

Eamon Duede

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Education

Ph.D. Philosophy & Ph.D. History and Philosophy of Science, *University of Chicago*, 2017 - 2023 (expected)
Department of Philosophy & Committee on Conceptual and Historical Studies of Science, (Joint Ph.D.)

Fellow, AI-enabled Molecular Engineering of Materials and Systems for Sustainability,
Pritzker School of Molecular Engineering, University of Chicago, 2021 - Present

M.A. Humanities (Philosophy), *University of Chicago*, 2008 - 2011

B.A. Philosophy (with honors), *Loyola University Chicago*, 2003 - 2007

Research Areas

Specialization: Artificial Intelligence & Machine Learning | Trust & Trustworthy AI | Philosophy of Science

Competence: Logic | Epistemology | History of Science | Sociology of Science

Manuscripts in Review

Eamon Duede. "Deep Learning and Representational Models" (Revise & Resubmit)

Eamon Duede, Misha Teplitskiy, Karim R. Lakhani, & James A. Evans. "Being Together in Place as a Catalyst for Scientific Advance" (Revise & Resubmit at *Research Policy*)

Eamon Duede & James A. Evans. "The Social Abduction of Science"

Zhi Hong, J. Gregory Pauloski, Aswathy Ajith, Eamon Duede, Kyle Chard & Ian Foster. "ScholarBERT: Bigger is Not Always Better"

Peer Reviewed Journal Articles

Eamon Duede. "Instruments, Agents, & Artificial Intelligence: Novel Epistemic Categories of Reliability" *Synthese* (Forthcoming)

Eamon Duede. "Deep Learning Opacity in Scientific Discovery" *Philosophy of Science* (Forthcoming)

Misha Teplitskiy, Eamon Duede, Michael Menietti, and Karim R. Lakhani. "How status of research papers affects the way they are read and cited." *Research Policy*, 2022

Media Coverage: *Times Higher Education*, *LSE Impact Blog*

Feng Shi, Misha Teplitskiy, Eamon Duede, and James A. Evans. "The Wisdom of Polarized Crowds." *Nature Human Behavior*, 2019

Media Coverage: *CNN*, *Scientific American*, *Harvard Business Review*, *Forbes*, *Nature*, *Nautilus*, *New Scientist*, *Daily Mail*, *UChicago News*

Eamon Duede and Victor Zhorin. "Convergence of Economic Growth and the Great Recession as Seen From a Celestial Observatory." *EPJ Data Science*, 2016

Media Coverage: *UChicago News*

Misha Teplitskiy, Grace Lu, and Eamon Duede. "Amplifying the Impact of Open Access: Wikipedia and the Diffusion of Science." *Journal of the Association for Information Science and Technology*, 2016

Winner: Best Student Paper, 2015, *Association for Information Science & Technology*, special interest group for *Measurement of Information Production & Use*

Media Coverage: *MIT Tech Review*, *LSE Impact Blog*

Peer Reviewed Conference Proceedings

Yadu Babuji, Kyle Chard, Eamon Duede, and Ian Foster. "Safe Collections and Stewardship on Cloud Kotta." *Safe Data '17 workshop at IEEE eScience '17*, 2017

Yadu Babuji, Kyle Chard, and Eamon Duede. "Enabling Interactive Analytics of Secure Data using Cloud Kotta." *Science Cloud '17 workshop at ACM International Symposium on High-Performance Parallel and Distributed Computing*, 2017

Yadu Babuji, Kyle Chard, Aaron Gerow, and Eamon Duede. "Cloud Kotta: Secure and Scalable Data Analytics in the Cloud." *IEEE BigData '16*, 2016

Yadu Babuji, Kyle Chard, Aaron Gerow, and Eamon Duede. "A Secure Data Enclave and Analytics Platform for Social Scientists." *IEEE eScience '16*, 2016

Misha Teplitskiy, Grace Lu, and Eamon Duede. "The Transmission of Scientific Knowledge to Wikipedia." *International Association for the Advancement of Artificial Intelligence Conference on Weblogs and Social Media (ICWSM'15 Oxford, UK)*, 2015

Aaron Gerow, Bowen Lou, Eamon Duede, and James A. Evans. "Classification and Link Prediction in a Text-Mined Hypergraph of Academic Relationships." *SocInfo '15*, 2015

Refereed Conference Presentations

"Deep Learning Opacity in Scientific Discovery", *The American Philosophical Association Central Division 120th Annual Meeting*, Colloquium Paper, Denver, CO., 2023 (Scheduled)

