Danielle J. Williams
Curriculum Vitae

Postdoctoral Research Fellow
Purdue University
610 Purdue Mall
West Lafayette, IN 47907

danielle.williams@purdue.edu
daniellejwilliams.com
orcid: 0000-0001-9550-943X

## AREAS OF SPECIALIZATION

Philosophy of Mind, Philosophy of Cognitive Science, Philosophy of Neuroscience, Philosophy of AI + History of Cognitive Science, Neuroscience, & AI

## AREAS OF COMPETENCY

Technology, Epistemology, Ethics

## ACADEMIC EMPLOYMENT

Purdue University (Fall 2025 - Current)
Postdoctoral Research Fellow
Department of Philosophy &
Cognition, Agency, Intelligence Center (CAIC)

Washington University in St. Louis (Fall 2023 – Spring 2025)
Mellon Postdoctoral Fellow in Modeling Interdisciplinary Inquiry
Departments of Philosophy and Psychological & Brain Sciences

University of California, Davis (Fall 2017 – Spring 2023)
Graduate Teaching Assistant
Department of Philosophy

## EDUCATION

University of California, Davis
2023 Ph.D. in Philosophy
Dissertation: 'Implementation & Interpretation: A Unified Account of Physical Computation'
Committee Members: Zoe Drayson (chair), Corey J. Maley, William Ramsey, Elaine Landry, Rohan French, and Hanti Lin

University of California, Davis
2019 MA in Philosophy
Thesis: 'Existential Introduction and Justification for Believing'

California State University, Sacramento
2016 BA in Philosophy (Ethics, Politics, & Law) – *Magna Cum Laude*
Thesis: 'Organs for Sale: Markets Without Limits'

## BOOKS

Williams, Danielle J. (Under Contract, expected Winter 2027). *Constructing the Computational Brain: Networks, Narratives, and the Making of a Discipline*. Springer Nature.

Description: Computational neuroscience wasn't officially recognized as a field of study until the 1980s, but many were building the theoretical and technological foundations of the computational approach to the mind and brain for decades before. Starting in the 1930s, I take an informal approach to telling the history of how we came to think of the brain as a computer and how that idea underpins one of the most successful scientific approaches to studying the mind and brain. Throughout the book, I develop and follow four historical strands: published work, historical context, conversations, and funding sources to weave an interesting and exciting history of how computational neuroscience came to be.

The book engages with the histories of AI, cognitive science, and neuroscience.

## PUBLICATIONS

Journal Articles:

Williams, Danielle J. (*forthcoming*). Computationalism, implementation, and the literal interpretation of computational models in neuroscience: distinctions with a difference. *Philosophy and the Mind Sciences*

Williams, Danielle J. (2025). Two Senses of Medium Independence. *Mind & Language*

Williams, Danielle J. (2025). How to be a realist about computational neuroscience. *Synthese*, 205:102. Doi: 10.1007.s11229-025-04952-5

Williams, D. (2022). Markov Blankets: Realism and our ontological commitments. *Behavioral and Brain Sciences*, 45, E217. Doi:10.1017/S0140525X2200025

Book Chapters:

Russin, J., McGrath, S., **Williams, D**. (*forthcoming*). From Frege to ChatGPT: Compositionality in Language, Cognition, and Deep Neural Networks in Felipe De Brigard and Walter Sinnott-Armstrong (eds.) *Neuroscience & Philosophy*. MIT Press.

Williams, D. and Piccinini, G. (2024). Philosophy and Technology in Chan Sin-Wai, Mak Kin-Wah, and Leung Sze Ming (eds.) *Routledge Encyclopedia of Technology and the Humanities*. Routledge.

Williams, D. and Drayson, Z. (2023). The nature of the predictive mind: Realism and instrumentalism in Bayesian cognitive science. In Tony Cheng, Ryoji Sato, and Jakob Hohwy (eds.) *Expected Experiences: The Predictive Mind in an Uncertain World*. Routledge.

