ABOUT PHILOSOPHY OF SCIENCE

The philosophy of science working group includes a core of five faculty (Andrea Woody, Carole Lee, Conor Mayo-Wilson, Benjamin Feintzeig, and Paul Franco) whose expertise spans physical and social sciences. Bridging our diversity of field-specific interests is a shared commitment to ground philosophical analysis in a technical understanding of specific sciences; an interest in scientific practice and questions that are matters of active concern for practicing scientists; and active engagement with issues that fall under the rubric of values and science.

EVENTS AND SPEAKERS

Our department regularly hosts a variety of workshops, lectures, and other events centered on philosophy of science. We host the O'Hara Philosophy of Physics Lecture Series and a variety of other events. Check our departmental calendar for upcoming events!

WORKING GROUPS AND INTERDISCIPLINARY PROGRAMS

ONGOING WORKING GROUPS

- Philosophy of Science discussion group: meets several times a quarter

INTERDISCIPLINARY PROGRAMS

- Undergraduate Major in History and Philosophy of Science
- Graduate Certificate in Science, Technology, and Society Studies
- Science Studies Network

FACULTY RESEARCH INTERESTS AND FOCAL TOPICS

METHODOLOGY AND EVIDENTIARIAL REASONING

Conor Mayo-Wilson investigates causal and statistical reasoning in medical research and the quantitative social sciences. Andrea Woody explores the impact of computational techniques, including search algorithms, for optimization and directed discovery in the natural sciences. Carole Lee examines the methods used to detect bias in judgment in psychology and peer review. Benjamin Feintzeig investigates the methodology used in physics for "quantization," or the construction of new quantum theories, and how philosophical perspectives might constrain the search for rigorous mathematical formulations of quantum field theories.

NORMATIVE ISSUES / SCIENCE IN CONTEXT

We cultivate a shared interest in issues that fall under the rubric of 'science and values' and that reflect our commitment to attend to the dynamics of scientific practice. Carole Lee studies how bias in peer review can impact the content and demographic make-up of scientific communities, while Andrea Woody is interested in the role of disciplinarity and multi-disciplinarity in the construction and maintenance of modern scientific communities. Conor Mayo-Wilson is interested in how different types of diversity affect the reliability and speed of discovery in smaller research communities. Paul Franco is interested in the ethical dimensions of scientific communication, especially looking at speech acts intended for policymakers and the general public.

EXPLANATION, MODELING AND REPRESENTATION

Andrea Woody explores the ways in which explanatory practice can support a diverse set of epistemic aims in science. With a focus on the physical sciences, in particular, chemistry, she also considers the impact of
representational choice (linguistic, mathematical, diagrammatic, graphical, etc.) on explanatory status and modeling efficacy; Conor Mayo-Wilson investigates the role of modeling (especially agent-based models) in the social sciences and in philosophy itself. Benjamin Feintzeig studies the role of idealizations in reductive explanations in quantum physics involving the classical limit and the thermodynamic limit; he also explores the possibility of using alternative probability theories to represent quantum systems. Paul Franco looks at debates in the history of philosophy of science concerning the proper characterization of scientific explanation; this historical research also informs his work on the ways values shape the felicity conditions of explanatory speech acts.

IDEALS OF OBJECTIVITY AND RATIONALITY

All of us are interested in the implications of our field and practice-specific technical analyses for ideals of objectivity. In particular, Carole Lee studies the role of concepts of rationality in cognitive science, and the social epistemic features of peer review within knowledge communities and Andrea Woody’s work stresses aspects of instrumental rationality in relation to diverse epistemic and practical aims. Benjamin Feintzeig explores the possibility of giving a single objective interpretation of quantum theories, or whether alternative interpretations are needed for the applicability of quantum theories in different contexts.

PHILOSOPHY OF SCIENCE FIELD-OF-INTEREST PAGES

For a comprehensive view of faculty and graduate students in our department with an interest in philosophy of science, as well as their publications on philosophy of science, please see the following fields of interest pages:

- Philosophy of Science
- Philosophy of Chemistry
- Philosophy of Physics
- Philosophy of Social Science
- Research Methods
- Science and Technology

DISSERTATIONS

- Toward a Pragmatic Ontology of Scientific Concepts [2018]
- Evaluating Neural Futures: Good Technoscience and the Challenge of Co-Production [2016]
- Analogical Reasoning in Scientific Practice: The Problem of Ingrained Analogies [2015]
- Intertheoretic Relations in Context: Details, Purpose, and Practice [2015]
- Values in Science: The Distinction Between the Context of Discovery and the Context of Justification [2010]
- Expert Testimony and the Transmission of Scientific Knowledge [2009]
- On a Cladistic Taxonomy for Biological Traits [2007]
- Physical Systems: Conceptual Pathways between Space-time and Matter [2004]
- The Quantum-to-Classical Transition: Decoherence and Beyond [2005]
- Should Science Be Value Free? Rethinking the Role of Moral and Political Values in the Justification of Scientific Theories [2004]

DISSERTATIONS IN PROGRESS

- Articulating the Responsibilities of Science to Society in Local Contexts
- The Different Roles of Consensus in Scientific Practice

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