

DANA MATTHIESSEN

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Minnesota Center for Philosophy of Science
746 Heller Hall
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Areas of Specialization: General Philosophy of Science; History and Philosophy of Biology;
History and Philosophy of Technology

Areas of Concentration: Bioethics; Philosophy of Medicine; Philosophy of Race; Early Modern
Natural Philosophy

ACADEMIC APPOINTMENTS

2023–present	Minnesota Center for Philosophy of Science , Postdoctoral Associate
2022–23	University of Pittsburgh , Visiting Lecturer, History and Philosophy of Science
2021–22	Pittsburgh Center for Philosophy of Science , Program Assistant

EDUCATION

2022	University of Pittsburgh , PhD in History and Philosophy of Science Chair: Sandra Mitchell
2015	Georgetown University , M. A. in Philosophy
2009	Wesleyan University , B. A. in Philosophy

ACADEMIC TEACHING

Independent Instructor

University of Pittsburgh

Morality and Medicine (6 sections, 2019, 2020, 2021, 2023)

Mind and Medicine (3 sections, 2022)

Race—History, Biology, Psychology, Philosophy (1 section, 2021)

Magic, Medicine, and Science (1 section, 2018)

Georgetown University

Philosophy of Music (1 section, co-taught, 2015)

Guest Speaker

Philosophy of the Natural Sciences (University of Wisconsin-Madison, 2024)

Teaching Assistant and Discussion Leader

University of Pittsburgh

Mind and Medicine (TA/DL, 2017)

Nature of Emotions (TA/DL, 2016)

Georgetown University

Intro to Logic (TA, 2014)

Intro to Ethics (TA/DL, 2014)

Intro to Philosophy (TA/DL, 2013)

Intro to Philosophy (TA, 2013)

Intro to Ethics (TA, 2012)

Mentorship

University of Minnesota

Academic Mentor for philosophy graduate students working in philosophy of science (2023–25)

University of Pittsburgh

Teaching Mentor for history and philosophy of science graduate students (2020–21)

Georgetown University

Logic Tutor for philosophy graduate students (2014)

Professional Development

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| 2024 | Center for Educational Innovation Formal Recognition for Teaching-Related Professional Development, University of Minnesota |
| 2017 | American Association of Philosophy Teachers Inclusive Pedagogy Workshop, University of Pittsburgh |

SERVICE/PROFESSIONAL CONTRIBUTIONS

Reviewing and referee work

Ongoing	Reviewer for • <i>Philosophy of Science</i> , • <i>British Journal for Philosophy of Science</i> , • <i>Studies in History and Philosophy of Science</i> , • <i>Synthese</i> , • <i>History and Philosophy of the Life Sciences</i> , • <i>Theoria</i> , • <i>European Journal for Philosophy of Science</i> , • <i>Journal for General Philosophy of Science</i>
2024	External referee for Philosophy of Race undergraduate textbook proposal
2023	Teaching peer reviewer for Prof. Mark Borrello, University of Minnesota
2014	External referee for P.-A. Braillard and C. Malaterre (eds.), <i>Explanation in Biology</i> (Springer, 2015)

Committee and organizational work

2024	Search Committee Member, Minnesota Center for Philosophy of Science 2024 postdoctoral appointment
2022	Assistant Organizer, Pittsburgh Summer Program (PSP6) for underrepresented students in philosophy of science
2020	Volunteer, Pittsburgh Summer Program (PSP4) for underrepresented students in philosophy of science
2018-2019	Co-Organizer, Pop-up Idea Kitchen, event series aimed at fostering conversations between graduate students in sciences and humanities
2015-2022	Member, University of Pittsburgh Graduate MAP Chapter
2014-2015	Member, Georgetown University Graduate MAP Chapter

PROFESSIONAL ORGANIZATION MEMBERSHIPS

American Association of Philosophy Teachers
American Philosophical Association
Philosophy of Science Association
Society for the Philosophy of Science in Practice
International Society for the History, Philosophy, and Social Studies of Biology
Society for the History of Philosophy of Science

PUBLICATIONS

Invited

- Forthcoming **Understanding Phenomena Through Opaque Models: Machine Learning and Integrative Practices in Structural Biology**, in D. Rowbottom, A. Curtis-Trudel, and D. Barack, *The Role of AI in Science: Epistemological and Methodological Studies*, Routledge.
- Forthcoming **Representational Content in Minds and Models: Latent Influences and Explanatory Challenges**, in Z. Kondor & I. Danka (eds), *Representation in Ab/Use*.

