

Areas of Expertise

- AOS foundations of physics, history and philosophy of science
AOC foundations of finance, mathematical logic, philosophy of mathematics

Academic Appointments

- 2017 to present. Associate Professor, Philosophy, Logic & Scientific Method,
London School of Economics & Political Science
2013 to 2017. Assistant Professor, Philosophy, Logic & Scientific Method,
London School of Economics & Political Science
2012 to 2013. Provost's Postdoctoral Scholar,
University of Southern California

Education

- Ph.D. History & Philosophy of Science, University of Pittsburgh, Sep 2012
B.S. Mathematics, University of Washington, Dec 2005
B.A. Philosophy, University of Washington, with College Honors, Dec 2005

Published Articles

Peer-Reviewed Articles in Journals

14. Forth. "Unreal observables" To appear in *Philosophy of Science*.
13. 2017 "Three myths about time reversal in quantum theory." *Philosophy of Science* 84(2):1-20.
12. 2016 "Curie's Hazard: From electromagnetism to symmetry violation." *Erkenntnis* 81(5):1011-1029. <http://dx.doi.org/10.1007/s10670-015-9779-1>
11. 2015 "Three merry roads to T-violation." In *Studies in History and Philosophy of Modern Physics* 52(A):8-15. <http://dx.doi.org/10.1016/j.shpsb.2014.08.003>
10. 2015 "Comment on Ashtekar: Generalization of Wigner's Principle." In *Studies in History and Philosophy of Modern Physics* 52(A):21-23. <http://dx.doi.org/10.1016/j.shpsb.2014.08.008>
9. 2014 "A general perspective on time observables." *Studies in History and Philosophy of Modern Physics* 47:50-54. <http://dx.doi.org/10.1016/j.shpsb.2014.05.001>
8. 2013 "When we do (and do not) have a classical arrow of time." *Philosophy of Science* 80(5):1112-1124. <http://dx.doi.org/10.1086/674001>
7. 2013 "The simple failure of Curie's Principle." *Philosophy of Science* 80(4):579-592. <http://dx.doi.org/10.1086/673212>
6. 2012 "Kramers degeneracy without eigenvectors." *Physical Review A* 86(3):034103. <http://dx.doi.org/10.1103/PhysRevA.86.034103>

5. 2012 (with John D. Norton) “The Scaling of Speeds and Distances in Galileo’s *Two New Sciences*: A reply to Palmerino and Laird.” *Centaurus* 54(2):182-191. <http://dx.doi.org/10.1111/j.1600-0498.2012.00263.x>
4. 2012 (with John D. Norton) “Galileo’s refutation of the speed-distance law of fall rehabilitated.” *Centaurus* 54(2):148-164. <http://dx.doi.org/10.1111/j.1600-0498.2012.00260.x>
3. 2011 “How Galileo Dropped the Ball and Fermat Picked It Up.” *Synthese* 180(3):337-356. <http://dx.doi.org/10.1007/s11229-009-9705-7>
2. 2011 “Group Structural Realism.” *The British Journal for the Philosophy of Science* 62(1):47-69. <http://dx.doi.org/10.1093/bjps/axq009>

Other Articles

1. 2016 “Supertasks.” With John Byron Manchak. In *Stanford Encyclopedia of Philosophy*, E. Zalta (Ed.), <http://plato.stanford.edu/entries/spacetime-supertasks/>.

Articles In Submission

“Observables, Disassembled” (under review)

<http://philsci-archive.pitt.edu/12478/>

“Disregarding the Hole Argument” (under review)

<http://philsci-archive.pitt.edu/11687/>

“Kähler representation theory” (under review) with Nicholas J. Teh

<http://arxiv.org/abs/1602.05979>

Selected Works in Preparation

“Rovelli on disharmony between the quantum arrows of time” (manuscript available)

“The mechanics of markets” (manuscript available)

“Why there is more than one kind of thing” (manuscript available)

“Jauch’s theorem” (manuscript available)

“Cautionary remarks about categorical equivalence” (manuscript available)

“Time observables” (manuscript available)

Book Manuscripts

The Curious Case of Reversal in Time: The philosophy and physics of time reversal

Manuscript, Sample chapters available upon request.

Philosophico-Scientific Adventures

Free public eBook, <http://personal.lse.ac.uk/ROBERT49/ebooks/PhilSciAdventures/>

Genes, Brains and Beyond

Free public eBook, <http://personal.lse.ac.uk/ROBERT49/ebooks/GenesBrains/>

Dissertation

Time, Symmetry and Structure, supervised by John Earman and John D. Norton, with committee members Robert Batterman, Laura Ruetsche, and Giovanni Valente. Electronic Dissertation available at <http://d-scholarship.pitt.edu/12533/>

Popular Articles

“Humans, Not Robots, Are the Real Reason Artificial Intelligence Is Scary”, *The Atlantic*, 14 August 2015, URL: <http://www.theatlantic.com/technology/archive/2015/08/humans-not-robots-are-the-real-reason-artificial-intelligence-is-scary/400994/>

Teaching Experience

Teaching at LSE

Teaching scores by the Teaching Quality Assurance and Review Office (TQARO) based on student surveys, on a scale from 5 (very poor) to 1 (very good).

