May 2018. $627,354
47. PI: Lewandowski, J. Co-PIs: Beuth, J., Fuchs E. plus 15 additional industry, university, and government participants. Rapid Qualification Methods for Powder Bed Direct Metal AM Processes. **National Additive Manufacturing Innovation Institute. (**now renamed **America Makes)** $278,982
48. PI: Whitacre, J. Co-PIs: Fuchs, E. and Michalek, J. Manufacturing Modeling Tools for Domestic Energy Storage Production: Process Based Cost Modeling. **Research for Advanced Manufacturing in Pennsylvania.** Industry Partner: Aquion Energy $26,440

5.C Faculty Associate

49. Lead investigator on one and co-investigator on a second of eight total sub-projects. PI: Jack Beuth, co-PIs: Tony Rollett, Liz Holm, L. Burak Kara, Barnabas Poczos, Amir Farimani, Aarti Singh. Artificial Intelligence Enabled Additive Manufacturing: Enhancing expeditionary Manufacturing Capabilities up to the Point-of-Need for the US Army, ARL Cooperative Agreement, $3,540,000, July 2020-June 2021
50. PI: Fedder, Gary. Lead, One of three projects that together created the body of the winning "Tech Belt" National Additive Manufacturing Innovation Initiative (NAMMI) Proposal (now "America Makes" in the Manufacturing USA Institutes); Project title: E. Fuchs, S. Smith, (CMU); D. Frangepol, E. Zimmers (Lehigh U.); T Harrison, PSU) Computational Models to Guide and Accelerate Commercialization. "Tech Belt" –involved over 30 entities (university, industry, and government) from the

Ohio-Pennsylvania-West Virginia region; was the first winning Manufacturing USA proposal nationally, awarded $30 million in federal funding, matched by another $40 million from the consortium.

51. PI: Veloso, F. E. Fuchs, and J. Michalek, Decision Tools for Engineering Design and Entrepreneurship, Course Outreach to Carnegie Mellon University's Technology Transfer Office, **R.K. Mellon Foundation**, August 2008 – August 2009, $25,000

6. Professional Activities

6.A Select Seminars and Presentations

1. Lead speaker (with select co-leads) Securing America's Future. Bloomberg Editorial Office
2. Lead speaker (with select co-leads) Securing America's Future. House China Select Committee Staff.
3. Keynote. New Thinking in Industrial, Innovation, & Technology Policy: Perspectives from Developed & Developing Countries. Columbia University.
4. Panelist. Industrial Policy. Economics for Inclusive Prosperity. March 30-31, 2023.
5. Speaker. How to address critical technology infrastructure at the federal level. (Other roundtable speaker was Sameera Fazili, Deputy Assistant to the President and Deputy Director, National Economic Council, the White House. Moderated by Eric Schmidt, Co-founder, Schmidt Futures, former CEO and Chairman, Google.) Reimagining Industrial Policy for the Service and Tech Sectors. Brookings Hamilton Project.
6. Panelist. Manufacturing Policy and Innovation. Manufacturing Policy Initiative. Indiana University. January 20, 2022
7. Panelist. Conference on The Rise of Global Supply Chains, National Bureau of Economic Research. December 10, 2021.
8. Seminar. Science Policy Research Unity (SPRU). University of Sussex. October 8, 2021.
9. Keynote. Varieties of Technological and Organizational Changes in the Age of Automation and Digitalization. ARTES 4.0 Institute of Economics. May 27, 2021.
10. Accelerating U.S. Competitiveness in Integrated Photonics. AIM Photonics Manufacturing USA Institute. January 12, 2021. Continued on January 26, 2021.
11. Discussant. Fort, T. et al. Co-Location of Production and Innovation: Evidence from the United States. Atlanta Workshop on International Economics. November 14, 2020.
12. Testimony. Inadequate Data on Manufacturers of Critical Medical Supplies Weakens U.S. Capabilities for Pandemic Response. Testimony. U.S. International Trade Commission. Investigation No. 332-580. COVID-19 Related Goods: The U.S. Industry, Market, Trade, and Supply Chain Challenges. September 23, 2020.
13. Speaker. American Affairs | Boston Review. Industrial Policy Meeting. September 21, 2020.
14. Discussant. Kim and Feng. Does Trade Liberalization Induce Innovation? China's WTO Accession and Novel Knowledge Recombination. 8th NBER-AIEA Conference on Innovation and Entrepreneurship. August 24, 2020.
15. Testimony. Hearing on Trade, Manufacturing, and Critical Supply Chains: Lessons from COVID-19. House Ways & Means Committee. Subcommittee on trade. July 23, 2020.
16. Panelist. Critical Considerations for Restarting a More Resilient and Robust U.S. Economy Post COVID-19. Carnegie Mellon University. Virtual Hill Briefing. June 12, 2020.

