

DR. DENNIS LEHMKUHL
IZWT and Institute of Philosophy,
University of Wuppertal,
Gausstrasse 20, 42119 Wuppertal, Germany
Telephone: +49 202 439 3605

AREAS OF ACADEMIC SPECIALIZATION

Philosophy of Physics, Philosophy of Science, History of Physics.

AREAS OF ACADEMIC COMPETENCE

Metaphysics, Logic, Epistemology, Philosophy of Mathematics, Early Modern Philosophy.

EDUCATION

- 2005-09: DPhil in Philosophy, *Oxford University (Oriental College)*. Viva 11/2009; awarded 07/2010.
- 2004-06: MA in Philosophy (with Distinction), *Hamburg University*.
- 2003-04: MSc in Theoretical Physics (with Distinction grade for the thesis), *Imperial College London*.
- 2000-03: BSc in Physics, *Hamburg University*.
- 2000-03: BA in Philosophy (with Distinction), *Hamburg University*.

ACADEMIC APPOINTMENTS

- 2012- : Juniorprofessor for Philosophy at the *Institute of Philosophy* and at the *Interdisciplinary Centre for Science and Technology Studies (IZWT)*, *Wuppertal University*, Germany.
- 2010- : Contributing Editor at the *Einstein Papers Project*, *California Institute of Technology*.
- 2009-12: Postdoctoral Fellow at the *Institute of Philosophy* and at the *IZWT*, *Wuppertal University*, Germany.

VISITING FELLOWSHIPS

- 2012-2013: Visiting Fellow at the *Center for Philosophy of Science*, *University of Pittsburgh*.
- Fall 2008: Visiting Scholar at the *Einstein Papers Project*, *California Institute of Technology*.
- Spring 2008: Visiting Scholar at the *Perimeter Institute for Theoretical Physics*, *Waterloo (Canada)*.
- 2004-05: Visiting Student in History and Philosophy of Science at the *London School of Economics*.

DOCTORAL DISSERTATION

Title: *Spacetime Matters. On Super-Substantivalism, General Relativity, and Unified Field Theories*
Supervisors: Dr O. Pooley, Prof H. Brown and Dr J.N. Butterfield

My thesis links questions from metaphysics and philosophy of science, using ideas proposed in the context of modern physics. The metaphysical endeavour is to provide the first detailed investigation of a recently revived ontological position towards spacetime, called super-substantivalism. The position claims that neither Leibniz, who affirmed that only matter was fundamental, nor Newton, who claimed that both matter and space and time are fundamental, were right. Instead, super-substantivalism asserts that only spacetime is fundamental. The position can be traced back to Plato and Descartes, but has only recently been looked at by analytic metaphysicians.

I explore different variants of super-substantivalism by investigating and categorising the theories in physics which seem to directly support super-substantivalism, namely those which aim to reduce matter to aspects of spacetime structure. I then explore a more general question: can we be realists about such structures in the first place?

PUBLICATIONS (As Author)

- '*Einstein, the Reality of Space, and the Action-Reaction Principle*' (with Harvey Brown), to appear in *The Nature of Reality*, ed. Partha Ghose, Oxford University Press (India), probably 2013. Online: <http://philsci-archive.pitt.edu/id/eprint/9792>.
- '*Time in Spacetimes.*' *Philosophia Naturalis*, Volume 49, No. 2, December 2012.
- '*Mass-Energy-Momentum. Only there because of Spacetime?*' *The British Journal for the Philosophy of Science*, Volume 62, No. 3, 2011. pp. 454-488.
- '*Super-Substantialism in der Philosophie der Raumzeit*' In: Michael Esfeld (ed.): *Philosophie der Physik*. Suhrkamp 2011, peer-reviewed.
- '*Matter(s) in Relativity Theory*'. In: Dorato, M., Rédei, M. and Suárez, M. (eds): *Philosophical Issues in the Sciences: Launch of the European Philosophy of Science Association*. Springer, 2010, peer-reviewed.
- '*Is spacetime a gravitational field?*' In: Dennis Dieks, 'The Ontology of Spacetime II.' Series: *Philosophy and Foundations of Physics*, Elsevier Science, 2008, peer-reviewed.