In Press:

Williams, D. (2024). 'It takes two to make a view go right.' *The Brains Blog*. DOI: 10.13140/RG.2.2.14986.68806

Williams, D. (2024). 'We've been here before: AI promised human-like machines – in 1958' in *The Conversation*

Manuscripts in Progress

1. A paper on Artificial Intelligence (invited, Philosophical Issues- a supplement to Nous)
2. A paper about computationalism and consciousness (with Jeffrey Yoshimi)
3. A paper on the physical signatures of computation (invited)
4. A paper about medium independence and auditory perception
5. A paper on computational explanation and dynamical systems explanation
6. A paper on functionalism and the identity theory

## HONORS & AWARDS

2025 Dana Foundation Project Grant
Interdisciplinarity Through Research Collaboration | $66,300
*This project will be executed in conjunction with the Society for Philosophy & Neuroscience*

2024 School of Ideas in Neuroscience
Invited Lecturer (Funded)
University of Warsaw, Poland

2022 Nomination: Outstanding Graduate Teaching Award
Course: Minds, Brains, & Computers

2022 NSF Travel Grant
Philosophy of Science Association | $631.20

2022 John Templeton Foundation / Duke University Project Grant
Computation & Systematicity in Human Behavior | $17,720

2022 Summer Seminars in Neuroscience & Philosophy (SSNAP)
Fellow in Philosophy (Funded)
Duke University

2020 Graduate Research Fellowship
University of California, Davis | $7,500

2016 Nammour Award
California State University, Sacramento | $100

2016 Perry Weddle Award
California State University, Sacramento | $100

2015-2016 Phi Kappa Phi
Invited Undergraduate Academic Honors Society

## PRESENTATIONS (♠ = invited, ♦= peer reviewed, ♣= presented by coauthor)

♠ (***upcoming***) Methodological Platonism as a Research Strategy in Computational Neuroscience
American Philosophical Association, Central Meeting, 2026.
Symposium organized by the Society for the Metaphysics of Science

♠ (***upcoming***) The interdependent relationship between computational and dynamical modeling in neuroscience
Workshop on "Mechanistic and Representational Explanation in Cognitive Neuroscience" (MeReX), 2026, Technical University Berlin, Germany

♦ An epistemic problem for the realist about mathematical functions in neuroscience
Symposium on Realism in Neuro with: Frances Egan, Ken Aizawa, and Gualtiero Piccinini
International Society for the Philosophy of the Sciences of the Mind, 2025

What is the black box problem in deep learning and why does it matter for cognitive science?
Cognition, Agency and Intelligence Center Brown Bag Speaker Series
Purdue University, 2025

♠ A historical perspective on computational explanation in neuroscience
The Society for Philosophy and Neuroscience, 2025

♠ Computationalism without Implementation
Author Meets Critic: "The Brain Abstracted" by Mazviita Chirimuuta
Southern Society for Philosophy and Psychology, 2025

♦ Burning the bridge: why a theory of implementation is of no use to computational cognitive science
Philosophy and Neuroscience at the Gulf, 2024

♠ What does a theory of computational implementation have to do with neuroscience?
School of Ideas in Neuroscience, Nencki Open Lab, 2024
University of Warsaw, Poland

♠ Why do we think of the brain as a computer?
Nencki Open Lab Academy of Neuroscience, 2024
University of Warsaw, Poland

♦ How to be a realist about computational neuroscience
Society for Philosophy and Psychology, 2024

♠ We've Been Here Before
AI & Society Brunch, Washington University in St. Louis, 2024

♠ New Language of Thought | Same Critique
Mini Conference on Modal Logic & Connectionism at the University of Houston

♦ Thinking about Levels
115th Annual Meeting of the Southern Society for Philosophy and Psychology, 2024

♠ What philosophers can offer collaborative neural engineering
California State University, Sacramento, 2024

♠ How to be a realist about computational neuroscience
The Edinburgh University Cognitive Science Society Meeting, 2024

♠ Marr's levels are not levels of abstraction
Washington University in St. Louis, 2023

♠ Representation and computation in the study of language and mind
Philosophy Conference in Dubrovnik, Croatia, 2023
(*Unable to attend due to postdoc relocation timeline*)

♠ Foundations of Computation
Philosophy Conference & Workshop at the Australian National University
(*Unable to attend due to postdoc relocation timeline*)

♦ Anti-anti individualism about computational implementation
Southern Society for Philosophy and Psychology, 2023

♦ Physical signatures of computation – Symposium
Paper: Implementation, interpretation, and triviality in theories of physical computation
Philosophy of Science Association Biennial Meeting, 2022

♠ Computation in psychology and neuroscience
Philosophy Colloquium Series, Chico State University, 2022

♦ There cannot be a mechanism-only theory of computation
37th Annual CHPS Conference, Philosophy of Cognitive Neuroscience: Content, Self, and Cognitive Ontology, 2022

♦ What a theory of computation can't be if the brain is a computer
Philosophy and Neuroscience at the Gulf, 5th Annual Meeting of the Deep South Philosophy and Neuroscience Workgroup, 2022