17. Opening Plenary. Challenges and Opportunities Arising from COVID-19: Industry Studies Perspectives. June 5, 2020.
18. Keynote Panel. "Fourth Industrial Revolution: Whose Opportunity? Whose Threat?" Opening Plenary. Atlanta Conference on Science and Innovation Policy. October 14, 2020.
19. Speaker. The Weighty Manufacturing Sector: Challenges in Innovation in the Transformation of Raw Materials to Physical Goods. National Bureau of Economic Research. Pre-Conference: Beyond 140 Characters: The Role of Innovation and Entrepreneurship in Economic Growth. January 6-8, 2020. July 22-23, 2019.
20. Panel. National Bureau of Economic Research Innovation Division Summer Institute Panel on "National Innovation Leadership: Is it changing and does it matter?"
21. Keynote Speaker. Launch by the Joint Research Centre of the European Commision (JRC)'s report on China: Challenges and Prospects from an Industrial Powerhouse. Brussels, Belgium. May 23, 2019.
22. Opening Plenary Session on What governments can do to support more radical innovation. Nesta Innovation Growth Lab Annual Conference. Berlin, Germany. May 22, 2019.
23. Seminar. Not All Technological Change Is Equal: How the Separability of Tasks Mediates the Effect of Technology Change on Labor Demand. Entrepreneurship Unit. Harvard Business School. October 1, 2019.
24. Speaker and Participant. Expert Workshop with the European Commission on the Implementation of the European Innovation Council ("a DARPA-like organization focused on market-oriented technologies). Workshop launched and concluded by Carlos Moedas, European Commissioner for Research, Science, and Innovation. Brussels, Belgium. February 22, 2019.
25. Invited Seminar. Global Manufacturing and the Future of Technology and Jobs. Bloomberg Headquarters. Washington, D.C. November 14, 2018.
26. Keynote Speaker. Another Brick in the Wall. [sic] DARPA Electronic Resurgence Initiative Launch Event. July 23, 2018.
27. Funding Breakthrough Research: Promises and Challenges of the "ARPA Model." (paper joint with Azoulay, Goldstein, Kearney) NBER Conference on Innovation Policy and the Economy. Washington, D.C. April 17, 2018

6.B Government Committees and Board Memberships

1. Member. Board of Trustees. National Semiconductor Technology Center. 2023-Present.
2. Appointed. President Biden's White House Advisory Committee for Trade Policy and Negotiations. 2023-Present.
3. Member. M.I.T. Corporation Visiting Committee. M.I.T. Institute for Data, Systems, and Society (IDSS) (which includes the M.I.T. Technology Policy Program (TPP)) 2020-present.
4. Advisory Editorial Board. *Research Policy*. (Journal) 2014-Present
5. Leadership Council. AIM Photonics. Manufacturing USA Institute. 2022-2023
6. External Review Committee. Graduate programs in the School of Global Policy and Strategy at UC San Diego. August 6, 2021.
7. Co-Chair (joint with Eric Lander.) US Science and Innovation Leadership for the 21st Century: Challenges and Prospects. National Academies Consensus Study. October 2019-December 2020) https://www8.nationalacademies.org/pa/projectview.aspx?key=51225. Committee received a stop work order from the Department of Defense after its first three meetings.

