

David Leo Barack, Ph.D.

Curriculum Vitae

<https://orcid.org/0000-0001-7131-4638>

Postdoctoral Research Fellow
Department of Social and Decision Sciences
Department of Philosophy
Carnegie Mellon University
Resident Fellow
Center for Philosophy of Science
University of Pittsburgh
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Employment

2026 –	Postdoctoral Research Fellow, Carnegie Mellon University, Department of Social and Decision Sciences and Department of Philosophy; Resident Fellow, University of Pittsburgh, Center for Philosophy of Science
2025	Research Assistant Professor, Lingnan University, Department of Philosophy
2024	Postdoctoral Fellow, University of Antwerp, Department of Philosophy
2020 –2024	Research Associate, University of Pennsylvania, Platt Lab, Department of Neuroscience and Visiting Scholar, Department of Philosophy
2015 –2020	Presidential Scholar in Society and Neuroscience and Associate Research Scientist, Columbia University, Zuckerman Mind, Brain, and Behavior Institute and Center for Science and Society, Departments of Philosophy, Neuroscience, and Economics

Education

2008 – 2014	Duke University Ph.D. Philosophy; Dissertation: “Mindcraft: A Dynamical Systems Theory of Cognition”; Committee: Alex Rosenberg (Co-Chair), Walter Sinnott-Armstrong (Co-Chair), Felipe De Brigard, Karen Neander, Michael Platt Cert. Cognitive Neuroscience
2007 –2008	Northwestern University Cert. Pre-Medical (unfinished)
2005 –2007	University of Wisconsin-Milwaukee

M.A. Philosophy; Thesis: “Systematicity and Mental Content”;
Committee: Robert Schwartz (Chair), John Koethe, Steven Leeds

2000 – 2004

Pitzer College

B.A. Consciousness Studies; Thesis: “Regaining Consciousness: An exploration of consciousness, the mind, processes and their scientific study”; Advisors: William Banks (Pomona College), Amy Kind (Claremont McKenna College), Brian Keeley (Pitzer College)

Areas of Specialization

Neuroscience

Neural mechanisms of decision making and foraging behavior

Philosophy

Philosophy of science (philosophy of neuroscience; philosophy of cognitive science) and philosophy of mind

Areas of Competence

Neuroscience

Behavioral decision-making and neural mechanisms of reward processing, computational modeling of behavior

Philosophy

Logic, Metaphysics, philosophy of AI

Publications

Philosophy

Books

Edited:

1. Rowbottom DP, Curtis-Trudel A, and Barack DL. The Role of Artificial Intelligence in Science: Methodological and Epistemological Studies. Forthcoming, Routledge.

Journal Articles

Reviewed:

1. Pohl S, Walker EY, Barack DL, Lee J, Denison RN, Block N, Meyniel F, and Ma WJ. “Desiderata of evidence for representation in neuroscience”. 2026. *Nature Reviews Neuroscience*, v27, p. 357-372. <https://www.nature.com/articles/s41583-026-01030-8>
2. Barack DL. “The Multiple Action Account of Filling a Role”. 2025. *Philosophical Studies*, v182(8), p. 2297-2312.
3. Barack DL. “Theory change in cognitive neurobiology: the case of the orbitofrontal cortex”. 2025. *Wiley Interdisciplinary Reviews: Cognitive Science*, 16:e70003, p. 1-12.