- Spr 2016 Physics and the City (PH 232/431) - Course Creator
TQARO Average Overall Performance: Seminars 1.5, Undergrad classes 1.2
- Fall 2015 Einstein for Everyone (PH 230/430) - Course Creator
TQARO Average Overall Performance: Lecture 1.0 (BSc), 1.0 (MSc), Seminars 1.0, Undergrad classes 1.0
- Spr 2015 Philosophy of Science (PH 201/400)
TQARO Average Overall Performance: Lecture 1.1 (BSc), 1.1 (MSc). Seminars: 1.2, 1.0.
- Fall 2014 Philosophy of Science (PH 201/400)
- Spr 2014 Genes, Brains and Society (PH 227/427) - Course Creator
TQARO Average Overall Performance: Lecture: 1.6 (BSc), 1.0 (Msc). Seminar: 1.0.
- Spr 2014 Reason, Knowledge and Values (PH 103)
TQARO Average Overall Performance: Lecture 1.3 (Bsc).

Other Teaching

- Spr 2013 Methodologies of the Sciences (PHIL 486), University of Southern California
- Fall 2012 Einstein’s Spacetime Revolution (ARLT 100), University of Southern California
- Spr 2010 Morality & Medicine, University of Pittsburgh
- Fall 2009 Principles of Scientific Reasoning, University of Pittsburgh
- Fall 2009 Certification in Higher Education Teaching (Teaching Practicum), University of Pittsburgh

Service

Service at LSE: School

Jan 2014-present Academic Consultation Group, Web Improvement Programme
Dec 2013-Feb 2017 IT Portfolio Board

Service at LSE: Philosophy

Jul 2017-present PhD Programme Director
Jun 2016-present Convener of the Popper Seminar Lecture Series
Jun 2014-present PhD Placement Director
Jan 2014-present Convener of the Sigma Club Lecture Series
Nov 2013-Oct 2017 MSc Admissions Selector
Jun 2014-present Web and Outreach Coordinator
Sep 2014-present Karl Popper Memorial Seminar Committee
Sep 2014-Aug 2015 MSc Programme Coordinator, Philosophy of Science
Jun 2014-Dec 2014 Designer and developer of new philosophy homepage
Nov 2013-Jun 2014 Fellow of the Forum for European Philosophy

Service to the Profession

Mar 2015-present Governing Board Member, British Society for the Philosophy of Science
Jan 2017-present Chair of the PSA Committee on Open Access Monograph Publishing, Philosophy of Science Association (co-chair with David Teira)
Mar 2013-present Developer and Manager of USC Logic Web, a public web application for learning logic, <http://dornsife.usc.edu/USCLoicWeb>.
Aug 2012-present Executive Committee, PhilSci-Archive, Official online preprint repository of the Philosophy of Science Association, <http://philsci-archive.pitt.edu>.
Aug 2009-Aug 2012 Archive Manager, PhilSci-Archive

Journal Referee Service

British Journal for the Philosophy of Science, Dialectica, Ergo, Erkenntnis, European Philosophy of Science Association, Foundations of Physics, Humana.mente Journal of Philosophical Studies, Journal of General Philosophy of Science, Pacific Philosophical Quarterly, Philosophy of Science, Philosophical Transactions of the Royal Society A, Studies in History and Philosophy of Modern Physics, Synthese, Theoria.

Programme Committee Service

British Society for the Philosophy of Science 2017 Annual Conference
British Society for the Philosophy of Science 2016 Annual Conference
European Philosophy of Science Association 2015 Biennial Conference
British Society for the Philosophy of Science 2015 Annual Conference

Conferences Organised

- 2017 The 3rd Cambridge Masterclass in Philosophy of Physics: Structure and equivalence in physical theories (Trinity College, Cambridge), 12 Nov 2016, Co-Organised with Jeremy Butterfield.
- 2016 Foundations 2016: The 18th UK and European Conference on Foundations of Physics (LSE), 16-18 July 2016, Co-Organised with Roman Frigg and Miklós Rédei.