8. Academic Advisory Board (AAB). M.I.T. Institute for Data, Systems, and Society (IDSS) and M.I.T. Technology Policy Program (TPP). (Advise IDSS as a whole and also join the subgroup focused on IDSS's TPP program.) 2018-2020.
9. Scientific Advisory Board (SAB). Institute for Research on Innovation & Science (IRIS) 2018-2020.
10. Member. National Academies Materials and Manufacturing Board. 2017-2019
11. Member, Future of Production Global Futures Council, World Economic Forum. 2017-2019
12. Member, Advanced Materials Global Agenda Council, World Economic Forum. 2017-2019
13. Committee Member. Evaluation of ARPA-E. Board on Science, Technology, and Economic Policy. The National Academy of Sciences. 2015-2017.
14. Expert. Innovation Dialogue. US-China Strategic and Economic Dialogue. October 2015-July 2016
15. Judges (Advisory) Panel, United States Patent and Trademark Office and American Institutes for Research PatentsView Initiative. 2015.
16. Member-at-Large. U.S. Advisory Committee to the International Commission for Optics. The National Academies. International Council for Science. February 14, 2013 – December 31, 2015
17. Committee Member. Committee on *Harnessing Light: Capitalizing on Optical Science Trends and Challenges for Future Research*. Board of Manufacturing and Engineering Design, National Materials Advisory Board, National Academy of Sciences. February 2011 – July 2012.
18. Participant. National Academies of Engineering. Invitation-Only Workshop. *Making Value: Integrating Manufacturing, Design, and Innovation to Thrive in the Changing Global Economy.* Washington, D.C. June 11-12, 2012.
19. Member. Committee of Visitors. Science of Science and Innovation Policy Program 3-year Review. National Science Foundation. Washington, D.C. December 15-16, 2011
20. 30-minute brief on the future of advanced manufacturing to Secretary Gary Lock's National Advisory Committee on Innovation and Entrepreneurship. Department of Commerce. December 8, 2010.
21. One of 23 Invited Participants. President's Council of Advisors on Science and Technology (PCAST) Advanced Manufacturing "Discussion Workshop". Led by Eric Schmidt, Chairman and CEO of Google, Inc. and Shirley Ann Jackson, President of Rensselaer Polytechnic Institute. Washington, D.C. March 19, 2010.

6.C Select Reviewer Activities

2024. National Academies Report. AI and the Future of Work. 2024. (in progress)
2021. NSF Review Panel. Future of Manufacturing Solicitation. June 22-23, 2021.
2020. NSF Review Panel. Future of Manufacturing Solicitation. July 28-29, 2020.
2019. National Academies Report. Strategic Long-Term Participation by DOD in Its Manufacturing USA Institutes. 2019.
2017. DOE Review Panel. Industrial Assessment Centers Field Manager Program submissions. Office of Energy Efficiency and Renewable Energy. Department of Energy. February 2017.
2016. NIST Review Panel. Manufacturing Extension Program submissions. National Institute of Standards and Technology. May 2016.

2012. National Academies Report. Rising to the Challenge: US Innovation policy for the global economy. 2012.

6.F Select Awards, Prizes, Honors

2024. Christopher Freeman and Richard R. Nelson Prize
2017. Reading High School Alumni Association, Distinguished Alumnus
2015. Philip L. Dowd Fellowship Award
2013. Carnegie Institute of Technology Dean's Early Career Fellow
2012. World Economic Forum Young Scientist (top 40 under 40 internationally; in conjunction with the International Academies Panel)
2011. Greeted President Barack Obama on behalf of Carnegie Mellon University along with Carnegie Mellon President Jared Cohon during President Obama's visit to announce the Advanced Manufacturing Partnership. Provided a synopsis of my offshoring research.
2010. SPIE (Society for the Advancement of Light) 2010 "Women in Optics"
2008. Oak Ridge Associated Universities Ralph E. Powe Junior Faculty Enhancement Award

7. Teaching and Education

7.A Courses Taught

1. Science and Innovation leadership for the 21st Century (previously: Global Competitiveness: Firms, Nations, and Technology Change)
2. Quantitative Entrepreneurship (previously: Decision Tools for Engineering Design and Entrepreneurship)
3. Department of Engineering and Public Policy Undergraduate Junior | Senior Project

7.B. Student Research Projects

(a) Undergraduate Projects

1. Jacob Feldgoise, "The relationship between quantity and quality of undergraduate education in China and Chinese foreign students pursuing undergraduate education in the U.S. Spring 2020-Spring 2021. Heinz Honors Thesis. Employment: Junior Fellow, Carnegie Endowment for International Peace (2021-2022), Center for Security and Emerging Technology. (August 2022-present)
2. Xiyu Yang, "Coding of optoelectronic inventor assignee changes from CV data." 5/4/15-1/23/17.
3. Alexander Lucci, "Accuracy of Hand-matching of patent data using inventor CVs." May 15, 2013 – October 2013.
4. Angela Ng. "Careers of optoelectronic inventors post-bubble," Feb 2012-Aug 2013.
5. Carl Glazer, "Born Global? Start-up location decision-making and the future of advanced manufacturing." January 2012-March 2013. (EPP Tom Johnson and CMU Summer Undergraduate Research Fellowship recipient for Summer 2012.); "Careers of optoelectronic inventors post-bubble," April 2011-December 2012.
6. Neha Nandakumar, "The quality of inventor disambiguation of patenting algorithms." June 2011-February 2013.