"Deep Learning Opacity in Scientific Discovery", *Philosophy of Science Association (PSA 2022) 28th Biannual Meeting*, Pittsburgh, PA., 2022 (Scheduled)

"Distance Matters in Science and Scholarship", *8th International Conference on Computational Social Science (IC²S²)*, Chicago, IL., 2022

"Accelerating Computational Social Science with ScholarBERT", *8th International Conference on Computational Social Science (IC²S²)*, Chicago, IL., 2022

"Ethical Frameworks for Balancing Bystander Risk with Public Health Priorities in Social Network Research", *Sunbelt 2022*, Cairns, Australia, 2022

"Digital Analogues", *Social Sci Foo*, 2022 (Virtual due to COVID-19)

"Being Together in Place as a Catalyst for Scientific Advance", *Seminars in Economic Geography*, 2022 (Virtual due to COVID-19)

"Being Together in Place as a Catalyst for Scientific Advance", *Networks 2021: A Joint Conference of Sunbelt and NetSci*, 2021 (Virtual due to COVID-19)

"Citations and Impact: Evidence from ground-truth measures of influence", *2020 Bibliometrics and Research Assessment Symposium*, National Institutes of Health, 2020 (Virtual due to COVID-19)

"Distance Matters in Science and Scholarship", *11th Annual International Science of Team Science Conference*, Duke University, Durham, NC, 2020 (Virtual due to COVID-19)

"Deep Neural Networks and the Philosophy of Science", *Overcoming Opacity in Machine Learning*, Society for the Study of Artificial Intelligence and the Simulation of Behaviour (AISB) annual convention, St. Mary's University, London, 2020 (Cancelled due to COVID-19)

"Do Citations Measure Influence?", *17th International Conference on Scientometrics & Informetrics*, Rome, Italy, 2019

"What do Citations Measure?" *Innovation Growth Lab*, Berlin, Germany, 2019

"Why (almost) Everything We Know About Citations is Wrong: Evidence from Authors", *23rd International Conference on Science and Technology Indicators (STI 2018)*, Leiden, Netherlands, 2018

"Why Citations Don't Mean What We Think They Mean: Evidence from Citers", *4th Annual International Conference on Computational Social Science*, Northwestern University, Evanston, IL., 2018

"The Wisdom of Polarized Crowds", *4th Annual International Conference on Computational Social Science*, Northwestern University, Evanston, IL., 2018

"Do Citations Measure Influence?", *MIT Economic Sociology Working Group*, MIT, Cambridge MA., 2017

"Wisdom of Politically Polarized Crowds", *Meeting of the Society for the Social Studies of Science (4S)*, Boston, 2017

"Wisdom of Polarized Crowds", *Collective Intelligence Conference*, NYC, 2017 (Poster)

"Convergence of Economic Growth and the Great Recession as Seen From a Celestial Observatory", *Mind Bytes 2017*, Chicago, 2017 (Poster)

"Amplifying Open Access: Wikipedia and the Diffusion of Science", *Quantifying Science* a workshop at the *Conference on Complex Systems*, Tempe, 2015

"Proposing Links in a Mined Hypergraph of Academics", *110th Annual Meeting of the American Sociological Association*, Chicago, 2015

"The Transmission of Scientific Knowledge to 50 Wikipedias: Coverage and the Role of Accessibility", *9th International Conference on Web and Social Media*, Oxford University, Oxford, UK., 2015

Honours, Awards, Grants

Named "Rising Star in Data Science", *Data Science Institute*, University of Chicago, 2022

Fellow, AI-enabled Molecular Engineering of Materials and Systems for Sustainability, *National Science Foundation*, 2021 - 2023

HiPSS Prize Lectureship, 2022

Fellow, Diverse Intelligences Summer Institute, 2021

(PI) *Latent Knowledge Capture on Covid-19 Literature*, Google, 2020 (\$20,000)

(Co-PI) *Engineering Opportunity: Identifying optimal skill and relationship mixtures for individual, enterprise, and regional prosperity*. Center for Data and Computing, w/ James Evans, Lingfei Wu, Matt Gee, 2019 (\$50,000)

(Workshop Grant) *When Technology Transforms Society: Considering the Societal and Ethical Impacts of Quantum Computing and AI*. Center for Data and Computing, w/ Chihway Chang, Daniel Bowring, Brian Nord, 2019 (\$15,000)

LinkedIn Economic Graph Research Awardee, 2017

Fishbein Fellowship, 2017 - 2022

University of Chicago Social Sciences Fellowship, 2017 - 2020

Winner: Best Student Paper, 2015, *Association for Information Science & Technology*, special interest group for *Measurement of Information Production & Use* for "Amplifying the Impact of Open Access: Wikipedia and the Diffusion of Science."