Peer Reviewed

- 2024 **Crystallizing Techniques: Sample Preparations, Technical Knowledge, and the Characterization of Blood Crystals, 1840–1909**, *History and Philosophy of the Life Sciences*
- 2023 **Observations, Experiments, and Arguments for Epistemic Superiority in Scientific Methodology** (w/ Nora Boyd), *Philosophy of Science* 91: 111–131
- 2022 **Empirical Techniques and the Accuracy of Scientific Representations**, *Studies in the History and Philosophy of Science, Part A*, 94: 143–157
- 2019 **The Rise of Cryptographic Metaphors in Boyle and Their Use for the Mechanical Philosophy**, *Studies in the History and Philosophy of Science, Part A*, 73: 8–21
- 2017 **Mechanistic Explanation in Systems Biology: Cellular Networks**, *British Journal for the Philosophy of Science*, 68(1): 1–25
- 2017 **Causal Concepts Guiding Model Specification in Systems Biology**, *Disputatio, Special Issue on Causality and Modeling in the Sciences*, 9(47): 499–527

Currently Under Review

What's in a Model? Empirical Practice and the Informativeness of Scientific Representations

Review Articles

- Forthcoming **Inference and Representation: A Study in Modeling Science**, by Mauricio Suárez, *Philosophy of Science*.

- 2024 **History and Philosophy of Structural Biology Symposium Summary**, *Proceedings of the Seventeenth International Congress on Logic, Methodology and Philosophy of Science and Technology* (co-authors: Agnes Bolinska and Jacob Neal)
- 2016 **Review of P. Huneman (ed.), *Functions: Selection and Mechanisms***, in *History and Philosophy of the Life Sciences* 38(1): 161–164

CONFERENCES AND TALKS

Conferences/Symposia Organized

- 2025 Co-Organizer, **Pragmatism and Measurement: New Directions**, University of Pittsburgh Center for Philosophy of Science
- 2024 Co-Organizer, **Measurement Across the Life Sciences: Conceptual Issues**, Philosophy of Science Association 2024 Conference
- Co-Organizer, **Measurement Across the Life Sciences: Conceptual Issues**, Society for the Philosophy of Science in Practice 2024 Conference
- 2022 Committee Member, **Institutions and the Scientific Research Agenda**, University of Pittsburgh Center for Philosophy of Science

Invited Talks

- 2024 Panelist, **Explanation and Gravitation: Boyle, Newton, and Early Modern Science in Dialogue**, Traveling Early Modern Philosophy Organization
- 2023 **What Makes Scientific Models Informative?**, UMN History of Science, Technology, and Medicine Colloquium Series
- 2023 **Reciprocal Influence of Modeling and Experiment in the Large-Scale History of Protein Structure**, International Union of History and Philosophy of Science and Technology Symposium Series, 17th International Congress on Logic, Methodology and Philosophy of Science and Technology (CLMPST)

Refereed Presentations

- 2024 **High-Throughput Biology and the Epistemology of Measurement**, Philosophy of Science Association
- Measurement in High-Throughput Biology: Beyond the “Objective” and “Data-Driven” Ideals**, Society for the Philosophy of Science in Practice (SPSP)