7. Willis Chang, “Process-Based Cost Modeling of the Economic Viability of Gas Turbine Blades for the Aerospace Industry.” Fall 2012. “Careers of optoelectronic inventors post-bubble,” Fall 2010 - Spring 2011
8. Sabrina Larkin. “Optoelectronic inventor careers post-bubble,” May 2012-Aug 2012.
9. Stephanie Hsuan Kao. “Predicting career states of optoelectronic inventors in telecommunications firms post-offshoring.” September 2011-May 2012.
10. Jane Sun, “Technology directions in monolithic versus hybrid integration photonic patenting,” Fall 2010-Spring 2011. January 2012.
11. Derek Lessard, “Careers of optoelectronic inventors post-bubble,” Sept-Nov 2011.
12. Farjad Zaim, “Careers of optoelectronic inventors post-bubble,” April-August 2011
13. Dan Murby, “Careers of optoelectronic inventors post-bubble,” April-May 2011
14. Sandeep Patel, “The Resiliency of the Innovation Ecosystem,” Fall 2009-Spring 2010 (became a MISM masters student in Fall 2010.)
15. Jack Wang, “The Relationship between Manufacturing and Jobs,” Spring 2010
16. Alex Chrichton, EPP-CMU Patent Inventor Matching System, Spring 2010
17. Peter Pong, “The Resiliency of the Innovation Ecosystem,” Fall 2008-Spring 2009
18. Jason Mirra, ‘Learning in Geographically Distributed Organizations,” Fall 2008
19. Tubtim Eawchoowongse, “Learning in Geographically Distributed Organizations,” Fall 2008
20. Luke Kryznowski, “The Role of DARPA in Seeding and Encouraging New Technology Trajectories,” Summer 2008

(b) Master’s Students

1. Kate McMahnon, “Institutional and Technological Conditions for New Technology Commercialization: Quantum Dots and Carbon Nanotubes” (Co-advisor with Daniel Armanios, Department of Engineering and Public Policy.) Employment: ORISE Science and Technology Scholar, Vehicle Technologies Office, Office of Market Development, International Affairs, Department of Energy.
2. Michael Jiang, “Process-Based Cost Modeling of the Economic Viability of Gas Turbine Blades for the Aerospace Industry: Adding Arcam and Stellite” Fall 2013
3. Sangyoung Cho, “Process-Based Cost Modeling of the Economic Viability of Gas Turbine Blades for the Aerospace Industry: Adding Arcam and Stellite” Fall 2013
4. Ria Laureijs, “Process-Based Cost Modeling of the Economic Viability of Gas Turbine Blades for the Aerospace Industry.” Fall 2012
5. Jessica Chuang, “Process-Based Cost Modeling of the Economic Viability of Gas Turbine Blades for the Aerospace Industry.” Fall 2012
6. Sreeram Kurup Unnikrishna Kurup, “Process-Based Cost Modeling of the Economic Viability of Gas Turbine Blades for the Aerospace Industry.” Fall 2012
7. Christina Onarato, “Location Decision Factors in U.S. Solar Manufacturing Firms,” Fall 2011.
8. Jonathan Bates, “Process-Based Cost Modeling of CdTe Thin Film Solar Technologies,” Fall 2011.
9. Sandeep Patel, “The Resiliency of the Innovation Ecosystem,” Fall 2010
10. Edward Lynch-Bell, “Process-Based Cost Modeling of Stationary Battery Production,” Summer 2009 (co-advised with Jay Whitacre).