Amazon Research Award, 2015 (\$50,000)

Departmental Honors B.A. in Philosophy, *Loyola University of Chicago*

Invited Talks, Panels, & Workshops

Symposium Paper Commentary: "Functional Psychology and the Computer Model of Mind", by Howard Callaway, *The American Philosophical Association Eastern Division 119th Annual Meeting*, Montreal, Quebec, Canada, 2023 (Scheduled)

"AI in Society: Inductive Risk and the Problem of Value Alignment", *Practical Philosophy Workshop*, University of Chicago, Chicago, IL., 2023 (Scheduled)

"Optimizing AI for the Human Loop", *Harnessing Data for Materials Symposium*, Chicago, IL., 2022

"Quantifying Scholarly Engagement with Artificial Intelligence", *Parsl funcXfest 2022*, Chicago, IL., 2022

"Deep Learning Opacity in Scientific Discovery", *The International Philosophy of Biology Working Group*, University of Texas at Austin, 2022 (Virtual due to COVID-19)

"Instruments, Agents, and Artificial Intelligence: Novel Epistemic Categories of Trust", *Theoretical Philosophy Workshop*, University of Chicago, Chicago, IL., 2022

"Being Together in Place as a Catalyst for Scientific Advance", *Seminars in Economic Geography*, 2022 (Virtual due to COVID-19)

Discussant: "Evolution and the Metabolism of Error: Biological Practice as Foundation for a Scientific Metaphysics", by William Wimsatt, *History and Philosophy of Science Workshop*, University of Chicago, 2021 (Virtual due to COVID-19)

Panel Moderator: "Interdisciplinary Data Science Panel" at *Rising Stars in Data Science Workshop*, 2021 (Virtual due to COVID-19)

"Distance Matters in Science and Scholarship", *ParslFest 2020*, 2020 (Virtual due to COVID-19)

"Diverse Intelligences, Distance, & the Logic of Influence", *Crossref*, 2020 (Virtual due to COVID-19)

"Deep Neural Networks and the Philosophy of Science", *Theoretical Philosophy Workshop*, University of Chicago, Chicago, IL., 2020

"Distance Matters in Science and Scholarship", *Laboratory for Innovation Science*, Harvard University, Cambridge, MA., 2020

Discussant: "Horizontal Persistence and the Complexity Hypothesis", by Aaron Novick, *History of Human Sciences*, University of Chicago, 2020

Discussant: "Generative Entrenchment and Modularity", by William Wimsatt, *History of Human Sciences*, University of Chicago, 2020

Discussant: "Affect and Inference: Genealogies of Affect Recognition in AI", by Alex Campolo, *Affect and Emotions Workshop*, University of Chicago, 2020

"Diverse Intelligences, Distance, & the Logic of Influence.", *Workshop in the History and Philosophy of Science*, University of Chicago, Chicago, IL., 2019

"Word Embedding with Python" *Data Therapy*, University of Chicago, 2019

"Model Realism and Theory Detection" *Center for Data Science and Computing Research*, University of Chicago, 2019

"Roads of Influence" *Laboratory for Innovation Science*, Harvard University, 2019

"Model Realism and Theory Detection" *Environmental Data Science Seminar Series*, University of Chicago, 2019

"Social Syllogisms Drive the Logic of Scientific Advance", *Workshop in the History and Philosophy of Science*, University of Chicago, Chicago, IL., 2018

"The Wisdom of Politically Polarized Crowds" *Center for Data Science and Computing Research*, University of Chicago, 2018

"How We Cite, and What It Means for Measuring the Value of Science: Survey Evidence from 12,000 Authors", *Laboratory for Innovation Science*, Harvard University, Cambridge, MA., 2018

"Big Data, Innovation, and Insights into the Complexities of the Scientific Enterprise" at *Science Works: Measuring the Innovation Output of Science*, Netherlands, 2017

"Hacking the Web of Science" at *ALA 2017*, Chicago, 2017

"The Wisdom of Politically Polarized Crowds" at *WikiCite 2017*, Vienna, Austria, 2017

Panelist: "Co/Eval" at *Converge: Disciplinarity and Digital Scholarship*, Los Angeles, 2017

Panel Moderator: "Computation and analytics are driving innovation across disciplines in new and interesting ways" at *Mind Bytes 2017*, Chicago, 2017