PUBLICATIONS (As Editor and Translator)

- '*The Collected Papers of Albert Einstein, Volume 14. The Berlin Years: April 1923 - June 1925*' with Diana Kormos Buchwald, Ze'ev Rosenkranz, Tilman Sauer, József Illy, (eds.); Daniel J. Kennefick, A.J. Kox and Osik Moses (assoc. eds.). Forthcoming with Princeton University Press, 2014.
- '*Towards a Theory of Spacetime Theories*'. Forthcoming with *Einstein Studies*, Birkäuser, 2014.
- '*The Collected Papers of Albert Einstein, Volume 13. The Berlin Years: January 1922 – March 1923*' with Diana Kormos Buchwald, Ze'ev Rosenkranz, Tilman Sauer, József Illy, (eds.); Daniel J. Kennefick, A.J. Kox and Osik Moses (assoc. eds.). Princeton University Press, 2012.
- '*Hermann Minkowski's "Space and Time"*' (Translation). In: Vesselin Petkov (editor): '*Minkowski Spacetime: A Hundred Years later*'. Springer, 2010.

WORK IN PROGRESS (Selection)

- '*Why Einstein did not believe that General Relativity geometrizes gravity*'. Under Review by *Studies in the History and Philosophy of Modern Physics*.
- '*The Metaphysics of Super-Substantialism*'. Late Draft Status, to be submitted to *Nous*.
- '*Unification in Field Theories*'. Late Draft Status, to be submitted to the *British Journal for the Philosophy of Science*.
- '*On "geometrization"*' (with John Norton). Early Draft Status.
- '*A lost love: Machian Principles in Einstein's Work*'. Early Draft Status.

REFEREE FOR

The British Journal for the Philosophy of Science, Philosophy of Science, Studies in the History and Philosophy of Modern Physics, Foundations of Science, Erkenntnis, International Journal for the Philosophy of Science, Foundations of Physics, the European Journal for Philosophy of Science and Elsevier.

RESEARCH PRESENTATIONS (Selection)

'*Why Einstein never really cared about geometrization*'

- 2013: Department of Philosophy, University of Maryland
- 2012: '23rd Biennial Meeting of the Philosophy of Science Association', San Diego (USA)
- 2012: Center for Philosophy of Science, University of Pittsburgh

'*The Difference between Matter and Spacetime*'

- 2012: 'Annual Conference of the British Society for the Philosophy of Science', Stirling (UK)

- 2011: The Sigma Club, London School of Economics (UK)
 - 2011: Institute for History and Foundations of Science, Utrecht University (Netherlands)
 - 2011: Institute of Philosophy, University of Bochum (Germany)
 - 2011: Institute of Philosophy, University of Dortmund (Germany)
- 'Unification in Field Theories'*
- 2010: '22nd Biennial Meeting of the Philosophy of Science Association' Montreal, Quebec (Canada).
 - 2010: Southern California Philosophy of Physics Reading Group (Irvine, USA).
 - 2010: 'Heuristics in Physics', Bad Honeff (Germany).
- 'Some Kinds of Spacetime Theories'*
- 2010: 'Towards a Theory of Spacetime Theories.' Interdisciplinary Center for Science and Technology Studies, University of Wuppertal (Germany).
 - 2010: Southern California Philosophy of Physics Reading Group.
- 'Spacetime Matters: On Unifying and Geometrising Field Theories'*
- 2009: 'Annual conference for philosophy of science.' Inter-University Centre (IUC), Dubrovnik (Croatia) .
 - 2010: 'International Workshop on Poincaré, Hilbert and the Foundations of Physics'. University of Mainz (Germany)
- 'The Metaphysics of Super-Substantivalism'*
- 2008: The Ockham Society, Oxford University.
- 'Mass-Energy-Momentum in General Relativity. Only there because of Spacetime?'*
- 2008: Southern California Philosophy of Physics Reading Group, Irvine (USA).
- 'Geometrisation of Matter in Modern Physics'*
- 2008: 'Third International Conference on the Ontology of Spacetime.' Concordia University, Montreal (Canada).
 - 2008: 'Annual Conference of the British Society for the Philosophy of Science'. St Andrews University (Scotland).
- 'Matter(s) in General Relativity'*
- 2007: 1st conference of the European Philosophy of Science Association (EPSA), Madrid (Spain).
 - 2007: Philosophy of Physics Discussion Group, Oxford University.
- 'What is a Gravitational Field?'*
- 2007: 15th UK and European Foundations of Physics meeting, Leeds (UK).
 - 2007: Annual Meeting of the Philosophy of Physics Group of the German Physical Society, Heidelberg (Germany).
 - 2007: Philosophy of Physics Seminar at the Department of Philosophy, University of Bristol (UK).
- 'Is Spacetime a Field?'*
- 2006: 'Second International Conference on the Ontology of Spacetime.' Concordia University, Montreal (Canada).
 - 2006: Philosophy of Physics Discussion Group, Oxford University.