(c) Ph.D. Students

11. Alex Newkirk, Lead advisor. (co-advised with Granger Morgan).
12. Wilson Martinez Diaz. 50-50 Co-advised with Christophe Combemale
13. Anthony Cheng, Equally co-advised with Valerie Karplus and Jeremy Michalek. September 2021-present.
14. Evan Adcock, "The economics of process windows in metal additive manufacturing." Co-advisor with Tony Rollett (Rollett = lead). Spring 2021-Spring 2022.
15. Elina Hoffman, "Rapid Coronavirus Testing Mobilization: an analysis of the local socio-technical factors influencing technology access, distribution, and management." Equal co-advisor with Valerie Karplus. Summer 2020-present.
16. Nikhil Kalathil, "The antecedents to pivoting in response to large demand shocks with high social costs: the case of COVID-19 medical supplies." Lead advisor. (co-advised with Granger Morgan). Summer 2020-present.
17. Afonso Amaral, "Entry barriers to new business entry in response to large demand shocks: the case of ventilator production in the European Union." (co-advisor with Granger Morgan and Joanna Mendoca, Mendoca = lead) Summer 2020-present.
18. Turner Cotterman, "Win-win pathways for vehicle electrification for labor demand and decarbonization." (equal co-advisor with Mitch Small, lead advisor for second paper.) Spring 2020-May 2022. McKinsey Corporation.(July 2022-Present)
19. Tracey Ziev, "Techno-economic analysis of additively manufactured heat exchangers." Thesis committee member. (Advised by Parth Vaishnav and Tony Rollet.) Fall 2020-present.
20. Ashley Orr, "The labor implications of technology change in manufacturing" (Lead advisor, transferred to Heinz at the end of first year) Septmber 2018-May 2019.
21. Patrick Funk, "Expert Heuristics for Identifying Part Opportunities in Metal Additive Manufacturing" (50-50 co-advised with Alex Davis, Department of Engineering and Public Policy.) September 2016 - January 2020. Employment: Director of Advanced Manufacturing, Tuscano Machine (July 2019 - August 2020), Statistician at Center for Biologics Evaluation and Research, Food and Drug Administration. (2021-Present) and Head of Curirculum Design, Veritas AI. (part time 2021-present)
22. Christophe Combemale, "The labor implications of technology change in manufacturing." (50-50 co-advised with Katie Whitefoot, Departments of Mechanical Engineering and Engineering and Public Policy.) September 2016-May 2022. Employment: Research Faculty Carnegie Mellon University.
23. Ria Laureijs, "The Cost of Complexity and the Value of Simplification." January 2016-present. (50-50 co-advised with Katie Whitefoot, Departments of Mechanical Engineering and Engineering and Public Policy.) January 2016-May 2020. Postdoctoral Fellow May 2020-October 2020. Employment: Bain & Co. (October 2020-present)
24. Jaime Bonnin Roca. "Additive Manufacturing in Aerospace Applications." September 2014-Jan 2018. (Co-advisor with Granger Morgan, Department of Engineering and Public Policy and Manuel Heitor, Instituto Superior Tecnico, Technical University of Lisbon) Employment: Post-doctoral Fellow, Institute for Manufacturing (IfM), Department of Engineering, University of Cambridge (Jan 2018-Dec 2018); Assistant Professor, Department of Industrial Engineering and Innovation Sciences, Eindhoven University of Technology (January 2019 – present)