- 2016 The Hole Shebang: New Perspectives on the Hole Argument (LSE), 15 July 2016, Co-Organised with James Nguyen.
- 2016 The Cambridge Masterclass in Philosophy of Physics: Measurement and the Emergence of the Classical-Quantum Interface (Trinity College, Cambridge), 14 May 2016, Co-Organised with Jeremy Butterfield.
- 2016 Geometry and Physics Workshop, on the Occasion of the Lakatos Award (LSE), 4 May 2016.
- 2016 50 Years of Worrall: Science, Structure and Rock 'n' Roll (LSE), 18 March 2016, Co-Organised with Richard Bradley, Roman Frigg, Miklós Rédei, Alex Voorhoeve.
- 2015 The Cambridge Masterclass in Philosophy of Physics I: Thermal Physics (Trinity College, Cambridge), 14 Nov 2015, Co-Organized with Jeremy Butterfield and Adam Caulton.
- 2015 From Physics to Metaphysics and Back Again (Trinity College, Cambridge), 6-7 Feb 2015.
- 2014 Lakatos Award Conference on Philosophy of Physics (LSE), 21 Oct 2014, Co-Organised with John Worrall.
- 2014 Quantum Time (Center for Philosophy of Science, Pittsburgh), 28-29 March 2014, Co-Organized with Thomas Pashby and Giovanni Valente.
- 2013 Relativity Meets Quantum Theory (CPNSS, London School of Economics), 28-29 Nov 2013, Co-Organized with Adam Caulton and Eleanor Knox.
- Irreversibility in Axiomatic Thermodynamics (Trinity College, Cambridge), 30 Nov 2013, Co-Organized with Adam Caulton and Eleanor Knox.
- 2012 7th Quadrennial Fellows Conference of the Center for Philosophy of Science (University of Pittsburgh / Muğla, Turkey), November 2012, Co-Organizers Mehmet Elgin, Peter Machamer, Ali Osman Gündoğan, John D. Norton.

Awards

- 2016 Excellence in Teaching Award, *London School of Economics*
- 2011 Dissertation Research Improvement Award #1058902, *National Science Foundation*.
- 2010 Rob Clifton Memorial Book Prize in Philosophy of Physics, *University of W. Ontario*.
- 2008 Wesley Salmon Award, *University of Pittsburgh*.
- 2007 Arts & Science Fellowship, *University of Pittsburgh*.
- 2006 Andrew Mellon Fellowship, *University of Pittsburgh*.

Talks

Invited Academic Talks

- 38. “Why there is more than one kind of thing,” Contemporary Debates in Philosophy of Science lecture at the University of Edinburgh, 23 Mar 2017.
- 37. “On the future of the weakly interacting arrow of time,” Workshop on Symmetry and symmetry breaking in fundamental physics, Paris Centre for Quantum Computing (PCQC), Pierre and Marie Curie University, Paris, 2 Dec 2016
- 36. “Beyond self-adjointness,” *Physics and Metaphysics* conference, University of Bristol, 27-28

Jun 2016

35. “Unreal Observables,” Trinity College, University of Cambridge, 29 May 2016
34. “Unreal Observables,” University of Notre Dame, 19 April 2016
33. “Why there is more than one kind of thing,” LSE 50 Years of Worrall Conference, 18 Mar 2016
32. “The history and philosophy of Curie’s principle,” University of Oxford, Philosophy, 4 Feb 2016
31. “The history and philosophy of Curies principle,” University of Cambridge, History and Philosophy of Science Department, 19 Nov 2015.
30. “On the future of the weakly interacting arrow of time,” University of Oxford, Philosophy, 22 Oct 2015.
29. “Why there is more than one kind of thing,” Material Metaphysics Conference, University of Osnabrueck, 18 Sep 2015.
28. “Weak interactions and the curious little arrow of time,” Workshop on Time and Physics, ETH Zurich, 7-11 Sep 2015
27. “Measuring the fundamental arrows of time,” Time: Arrows, Experience, Emergence, conference of the New Agendas for the Study of Time project at the University of Sydney, 12-13 Jun 2015.
26. “Geometrizing quantum theory,” 3rd Budapest-Krakow Workshop on Probability, Causality and Determinism, Hungarian Academy of Sciences, BTK Filozófiai Intézet, 21-22 May 2015.
25. “Mathematical representation and the hole argument,” Applying Homotopy Type Theory to physics workshop, University of Bristol, 7-8 Apr 2015
24. “On the meaning of time reversal,” Popper Seminar, Philosophy, LSE, 10 Mar 2015
23. “Quantum field theory on Kähler manifolds,” Centre for Mathematical Sciences, University of Cambridge, 5 Jan 2015
22. “Curie’s hazard,” Lecture programme of the British Society for the Philosophy of Science, 24 Nov 2014
21. “The curious case of reversal in time,” University of Leeds, 29 Oct 2014
20. “A general perspective on time observables,” University of Bristol, 11 Jun 2014
19. “A general perspective on time observables,” London Foundations Connection, LSE, 14 May 2014
18. “Curie’s Principle,” University of Rome III, 16 Apr 2014
17. “Two Merry Roads to T -violation,” LSE Sigma Club, 3 Feb 2014
16. “Two Merry Roads to T -violation,” Centre for Mathematical Sciences, University of Cambridge, 18 Mar 2014
15. “Classical time obseables,” Centre for Mathematical Sciences, University of Cambridge, 4 Jan 2014
14. “Three Merry Roads to T -violation,” Workshop on Cosmology and Time, Penn State University, 16-17 Apr 2013