TEACHING EXPERIENCE

Wuppertal University:

2013: Seminars 'Contemporary Philosophy of Science' and 'Introduction to Modal Logic'.

2012: Lecture Courses 'Introduction to Logic' and 'Space, Time, Big Bangs and Black Holes for Pedestrians'.

2011: Lecture Course 'Introduction to Logic', Graduate Seminar 'Philosophy of Mathematics and the Natural Sciences', Lecture Courses 'Introduction to Analytic Metaphysics' and 'The Leibniz-Clarke Correspondence'.

2010: Lecture Course 'Introduction to Logic', Undergraduate Seminar 'For and Against Method: Imre Lakatos vs. Paul Feyerabend' and Graduate Seminar 'Albert Einstein as a Philosopher'.

2009: Lecture course 'The Philosophical Foundations of Theories of Space and Time' and

Undergraduate Seminar on 'The Structure of Scientific Thought Experiments'.

Oxford University:

- 2007-08: College Lecturer for Logic (introductory and intermediate), *St. Peter's College*.
2008: Tutor for Knowledge and Reality, History from Descartes to Kant, Philosophy of Science and the Social Sciences, and General Philosophy, *Wadham College*.
Tutor for Philosophy of Science, *Oriel College*.
2008: Tutor for Philosophy of Science, *Magdalen College*.
2008: Tutor for Logic, *Corpus Christi College*.
2007: Tutor for Philosophy of Science, *St. Annes College*.
2006-07: Teaching Assistant for Logic, *Magdalen College*.
2006: Teaching Assistant for Logic, *St. Annes College*.
2006: Tutor for Philosophy of Physics for the *Oxford Programme for Undergraduate Studies* and for Philosophy of Science for the *Oxford Overseas Study Course*.

Hamburg University:

- 2005: Assistant Teacher at the *DESY-program "Understanding Physics"* for 4th to 13th grade pupils. DESY is the biggest research centre for physics in Germany.
2001-03: Teaching Assistant for Philosophy of Science, *Hamburg University*.

ACADEMIC AWARDS AND SCHOLARSHIPS

- 2010-11: Maurice. A. Biot Award of the California Institute of Technology.
2006-08: Doctoral Scholarship, *British Society for the Philosophy of Science*.
(One applicant per year is awarded a scholarship; open to students in all of the UK.)
2006-08: Graduate Scholarship, *Oriel College, Oxford University*.
2005-08: Scholarship (tuition fees), *Arts and Humanities Research Council, UK*.
2005-06: Research Scholarship, *Hamburg Foundation for Support of Science and Culture*.
2005-07: Travel Grants from *Oriel College*, the *European Science Foundation*, the *U.S. National Science Foundation*, the *Einstein Papers Project at Caltech*, the *Max-Planck-Institute for Gravitational Physics*, the *Max-Planck-Institute for Mathematics in the Sciences* and the *Newton Institute of Cambridge University*.
2003-04: Erasmus Scholarship for a stay at *Imperial College London*.

ADMINISTRATIVE EXPERIENCE, PROFESSIONAL ACTIVITIES AND PROJECT GRANTS

- 2012: Elected Vice Speaker of the Philosophy of Physics Work Group of the German Physical Society (DPG). In this function, co-organiser of a workshop on 'Causality and Physics' in 2012 and preparation of the annual conference of the DPG in 2013.
2011: Co-Organiser of the '1st International Spring School on Particle Physics and Philosophy'. Funded by the Volkswagen Foundation with 30.000 Euros.
2011: Member of the Search Committee for the position of the Chair in History of Science at the University of Wuppertal.
2010: Organiser of an International Conference on the topic 'Towards a Theory of Spacetime Theories' at Wuppertal University. Funded by the Thyssen Foundation with 5.000 Euros.
2008-09: Junior Dean of *St. Peter's College, Oxford University*.
2008: Exam Setting and Marking, Logic and Philosophy of Science, *Magdalen College* and *Corpus Christi College, Oxford University*.
2007: Exam Setting and Marking, Logic and Philosophy of Science, *St Anne's College, Oxford University*.
2007: Invigilating for *Oriel College, Oxford University*.
2007-: Chair of the Graduate Joint Consultative Committee (GJCC) of the *Faculty of Philosophy, Oxford University*. (Representative of the Graduate Student Body of the Faculty.)