4. Barack DL. "Context and Neural Function". 2025. *Philosophy of Science*, v92, p. 185-203.
5. Barack DL. "Rational Dynamics in Efficient Inquiry". 2025. *Analysis*, v85(3), p. 649-658.
6. Barack DL. "What is Foraging?" 2024. *Biology and Philosophy*, v39.
<https://link.springer.com/article/10.1007/s10539-024-09939-z>
7. Barack DL. "The Dynamicist Landscape". *Topics in Cognitive Science*. 2023.
<https://onlinelibrary.wiley.com/doi/epdf/10.1111/tops.12699?domain=author&token=BJGWWYENFMBRSMYBMWJS>
8. Barack DL and Krakauer J. "Two Views on the Cognitive Brain". 2021. *Nature Reviews Neuroscience*. <https://www.nature.com/articles/s41583-021-00448-6>
9. Barack DL. "Mental Kinematics". 2021. *Synthese*, v199, p. 1091-1123.
<https://link.springer.com/article/10.1007/s11229-020-02766-1>
10. Barack DL and Jaegle A. "Codes, Functions, and Causes". 2019. *Behavioral and Brain Sciences*. <https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/codes-functions-and-causes-a-critique-of-brettes-conceptual-analysis-of-coding/917AFE6FA4850F278AE8D93E28B6BB92>
11. Barack DL. "Mental Machines". 2019. *Biology and Philosophy*, v34(63).
<https://link.springer.com/article/10.1007/s10539-019-9719-6>
12. Barack DL. "Cognitive Recycling". 2019. *British Journal for the Philosophy of Science*, v70(1), p. 239–268.
<https://www.journals.uchicago.edu/doi/10.1093/bjps/axx024>

Invited:

1. Flanagan OJ and Barack DL. "Neuroexistentialism". 2010. *EurAmerica*, v40(3), p. 1–18.

Revise and Resubmit:

1. Barack DL. "Boundaries of Cognition". *Mind and Language*.

Under Review:

1. Barack DL. "Understanding and Neural Networks". *Synthese*.

Manuscripts:

1. Barack DL and Jaegle A. "Extended Intelligence". arXiv:
<https://arxiv.org/abs/2209.07449>.

Chapters

1. Barack DL. "Perils and Prospects of NeuroAI". In Rowbottom et al. ed. Forthcoming.

Book Reviews

1. Barack DL. "The Tools of Neuroscience Experiment by John Bickle, Carl F Craver and Ann-Sophie Barwich". 2022. *British Journal for the Philosophy of Science*.

Neuroscience

Journal Articles

Reviewed:

1. Barack DL, Ludwig VU, Parodi F, Ahmed N, Brannon EM, Ramakrishnan A, and Platt ML. "Attention Deficits Linked with Proclivity to Explore while Foraging". 2024. *Proceedings of the Royal Society B*, v291(2017), p. 1-13.
<https://royalsocietypublishing.org/doi/10.1098/rspb.2022.2584>
2. Walker EY, Pohl S, Denison RN, Barack DL, Lee J, Block N, Ma WJ, and Meyniel F. "Studying the Neural Representations of Uncertainty". 2023. *Nature Neuroscience*. <https://doi.org/10.1038/s41593-023-01444-y>
3. Kay K, Bonnen K, Denison RN, Arcaro MJ, and Barack DL. "Tasks and their role in visual neuroscience". 2023. *Neuron*.
[https://www.cell.com/neuron/fulltext/S0896-6273\(23\)00218-0](https://www.cell.com/neuron/fulltext/S0896-6273(23)00218-0)
4. Barack DL, Bakkour A, Shohamy D, and Salzman CD. "Signatures of visuospatial information foraging during learning of complex environments". 2023. *Scientific Reports*. <https://www.nature.com/articles/s41598-023-27662-9.pdf>
5. Barack DL, Miller EK, Moore CI, Packer AM, Pessoa L, Ross LN, and Rust NC. "A call for more clarity around causality in neuroscience". 2022. *Trends in Neurosciences*. [https://www.cell.com/trends/neurosciences/fulltext/S0166-2236\(22\)00121-7](https://www.cell.com/trends/neurosciences/fulltext/S0166-2236(22)00121-7)
6. Barack DL and Krakauer J. "Two Views on the Cognitive Brain". 2021. *Nature Reviews Neuroscience*. <https://www.nature.com/articles/s41583-021-00448-6>
7. Barack DL and Platt ML. "Neuronal activity in the posterior cingulate cortex signals environmental information and predicts behavioral variability during routine foraging". 2021. *Journal of Neuroscience*, v41(12), p. 2703-2712.
<https://www.jneurosci.org/content/41/12/2703.abstract>
8. Barack DL, Chang SWC, and Platt ML. "Posterior cingulate neurons dynamically signal decisions to disengage during foraging". 2017. *Neuron*, v96(2), p. 339-347.
<https://www.sciencedirect.com/science/article/pii/S0896627317309170>
9. Addicott MA, Pearson JM, Sweitzer MM, Barack DL, and Platt ML. "A primer on foraging and the explore/exploit trade-off for psychiatry research". 2017. *Neuropsychopharmacology*, v42, p. 1931-1939.
<https://www.nature.com/articles/npp2017108>
10. Barack DL and Platt ML. "Neurocomputational Nosology: Malfunctions of Models and Mechanisms". 2016. *Frontiers in Psychology*, v7(602), p. 1-9.
<https://www.frontiersin.org/articles/10.3389/fpsyg.2016.00602/full>
11. Barack DL and Gold JI. "Temporal Trade-offs in Psychophysics". 2016. *Current Opinion in Neurobiology*, v37, p.121-125.
<https://www.sciencedirect.com/science/article/pii/S0959438816300010>
12. Chang SWC, Barack DL, and Platt ML. "Mechanistic Classification of Neural Circuit Dysfunctions: Insights from Neuroeconomics Research in Animals". 2012. *Biological Psychiatry*, v72, p. 101-106.
<https://www.sciencedirect.com/science/article/pii/S0006322312001448>