25. Jeff Anderson. “Man or Machine? A Strategic Toolset to Quantify and Accelerate the Economic Viability of Emerging U.S. Science & Technology Adaptive Make Capabilities” August 2012-August 2013. (Lead Advisor.)
26. Hassan Khan. “Beyond Sematech as the model for public-private partnerships: Insights from the Semiconductor Research Corporation for the administration of the NIST Advanced Manufacturing Technology Consortia Program.” (Lead Advisor. Co-advised with David Hounshell; Social and Decision Science Department.) (August 2012-December 2017) Employment: Operations Strategist, KeepTrukin (Dec 2017-July 2018); Associate, McKinsey Corporation (August 2018-2020), NPI Operations Program Manager, Apple. 2020-2022. Semiconductor Executive in Residence. National Network for Critical Technology Assessment 2022-2023. Department of Commerce. 2023-Present.
27. John Helveston, “Think Globally, Act Locally: China and the Future of Energy Savings Vehicle Technologies” (50-50 co-advised with Jeremy Michalek) September 2011-August 2016. Employment: Post-doctoral fellow, Institute for Sustainability, Boston University (September 2016-August 2018); Assistant Professor, Department of Engineering Management & Systems Engineering, School of Engineering & Applied Sciences, George Washington University (September 2018-Present).
28. Apurba Sakti, “Quantification of Li-Ion Electric Vehicle Battery Performance and Cost Trajectories.” March 2011-December 2013. (Co-advisor. Lead advisors: Jeremy Michalek, Departments of Mechanical Engineering and Engineering and Public Policy; Jay Whitacre, Departments of Materials Science and Engineering and Engineering and Public Policy.) Employment: Post-doctoral associate, Research Scientist, M.I.T. Energy Initiative, (2014-2022), Data Science Advisor, Albemarle Corporation (2022-present.)
29. Samuel Ventura, “Methods Matter: Revamping Inventor Disambiguation Algorithms with Classification Models and Labeled Inventor Records.” June 2010-July 2014. (Co-advisor. Lead advisor: Rebecca Nugent, Dept. of Statistics) Employment: Visiting Professor, Carnegie Mellon University (2015-2017); Director of Hockey Research for the Pittsburgh Penguins of the National Hockey League and Affiliate Faculty, Carnegie Mellon University (2017-2021.) Vice President of Hockey Strategy and Research, Buffalo Sabres. 2021-present.
30. Eyiwunmi Akinsanmi, “The Resiliency of the Innovation Ecosystem: Technology Directions and Productivity During Economic Downturn,” August 2009-June 2014. (Lead advisor. Co-advised with Ray Reagans, M.I.T. Sloan School of Management) Employment: Associate, Engagement Manager, Vice President Client Development, McKinsey & Company (2014-2021). Vice President, Card, Capital One. (2021-present.)
31. Chia-Hsuan Yang “Gains from Others’ Losses: Technology Trajectories and the Global Division of Firms,” July 2009-June 2014 (Lead advisor. Co-advised with Rebecca Nugent, Dept. Statistics) Employment: Consultant to RHM International, 2015; Research Scientist, New York University, 2016-2018, Assistant Professor, James Madison University. 2018-2022.
32. Carolyn Denomme, “The Benefits of Bounded Diversity: Organizational Learning in a Multi-Product Manufacturing Environment,” August 2007-December 2013 (Lead advisor. Co-advised with Linda Argote and Dennis Epple, Tepper School of Business)

Employment: Medallia 2014-2018. Senior Quantitative User Experience Researcher. Google, Inc. 2018-Present.

33. Timothee Doutriaux, "The Resiliency of the Innovation Ecosystem: The Impact of Offshoring on Firm vs. Individual Technology Trajectories," August 2007-May 2009 (Lead advisor. Co-advised Sept 2008 – Jan 2009 with Francisco Veloso) Employment: McDermott Will & Emery LLP
34. Matthew Hamilton. "The Cooperative Role of Formal and Informal Institutions in Regional Innovation Systems." August 2007-August 2008 (Dissertation Committee) Employment: Wellspring Worldwide

(d) Post-Doctoral Students

35. Parth Vaishnav, "Additive Manufacturing Policy" (Co-advised with Granger Morgan) Employment: Assistant Professor, School for Environment and Sustainability. University of Michigan.
36. Chia-Hsuan Yang "Gains from Others' Losses: Technology Trajectories and the Global Division of Firms," June 2014-Present. (Lead advisor) Employment: see Ph.D.
37. Eyiwunmi Akinsanmi, "The Resiliency of the Innovation Ecosystem: Technology Directions and Productivity During Economic Downturn," June 2014 (Lead advisor) Employment: see Ph.D.
38. Carolyn Denomme, "The Benefits of Bounded Diversity: Organizational Learning in a Multi-Product Manufacturing Environment," January 2013-present (Lead advisor. Co-advised with Linda Argote and Dennis Epple, Tepper School of Business) Employment: see Ph.D.

8. Select Media

2024. Erica Fuchs: Turning a Policy Idea into a Pilot Project. Issues in Science and Technology Podcast.
2023. US draws up plans for new national body to monitor R&D strengths and weaknesses. Science | Business.
2023. A call for disruptive change in how the government assesses technology. Federal News Network.
2023. New report identifies pathways to strengthen US competitiveness in key technology areas. National Science Foundation News.
2023. What the electric car transition really means for autoworkers. Axios
2023. Auto workers worry it take less labor to build electric cars. CNN Business.
2023. Understanding America's Greatest Vulnerabilities. Peter Coy. New York Times.
2023. 2022's seismic shift in US tech policy will change how we innovate. David Rotman. MIT Technology Review.
2020. Why tech didn't save us from covid-19. David Rotman. MIT Technology Review.
2020. We're not prepared for the end of Moore's Law. David Rotman. MIT Technology Review.
2018. New blue-collar jobs will survive the rise of AI. Craig Torres. Bloomberg.
2011. Location matters in manufacturing. David Rotman. MIT Technology Review.