2006-: Chair and Organiser of the Philosophy of Physics Discussion Group of the *Faculty of Philosophy, Oxford University*.

2006: Member of the Organising Committee for the “10th Oxford Philosophy Graduate Conference”.

2006-: Overseas Representative of the Oriel College Middle Common Room.

2006-: Junior Member of the *Isaac Newton Institute, University of Cambridge*.

2005: Research Grant from the *University of Neubrandenburg*, taking part in the project “The observer in physics and systems theory.”

2001-03: Student representative in the Council of the *Department of Philosophy, Hamburg University*.

PROFESSIONAL AFFILIATIONS

British Society for the Philosophy of Science, European Philosophy of Science Association, American Philosophical Association, Philosophy of Science Association, German Physical Society.

LANGUAGES

English, German (fluent), French and Spanish (basic)

GRADUATE CLASSES IN PHILOSOPHY

Oxford University:

2006: The Natural Philosophy of Immanuel Kant – Dr J. Butterfield.

2005: The Philosophical Foundations of General Relativity – Prof H. Brown and Dr O. Pooley.

2005: Philosophy of Science – Dr J. Butterfield.

2005: Seminar for first year Graduates in Philosophy – Dr R. Wedgwood and Dr B. Child.

London School of Economics:

2004-05: Philosophy of Science and Scientific Method – Dr R. Frigg and Dr S Hartmann.

2004-05: Philosophical Foundations of Physics – Dr R. Frigg and Dr S. Hartmann.

2004-05: Philosophy of Mathematics – Dr M Giaquinto.

Hamburg University:

2005: Epistemology, Philosophy of Science and Ethics – Prof U. Gähde.

2002: Fundamentalism vs. Coherentism in Epistemology – Prof U. Gähde.

2002: Logical Structure and Dynamics of Empirical Theories – Prof U. Gähde.

GRADUATE CLASSES IN PHYSICS

Imperial College London (2003-04):

Quantum Field theory – Prof J. Halliwell.

Quantum Electrodynamics – Dr D. Waldram.

Advanced Quantum Field Theory – Dr R. Rivers.

Unification – Dr T. Evans.

Differential Geometry – Prof C. Isham.

General Relativity – Dr H. Jones.

Quantum Gravity – Prof J. Halliwell.

Foundations of Quantum Mechanics – Prof C. Isham.

Group Theory – Dr T. Evans.

Supersymmetry – Dr K. Stelle.

LIST OF REFEREES

RESEARCH

Professor John Norton
Center for Philosophy of Science
University of Pittsburgh
817 Cathedral of Learning, Pittsburgh, PA

Professor Harvey Brown, FBA
Faculty of Philosophy
Radcliffe Humanities,
Woodstock Road
Oxford OX2 6GG
harvey.brown@philosophy.oxford.ac.uk

Dr Oliver Pooley
Oriol College
Oxford OX1 4EW
oliver.pooley@philosophy.ox.ac.uk

Dr Jeremy Butterfield, FBA
Trinity College
Cambridge CB2 1TQ
jb56@hermes.cam.ac.uk

Dr David Wallace
Balliol College
Oxford OX1 3BJ
david.wallace@philosophy.ox.ac.uk

Professor Carl Hofer
Departament de Filosofia,
Universitat Autònoma de Barcelona
Barcelona, Spain
carl.hofer@icrea.es

Dr Tilman Sauer
Einstein Papers Project
California Institute of Technology 20-7
1200 E. California Blvd.
Pasadena, CA 91125, USA
Email: tilman@caltech.edu

TEACHING

Dr Timothy Mawson
St Peter's College
New Inn Hall Street
Oxford OX1 2DL
tim.mawson@spc.ox.ac.uk

Dr Sophie Allen
St Peter's College
New Inn Hall Street
Oxford OX1 2DL
sophie.allen@spc.ox.ac.uk