"Computational Social Science" at *Research Computing Center*, University of Chicago, 2017

"Delphi: Leveraging Research Analytics to Understand and Navigate the Research Enterprise", *The John Templeton Foundation*, Philadelphia, 2016

"Toward a Theory of Peer Review", *PLOS*, San Francisco, 2016

"Science of Peer Review", *PLOSCast*, San Francisco, 2016

"Science of Science", *PLOSCast*, Berlin, Germany, 2016

"Data and Machine Enabled Science", *Globus World*, Argonne National Lab, 2015

"A Search for Knowledge About Knowledge", *Center for Robust Decision Making on Climate and Energy Policy*, University of Chicago, 2014

"Knowledge Lab", *Computation Institute Student Engagement Lightning Talk*, University of Chicago, 2013

Other Publications

"Citation counts reinforce the influence of highly cited papers and nudge us towards undervaluing those with fewer", *The London School of Economics: Impact Blog*, 2022

"Harnessing Polarized Minds", *Nature: After the Paper*, 2020

"Finding Wisdom in Politically Polarized Crowds", *Nature: Behind the Paper*, 2019

"Are Politically Diverse Teams More Effective?", w/ Feng (Bill) Shi, Misha Teplitskiy, and James A. Evans, *Harvard Business Review*, 2019

"Wikipedia is significantly amplifying the impact of Open Access publications", *The London School of Economics: Impact Blog*, 2015

(A 'Top Post' of 2015)

Professional Service

Co-Organized with James A. Evans and Rebecca Willett: "Trusted Intelligence in Society Workshop", 2022 - Present

Special Advisor, *University of Chicago Division of the Social Sciences*, 2021 - Present

Co-Organized with James A. Evans the "Technology Session" of the *American Sociological Association*, 2021

Co-Organized with Chihway Chang, Daniel Bowring, Brian Nord: "When Technology Transforms Society: Considering the Societal and Ethical Impacts of Quantum Computing and AI" *Workshop*, Chicago, 2019

Research Mentor *Data and Computing Summer Lab & Computation Institute Summer Internship Program*, 2014 - 2020

Coordinator, "Seminar on Important Things", *Committee on the Conceptual and Historical Studies of Science*, University of Chicago, 2018 - 2019

Special Advisor, *University of Chicago Research Development Services*, 2017 - Present

Special Advisor, *ARETE*, University of Chicago, 2014 - 2017

Co-Director with Kyle Chard and Alison Brizius of the *Computation Institute Summer Internship Program*, 2014 - 2018

Co-Organized with Ian Foster and Julia Lane: "Safe data: A workshop on paradigms and platforms for safe analysis of sensitive data", a one day workshop at *eScience2017*, Auckland, New Zealand, 2017

Co-Organized with Feng Shi and Valentin Danchev: "Knowledge Networks in Science and Technology", a Satellite Symposium at *NetSci 2017*, Indianapolis, 2017

Co-Organized with Rayid Ghani and Joe Walsh: "Computational Social Science & Public Policy Colloquium", a monthly speaker series co-organized with *Knowledge Lab* and the *Center for Data Science & Public Policy*, Chicago, 2017

Chicago Innovation Exchange Advisory Group, 2013 - 2016

Co-Organized with Katy Börner and James Pringle: "Web of Science as Research Dataset", a two-day workshop organized with *Thomson Reuters*, Bloomington, 2016

Co-Organized "B³: Big Questions, Big Data, Big Computation", a joint conference with *Microsoft Research*, Chicago, 2016

Co-Organized with James A. Evans and Dashun Wang: "International Symposium on the Science of Science", a two-day conference held at the *Library of Congress*, Washington D.C., 2016

Organized "About Discovery Engines: Under the Hood", a monthly workshop series at the *University of Chicago's Computation Institute*, 2015 - 2016

Co-Organized, "Information, Interaction, and Influence", a two-day workshop co-organized with *Knowledge Lab* and *Digital Science* at the University of Chicago, 2014

Co-Organized with *hack@uchicago*, "Fall 2014 Hackathon", a two-day, data science focused, event featuring tools and techniques workshops. Chicago, 2014

Co-Organized "In the Loop: A City Data and Digital Manufacturing STEM Learning Project", a 6 week course on computer programming, data analysis, and digital fabrication for Chicago high school students. Chicago, 2014

Peer Review(er)