- Understanding Through Coordinated Practices: Uses of Deep Learning Algorithms in Structural Biology**, Machine Learning, Explain Yourself! Conference
- Uses of Deep Learning in Structural Biology**, Sixth Annual Scientific Understanding and Representation Conference
- 2023 **Observations, Experiments, and Arguments for Epistemic Superiority in Scientific Methodology**, Philosophy of Experiment Workshop at Stockholm University
- Pragmatic Representational Content**, Fifth Annual Scientific Understanding and Representation Conference
- 2022 **Technical Understanding and Representational Content: How Experimentation Informs the Interpretation of Models**, Fourth Annual Scientific Understanding and Representation Conference
- Empirical Techniques and the Accuracy of Scientific Representations**, American Philosophical Association Pacific Division
- 2021 **Dynamics of Modeling and Empirical Techniques in Protein Crystallography**, International Society for the History, Philosophy, and Social Studies of Biology (ISHPSSB)
- 2018 **Decoding the Secrets of Nature: Robert Boyle and Cryptographic Metaphors in Seventeenth Century Science**, History of Science Society
- Two Dogmas of Representationalism**, Society for Philosophy of Science in Practice (SPSP)
- Shaping Patterns into Structures: Protein Science and the Mobility of Data**, American Philosophical Association Pacific Division
- 2016 **Cartesian Cryptography and Norms of Scientific Explanation**, History of Philosophy of Science Conference
- Einstein and the Foundations of Geometry: A Deflationary Approach**, Irvine–Pittsburgh–Princeton Conference on the Conceptual and Mathematical Foundations of Physics
- 2015 **Mechanistic Explanation in Systems Biology: Cellular Networks**, International Society for the History, Philosophy, and Social Studies of Biology (IHPSSB)

Causality and Underdetermination in Models of Biological Networks,
Causality and Modeling in the Sciences Conference

Predictive Brains and Mental State Representations, Social Minds Graduate
Conference

Analogy, Abstraction, and Symbolism in Early Rationalist Epistemology,
British Society for the History of Philosophy Conference

Poster Sessions

- 2021 **Choosing Empirical Methods: Challenging the Superiority of Manipulation-
Based Inquiry** (w/ Nora Boyd), Philosophy of Science Association
- 2016 **Reconsidering Scientific Representation,** Philosophy of Science Association

Invited Discussant

- 2021 Perspectivism in the Philosophy of Science, Campus BioMedico, Rome IT
- 2015 New Directions in Foundations of Physics, Washington DC
- 2014 New Directions in Foundations of Physics, Washington DC

COMPETITIVE GRANTS AND AWARDS

- 2024 Grant to Organize Workshop on Pragmatism and Measurement (\$10,000)
Center for Philosophy of Science, University of Pittsburgh
- 2022 Wesley C. Salmon Graduate Research Award (\$500)
- 2021 University of Pittsburgh International Studies Fund (\$1,000)
- 2021 Wesley C. Salmon Graduate Research Award (\$1,000)
- 2018 Wesley C. Salmon Graduate Research Award (\$1,000)
- 2015 Georgetown Graduate School Travel Grant (\$500)

SUMMER SCHOOLS AND WORKSHOP PARTICIPATION

- 2024 Epistemological Issues of Machine Learning in Science, Dortmund
University

2021	Data Science Workshop, Center for Research Computing, University of Pittsburgh (nine 3-hour sessions)
2017	Georgetown Summer School on the Philosophy and Science of Active Materials, Georgetown University
2014	North American Summer School in Language, Logic, and Information, University of Maryland

RELEVANT NON-ACADEMIC EXPERIENCE

2015–2024	Event Organizer, Pittsburgh, PA: Contact presenters, coordinate staffing, maintain organizing schedule, manage finances, promote, and run events.
2007–2012	Private Tutoring, Middletown, CT and New York City, NY. Tutor for high-school students in Math, Physics, Test Prep.
2009–2012	Central Park Tutors, Empire Edge Academic Advising, and Mosaic Tutoring, New York City and Long Island, NY. Tutor in Math, Physics, Test Prep.

REFERENCES

Teaching specific: Jonathan Fuller

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