13. "The Curious Case of Reversal in Time," LSE Philosophy, Logic and Scientific Method, 5 Feb 2013
12. "The simple failure of Curie's principle," Philosophy, University of Minnesota, 14 Feb 2013
11. "The simple failure of Curie's principle," Southern California Philosophy of Physics Reading Group, University of California, Irvine, 8 Dec 2012
10. "When do the laws of physics distinguish past from future?" University of Southern California, 31 Aug 2012
9. "Does quantum time have a preferred direction?" University of Sydney, 6 Dec 2011
8. "Does quantum time have a preferred direction?" University of California, Irvine 13 Jan 2012
7. "Does quantum time have a preferred direction?" University of Chicago 19 Jan 2012
6. "Does quantum time have a preferred direction?" California State University, LA, 23 Jan 2012
5. " T -invariance and T -violation." University of Bristol Quantum Field Theory Workshop, 24 May 2011
4. "Three myths about time reversal." University of Oxford Philosophy of Physics Research Seminar, 19 May 2011
3. "Notes on the CPT Theorem." UCSD Philosophy of Science Reading Group, University of California, San Diego, 3 Mar 2011
2. "How to time reverse a quantum system." Southern California Philosophy of Physics Reading Group, University of California, Irvine, 19 Feb 2011
1. "Group Theory and the Structure of Quantum Theory." University of Notre Dame Workshop: *Structuralism in Philosophy of Science*, 18-20 Nov 2010

Professional Conferences

8. "Unreal Observables," Biennial Meeting of the Philosophy of Science Association, Atlanta, November 2016.
7. "Kähler representation theory," Foundations 2016: The 18th UK and European conference on Foundations of Physics, 16-18 Jul 2016
6. "Geometrizing Quantum Theory," British Society for the Philosophy of Science Annual Meeting, Manchester, 2-3 Jul 2015
5. "Curie's hazard: From electromagnetism to symmetry violation," Symposium on Curie's Principle with Elena Castellani, Jenann Ismael, and John D. Norton, Biennial Meeting of the Philosophy of Science Association, Chicago, 7 Nov 2014
4. "When we do (and do not) have a classical arrow of time," Biennial Meeting of the Philosophy of Science Association, San Diego, 16 Nov 2012
3. "How to time reverse a quantum system," Biennial Meeting of the Philosophy of Science Association, Montreal, 4-7 Nov 2010
2. "Galileo's refutation of the speed-distance law of fall rehabilitated," &HPS3 Conference, Bloomington, IN, 23-26 Sep 2010

1. “Time reversal and the symmetry of nothing,” British Society for the Philosophy of Science Annual Meeting, Dublin, 9 Jan 2010

Invited Public Lectures

9. “Do aliens exist?” Public lecture at *Philosophy Standup*, London, 6 Mar 2017.
8. “Time, disassembled” Public lecture at the Royal Court Theatre for the performance of *Torn*, 20 September 2016.
7. “Unveiling Reality” and “Traveling Through Time”, Public lectures at *How the Light Gets In* at the Festival at Hay on Wye, 5 Jun 2016.
6. “The Ethics of Drones: A Dialogue”, with Susanne Burri and Jonathan Birch, *Philosophy Now* Festival, Conway Hall Ethical Society, London, 21 Nov 2015.
5. “The arrow of time”, Barnes Philosophy Club, London, 15 Jan 2015
4. “The limits of science”, Forum for European Philosophy, LSE, 7 Oct 2014
3. “On the Unreasonable Effectiveness of Mathematics in Science”, Forum for European Philosophy public panel, 1 May 2014. Audio: <https://soundcloud.com/lsepodcasts/on-the-unreasonable>
2. “Metaphysics vs. Physics”, University of Southern California, 30 Nov 2012
1. “The science of warp drives”, Casa de Bernardo, Los Angeles, 20 Sep 2012

Media Appearances

3. *Thinkative* Podcast, “Alien life”, Guest, 9 Mar 2017. Video: <https://www.facebook.com/thinkativepodcast/videos/1873953409529939/>
2. *Thinkative* Podcast, “Time and Philosophy of Physics”, Guest, 26 May 2016. Audio: <https://www.buzzsprout.com/55175/385442-bryan-s-prosecco-ep-8>
1. Radio 4 *The Moral Maze*, “Is science morally neutral?” Expert Witness, 12 Mar 2016. Audio: <http://www.bbc.co.uk/programmes/b072mz5r>

Languages

fluent English, French, Spanish
reading Latin
learning German