13. Pearson JM, Heilbronner SR, Barack DL, Hayden BY, and Platt ML. “Posterior Cingulate Cortex: Adapting Behavior to a Changing World”. 2011. *Trends in Cognitive Sciences*, v15(4), p. 143–151.

<https://www.sciencedirect.com/science/article/pii/S1364661311000180>

Invited:

1. Wise TB, Barack DL, and Templer VL. “Geometrical representation of serial order in working memory”. 2022. *Learning and Behavior*.
<https://doi.org/10.3758/s13420-022-00541-5>

Under Review:

1. Clarkson T, Arora A, Quarmley M, Barack DL, Johnston C, Carpenter A, Archambault C, Kendal P, Hackel L, and Jarcho JM. "Learning to Fear Social Interactions: Dysregulated Neural Mechanisms of Social Learning in Adolescent Social Anxiety". *Nature Neuroscience*.

Revise and Resubmit:

1. Barack DL, Parodi F, Ludwig V, and Platt ML. “Information gathering explains decision dynamics during human and monkey reward foraging”. *PNAS*. bioRxiv:
<https://www.biorxiv.org/content/10.1101/2023.10.14.562362v1>

Chapters

1. Barack DL and Platt ML. “Engaging and Exploring: Cortical Circuits for Adaptive Foraging Decisions”. 2017. In J.R. Stevens (ed.), *Impulsivity*, p. 163-199. https://link.springer.com/chapter/10.1007/978-3-319-51721-6_6
2. Harris JA, Barack DL, McMahon AR, Mitroff SR, & Woldorff MG. “Object-Category Processing, Perceptual Awareness, and the Role of Attention during Motion-Induced Blindness”. 2014. In G. R. Mangun (ed.), *Cognitive Electrophysiology of Attention: Signals of the Mind*, p. 97–106.

Grants

National Institutes of Health/NIDA – 1K99DA048748-01 – (05/2019 – 05/2023)

K99/R00 Pathway to Independence BRAIN Initiative Diversity Award

Role: Principal Investigator

\$318,104 (K99 phase); \$750,000 (R00 phase)

National Institutes of Health – T32 Training Fellowship

Administered by Columbia University

Role: Post-doctoral Fellow

\$52,000

Presidential Scholarship in Society and Neuroscience

Columbia University

Role: Principal Investigator

\$325,000

Summer research stipend

Duke University

Role: Graduate student
\$2000

Talks

Symposia

- “Reconciling the Dichotomy between Sherringtonian and Hopfieldian Views on Neural Computations”. Symposium on my view of the relationship between cognition and the brain. Generative Adversarial Collaboration, Cognitive Computational Neuroscience 7, August 2023, https://www.youtube.com/watch?v=cl_Wa7CGm7A.
- “Content Preservation and Streams of Thought”. Symposium, American Philosophical Association, Eastern Division, January 2023.