Proceedings of the National Academy of Sciences (PNAS) | Philosophy of Science | American Journal of Sociology (AJS) | Minds and Machines | PLoS One | Philosophy & Technology | ACM FAccT

Teaching & Advising

The Science and Philosophy of Artificial Intelligence (Designed & Sole Instructor), *University of Chicago*, (2021 - 2022)

B.A. Thesis Advisor to Bobby Zhang, *University of Chicago*, (2019 - 2020)

Ethics in the Digital Age (TA), *University of Chicago*, (Fall 2020)

Modern Logic and the Structure of Knowledge (TA), *University of Chicago*, (Winter 2020)

Elementary Logic (TA), *University of Chicago*, (Fall 2019)

Philosophy of Quantum Mechanics (TA), *University of Chicago* (Winter 2019)

Computer Science Graduate Practicum Advisor, *University of Chicago* (2014 - 2017)

"In the Loop: A City Data and Digital Manufacturing STEM Learning Project", a 6 week course on computer programming, data analysis, and digital fabrication for *Chicago Public Schools* high-school students (2014)

Elementary Logic (Sole Instructor), *Harold Washington College* (2011, 2012, 2013)

Introduction to Philosophy (Sole Instructor), *Harold Washington College* (2011, 2012, 2013)

Introduction to Ethics (Sole Instructor), *Harold Washington College* (2011, 2012, 2013)

Media Coverage of Research

“The London School of Economics: Impact Blog”, *The London School of Economics: Impact Blog*, 2022
 “FAREED’S TAKE: Democrats win with a big tent”, *CNN*, 2020
 “Finding Wisdom in Politically Polarized Crowds”, *Nature: Behind the Paper*, 2019
 “Are Politically Diverse Teams More Effective?”, *Harvard Business Review*, 2019
 “Wikipedia and the Wisdom of Polarized Crowds: A lesson in how to break out of filter bubbles”, *Nautilus*
 “The Wisdom of Crowds Requires the Political Left and Right to Work Together”, *Scientific American*
 “Wikipedia encourages healthy debate among people with different political views”, *Daily Mail*, 2019
 “Wikipedia’s civil wars show how we can heal ideological divides online”, *New Scientist*, 2019
 “Academics cite work they don’t know particularly well”, *Times Higher Education*, 2018
 “Testing Economics From the Celestial Observatory”, *UChicago News*, 2016
 “Science of Peer Review”, *PLOSCast*, 2016
 “Science of Science”, *PLOSCast*, 2016
 “The Impact of Open Access Scientific Knowledge”, *Brookings TechTank*, 2016
 “Why Wikipedia + Open Access = Revolution”, *X_b MIT Technology Review*, 2015
 “Wikipedia, open access and knowledge dissemination”, *OpenScience.com*, 2015
 “Wikipedia is significantly amplifying the impact of Open Access publications”, *The London School of Economics: Impact Blog*, 2015

Technical Skills

Python, R, \LaTeX
 HPC for Big Data

Languages

Natural: English (Native) | German (Working)

Dissertation

Title: Epistemics of AI-Infused Science

Committee: Kevin Davey (Chair), Tom Pashby, James A. Evans, Ian Foster

Abstract: My dissertation is about epistemic trust in Artificial Intelligence in scientific contexts. In it, I offer novel interventions in the budding epistemology of AI for science. While the use of AI has helped scientists overcome the complexity of historically intractable scientific problems, it has recently become clear that the use of current AI systems in science is met with a number of epistemological and social challenges. These challenges undermine scientists’ ability to trust in the

reliability of AI. Yet, very little philosophical work has been done to articulate the fundamental nature of these challenges, let alone specify what plausible and satisfying solutions might look like. The four core papers of this dissertation aim at just that, and seek collectively to A) broaden and deepen our understanding of the unified and interrelated nature of the challenges for scientific trust in AI, B) propose solutions, and C) articulate what this all means for the opportunities and benefits that AI has to offer science and society.

Other Employment

Special Advisor, *Knowledge Lab*, University of Chicago, 2017 - Present

Founder, *Philosophic Ai*, 2015 - Present

Executive Director, *Knowledge Lab*, University of Chicago, 2013 - 2017

Co-Founder and CTO, *Practice Prism*, 2015 - 2017

Administrator, *The Metaknowledge Research Network*, 2013 - 2016

Co-Founder and CEO, *SwiftDates*, LLC., 2012 - 2013

Sr. Director, *HR-Meter International*, 2007 - 2013

Instructor of Philosophy, *Harold Washington College*, 2012 - 2013

References

Available upon request

Last updated: recently enough...