♦♣ Marr, instrumentalism, and Bayesian Cognitive Science
96th Joint Session of the Aristotelian Society of the Mind Association, 2022

♦ There cannot be a mechanism-only theory of computation
Rotman Graduate Student Conference, Rotman Institute of Philosophy, 2022

♦ Minds, understanding, and artificial intelligence
UC Davis Undergraduate Philosophy Conference, 2016

♦ McCausal Impotence: How your chicken sandwich matters
Nammour Symposium, 2016

♦ Knowledge as justified true belief
Pacific University Undergraduate Philosophy Conference, 2016

♦ Gettier's Problem: the problem with the Gettier Problem
Perry Weddle Colloquium, 2016

## POSTERS

Implementation, individuation, and triviality in computational theories
The Society for Philosophy and Psychology, 2022

The mechanistic account of computation and the implementation relation
The American Philosophical Association, Central Division Meeting, 2022

## COMMENTARIES

♠ Panel Discussion: On the Current State & Future of the Humanities
The WashU Postdoc Society, Washington University in St. Louis, 2025

♠ Predictive Processing's Flirt with Transcendental Idealism
Neural Mechanisms Online, 2024

♠ Is Computation Essentially Medium-Independent? (Symposium)
Society for the Metaphysics of Science
American Philosophical Association, Central Division Meeting, 2024

Neural Network Modeling as Task Analysis, Not Mechanistic Explanation
American Philosophical Association, Central Division Meeting, 2024

♠ The Physical Signatures of Computation: A Robust Mapping Account
St. Louis Area Philosophy of Science Association Book Symposium, 2024

♠ Generative AI Panel Discussion
AI Digital Health Summit, Washington University in St. Louis, 2023

Why we cannot resolve the scientific realism debate
American Philosophical Association, Central Division Meeting, 2023

What justifies the model-to-mechanisms mapping requirement?
American Philosophical Association, Central Division Meeting, 2022

♠ Computation with Neural Manifolds
Neural Mechanisms Online, 2021

Opening up the Openness of Joint Attention
American Philosophical Association, Eastern Division Meeting, 2021

♠ Morality Derived from Social Evolution
Pacific University Undergraduate Philosophy Conference, 2016

♠ Marriage in a Liberal Democracy: Continuing the Discussion
California State University, Sacramento Ethics Colloquia Series, 2016

## PROFESSIONAL SERVICE

Refereeing:
Minds & Machines
Synthese
British Journal for Philosophy of Science
Philosophical Psychology
Mind & Language
WIREs Cognitive Science
Cogent Humanities
CUP Elements in Philosophy of Science
Philosophical Quarterly
Acta Analytica
Canadian Journal of Philosophy
Philosophy of AI
Philosophy and the Mind Sciences
Erkenntnis

Conference Committees:
Philosophy of Science Association (PSA), 2026

International Conference for High Performance Computing, Networking, Storage, and Analysis (SC24), 2024

7th International Conference on the History & Philosophy of Computing, 2023

Organizing:
Cognition, Agency, Intelligence Center Symposium, 2026
Purdue University

The Society for Philosophy & Neuroscience 1st Annual Meeting, 2025
Washington University in St. Louis

AI, Technology, & Society Conference, 2025
Washington University in St. Louis

Berkeley-Stanford-Davis Philosophy Conference, 2022
University of California at Davis

Societies:
Society for Philosophy & Neuroscience (SPAN)
Founding & Organizing Member
Steering Committee Chair (2024 - current)

Society for Philosophy and Psychology
Southern Society for Philosophy and Psychology
American Philosophical Association
The Society for Hearing Research (Purdue University)

## MENTORING

Philosophy of Science Association
Underrepresented Philosophy of Science Scholars
Mentor (2024 – current)

Washington University in St. Louis

Mentored several undergraduate students on how to build relationships with several labs in the psychology department.
(2023-2024)

University of California, Davis

Mentored several undergraduate students on how to prepare for graduate school in philosophy, including developing their job materials.

## TEACHING EXPERIENCE

Washington University in St. Louis

Methodologies in Cognitive Science (Interactive, lab-based course)
Thought & Feeling (Interdisciplinary course on affect and the mind) (upper division)

University of California, Davis

Philosophy of Mind (upper division)
Minds, Brains, & Computers
Introduction to Cognitive Science

University of California, Davis (Teaching Assistant)

Introduction to Cognitive Science
Minds, Brains, & Computers
Introduction to Philosophy of Biology
Philosophical Perspectives on Sexuality
Introduction to Philosophy
Bioethics

Sacramento State University (Teaching Assistant)

Introduction to Ethics