Philosophy

- TBD.* American Philosophical Association, Eastern Division, January 2027.
- “Zetetic Agency”.† American Philosophical Association, Eastern Division, January 2027.
- “Norms of Pursuit for Scientific Investigation”. Philosophy of Science Association, November 2026.
- “Zetetic Agency”.* University of Turku, August 2026.
- “Plans, Planning, and Intentions”. European Society for Philosophy and Psychology, July 2026.
- “Zetetic Agency”.* Tulane University, April 2026.
- “Zetetic Agency”.* Universitat Pompeu Fabra, March 2026.
- “Neural Dynamics: Real, Latent Features of Neural Activity”.* Stanford University, Workshop on Neural Dynamics, March 2026.
- “Planning and Agency”. Southern Society for Philosophy and Psychology, February 2026.
- “Inquiry as Foraging”. Annual Interdisciplinary Conference 50, January 2026.
- “Moving Beyond Mappings”. American Philosophical Association, Eastern Division, January 2026.
- “Neuron Doctrines”.* University of Pittsburgh, November 2025.
- Panel Discussant.* Workshop on the Neuron Doctrine. University of Pittsburgh, October 2025.
- “Neuron Doctrines”. International Society for the Philosophy of the Sciences of the Mind, October 2025.
- “A new folk psychological eliminativism”. Philosophy of Neuroscience in the Gulf VIII, September 2025.
- “Neuron Doctrines”.* Purdue University, August 2025.
- “Model Networks”. Society for Philosophy and Psychology, June 2025.
- “Model Networks”. Scientific Understanding and Representation, May 2025.
- “Model Networks”. Society for Philosophy and Neuroscience, May 2025.
- “Model Networks”. Southern Society for Philosophy and Psychology, April 2025.
- “Making Progress on Neural Representation”. American Philosophical Association, Pacific Division, April 2025.
- “Inquiry, Search, and Foraging”.* Columbia University, March 2025.
- “Model Networks”. Technical University Berlin, February 2025.
- “Inquiry, Search, and Foraging”.* University of California – Irvine, February 2025.

“Model Networks”.* University of Notre Dame, January 2025.
 “Foraging, Inquiry, and Thought: A Biologically Informed Theory of the Mind”.*
 Konrad Lorenz Institute, Vienna, Austria, October 2024.
 “Foraging, Inquiry, and Thought: A Biologically Informed Theory of the Mind”.
 Macquarie University, NSW, Australia, October 2024.
 “Composition in neural population dynamics”. Philosophy of Neuroscience in the Gulf
 VII, October 2024.
 “Making Progress on Neural Representation”. Sofia University, Sofia, Bulgaria,
 September 2024.
 “Scientific Inquiry as Foraging”.* Lingnan University, Hong Kong, September 2024.
 “Making Progress on Neural Representation: Moving from Evidence to Content”. Nencki
 Open School, Warsaw, Poland, July 2024.
 “Structure-Function Inference in Cognitive Neuroscience”. ESPP 31, July 2024.
 “Bounds of Cognition”. University of Antwerp, May 2024.
 “Context and Neural Function”. Southern Society for Philosophy and Psychology, March
 2024.
 “Scientific Inquiry as Foraging”.* University of Pittsburgh, February 2024.
 “Neural Vehicles”. International Society for the Philosophy of the Sciences of the Mind,
 November 2023.
 “Cognition Penetrates Vision”. Philosophy of Science Association Around the World,
 November 2023.
 “Streams of Thought”.* University of Antwerp, October 2023.
 “A Neurodynamical Alphabet”. Philosophy of Neuroscience in the Gulf VI, September
 2023.
 “Information Harvesting: Reasoning as Foraging in the Space of Propositions”. The
 Inquiry Network, April 2023.
 “Computation with Neural Manifolds”.* University of California – Merced, April 2023.
 “Inference is a Mental Process”. Southern Society for Philosophy and Psychology, March
 2023.
 “Computation with Neural Manifolds”. Philosophy of Science Association, November
 2022.
 “The New Central Executive”. Neurocognitive Foundations of Mind, November 2022.
 “The New Central Executive”. Philosophy of Neuroscience in the Gulf V, September
 2022.
 “The New Central Executive”. University of Colorado – Boulder, September 2022.
 “Computation with Neural Manifolds”. British Society for the Philosophy of Science,
 July 2021.
 “Extended Intelligence”. Kinds of Minds 2020 (postponed), June 2021.
 “Computation with Neural Manifolds”.* Neural Mechanisms Online, January 2021.
 “Represent Represent”. Philosophy of Neuroscience in the Gulf III, October 2020.
 “On the Purported Impenetrability of Perception by Cognition”.† Inter-American
 Congress of Philosophy, October 2019.
 “Stream of Thought”. American Philosophical Association, Central Division, February
 2019.
 “Streams of Thought: Search, Selection, and Content Preservation in Reasoning”. Duke
 University, May 2018.

- “The Explanatory Impotence of Deep Neural Networks”. Southern Society for Philosophy and Psychology, March 2018.
- “From Moth to Machine”. American Philosophical Association, Central Division, February 2018.
- “Mental Machines”. American Philosophical Association, Eastern Division, January 2018.
- “Levels and Layers”. European Philosophy of Science Association, September 2017.
- “Information Harvesting: Reasoning as Foraging in the Space of Inferences”. American Philosophical Association, Eastern Division, January 2017.
- “Dynamical Mechanisms and Models in Cognitive Neuroscience”. Models and Simulations VI, University of Notre Dame, May 2014.

Neuroscience

- “Inquiry as Foraging”.* University of Birmingham, November, 2025.
- “Inquiry as Foraging”. Carnegie Mellon University, October, 2025.
- “Inquiry as Foraging”.* Inmed, Marseilles, France, July 2024.
- “Inquiry as Foraging”.* Rochester Institute of Technology, February 2024.
- “Inquiry as Foraging”.* Georgia State University, January 2024.
- “Inquiry as Foraging”.* Emory University, August 2023.
- “Inquiry as Foraging”.* Queen’s University, August 2023.
- “The Quest for Information: Foraging as a Scaffold for Learning and Reasoning”.* University of Miami, February 2023.
- “The Quest for Information: Foraging as a Scaffold for Learning and Reasoning”.* University of Wisconsin – Madison, February 2023.
- “Primate Orbitofrontal Cortex Neurons Reflect Learning of States of Complex Environments”. Icahn School of Medicine at Mount Sinai, MSNseminar, January 2023.
- “The Quest for Information: Foraging as a Scaffold for Learning and Reasoning”. University of Chicago, January 2023.
- “The Quest for Information: Foraging as a Scaffold for Learning and Reasoning”. Carnegie Mellon University, January 2023.
- “Assessing Preferences for Different Foods in Nonhuman Primates during Unconstrained Behavior”.† Society for Neuroscience 52, November 2022.
- “What Is Foraging?”* Future of Foraging Seminar Series, May 2022, <https://www.youtube.com/watch?v=vYQs1EgWYv0>.
- “Signatures of information foraging during learning of complex environments”.* Innovators in Cognitive Neuroscience, October 2021, <https://www.youtube.com/watch?v=LejOgvLQbCU>.
- “Two Views on the Cognitive Brain”.* Ruhr University Bochum, September 2021.
- “Two Views on the Cognitive Brain”.* Duke University, July 2021.
- “Two Views on the Cognitive Brain”.* Brown University, July 2021.
- “Information Seeking and Learning in Complex Environments”.* Princeton University, September 2020.
- “From Ecology to Neurobiology and Back: Foraging in Both the External and Internal Worlds”.† COSYNE 2020.

“Information Seeking and Learning in Complex Environments”.* Claremont Colleges, February 2020.
 “Primates seek information to learn states of complex environments”. Society for Neuroscience 49, October 2019.
 “Posterior Cingulate Cortex and Adaptive Foraging”. Society for Neuroscience 46, November 2016.
 “From Bits to Policies: The Posterior Cingulate Encodes Environmental Information”. Max Planck Institute for Intelligent Systems, July 2015.
 “Adaptive Action and the Posterior Cingulate”.* Princeton University, December 2014.
 “Exploiting the Posterior Cingulate”.* Princeton University, July 2014.
 “Strategic Decision Making and the Cingulate Cortex”. University of Pennsylvania, December 2012.

*: invited; †: accepted, not delivered.

Posters

Barack DL. 2024. Philosophy of Science Association.
 Barack DL. 2024. Society for Philosophy and Psychology.
 Barack DL and Salzman CD. 2023. COSYNE 20.
 Barack DL and Salzman CD. 2022. CCN 6.
 Barack DL and Jaegle A. 2022. Society for Philosophy and Psychology / European Society for Philosophy and Psychology Joint Meeting.
 Barack DL and Salzman CD. 2018. Cognitive Computational Neuroscience (CCN) 2.
 Barack DL and Salzman CD. 2017. Society for Neuroscience 47.
 Bromberg-Martin EM, Platt ML, and Barack DL. 2016. COSYNE 13.
 Barack DL, Li Y, Nassar MR, and Gold JJ. 2015. Society for Neuroscience 45.
 Barack DL. 2015. Society for Philosophy and Psychology.
 Barack DL, Gariépy JF, and Platt ML. 2014. Society for Neuroscience 44.
 Barack DL, Gariépy JF, and Platt ML. 2014. COSYNE 11.
 Barack DL, Gariépy JF, and Platt ML. 2013. Society for Neuroscience 43.
 Barack DL and Platt ML. 2013. COSYNE 10.
 Barack DL, Hayden BY, and Platt ML. 2012. Society for Neuroscience 42.
 Barack DL, Hayden BY, Pearson JM, and Platt ML. 2012. Computational and Systems Neuroscience (COSYNE) 9.
 Barack DL, Hayden BY, Pearson JM, and Platt ML. 2011. Society for Neuroscience 41.
 Harris J, Barack DL, and Woldorff MW. 2010. Society for Neuroscience 40.
 Barack DL and Woldorff MW. 2009. Society for Neuroscience 39.

Teaching

Pitzer College	January 2025-May 2025
Lecturer, “Introduction to Philosophy of Science”	
Lecturer, “Topics in Philosophy of Neuroscience”	
Lingnan University, Hong Kong	September 2024-December 2024
Lecturer, “Critical Thinking”	
Duke University, Durham, NC	January 2013-May 2014

Teaching Assistant, “Neuroethics”, Philosophy Department
Lecturer, “Introduction to Philosophy” and “Seminar in Theories of Cognition”,
Philosophy Department
University of Wisconsin-Milwaukee, Milwaukee, WI August 2005-May 2007
Teaching Assistant and Lecturer, “Introduction to Philosophy”, Philosophy
Department
Pomona College, Claremont, CA September 2003-December 2003
Research and Teaching Assistant, “Consciousness and Cognition”, Psychology
Department

Service

Societies

Society for Philosophy and Neuroscience

- Founding Member
- Chair (2024 -)

Ad Hoc Referee

Journals

*Synthese, Ergo, British Journal for the Philosophy of Science, Australasian
Journal of Philosophy, Nature Neuroscience, Nature Reviews Neuroscience,
Neuron, International Studies in the History and Philosophy of Science, Current
Biology, European Journal for the Philosophy of Science, Topics in Cognitive
Science, Trends in Cognitive Science, Biology and Philosophy*

Books

Oxford University Press, MIT Press

References

Philosophy:

Dr. Bence Nanay
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Centre for Philosophical Psychology
University of Antwerp
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Dr. Christopher A B Peacocke
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Dr. John Morrison

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Dr. Michael Weisberg
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Dr. Alex Rosenberg
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Dr. Walter Sinnott-Armstrong
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Neuroscience:

Dr. Michael L Platt
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