

# Curriculum Vitae

Harvey R. Brown, FBA

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BORN England, April 4 1950

NATIONALITY UK/USA

MARITAL STATUS Married to Maria Rita Kessler; two children: Frances (b. 1985), Lucas (b. 1987).

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## EDUCATION

1971-1978 Ph.D., Department of History and Philosophy of Science, Chelsea College (now King's College KQC), University of London.

Courses subject to examination:

Mathematical logic, philosophy of science, history of philosophy, foundations of probability theory

Ph.D. thesis title: *Problems of measurement in quantum theory* (1978). Supervisors: J. Dorling, M.L.G. Redhead

1968-1970 B.Sc. (Hons), Physics, first class honours  
 University of Canterbury, New Zealand

1963-1967 Secondary schooling, St. Bede's College, Christchurch, New Zealand

POSITIONS HELD

- 1984 - University of Oxford: University Lecturer in Philosophy of Physics  
 Reader in Philosophy, 1996  
 Professor of Philosophy of Physics 2006
- Fellow of Wolfson College, Oxford  
 Member of Faculty of Philosophy  
 (Unofficial) Member of Department of Physics (since 1987)
- 1978-1984 Assistant Professor in Department of Philosophy, São Paulo State University at  
 Campinas (UNICAMP), Brazil.  
 Member of Centro de Lógica, Epistemologia e História da Ciência, UNICAMP.

AWARDS, FELLOWSHIPS

- Leverhulme Trust Institute Award (Jan. 1990 - Dec. 1992) for research in foundations of  
 quantum physics (Research collaborator Dr. P. Kaloyerou)
- Radcliffe Research Fellowship in Philosophy, academic year 1995/6.
- Visiting Erskine Fellowship in Physics and Philosophy, University of Canterbury, NZ, July-  
 August 1996.
- Special Lectureship, Oxford University, for the academic year 1996-7.
- British Academy/Leverhulme Trust Senior Research Fellowship, for the academic year 1999-  
 2000.
- Arts and Humanities Research Board (AHRB) Study Leave, Trinity Term, 2004.
- Oxford Visiting Fellow, University of Canterbury, NZ, 12 July-13 August, 2006.
- TaU (Time and Universe) Lecturer, 31 October-16 November, 2006; (Tour involving 9 lec-  
 tures across Canada)
- Co-winner of 2006 Lakatos Award in Philosophy of Science.
- Elected fellow of the British Academy, July 2007.
- Long-term Visitor, Perimeter Institute for Theoretical Physics, Waterloo, Canada, October  
 2007-June 2008.

## PROFESSIONAL ACTIVITIES AND CONSULTANCIES

Departmental Assessor, Department of Philosophy, Logic and Scientific Method, London School of Economics 2001-.

Member of Program Committee, Philosophy of Science Association Meeting 2002.

Member of Committee for the British Society for the Philosophy of Science, 2006-10; elected President 2007-9.

Member of Section Committee for Philosophy, British Academy, 2008-.

### Journals

Secretary for the journal *Cadernos de História e Filosofia da Ciência*, Brazil. 1980 - 1982.

Member of Editorial Advisory Board of *Studies in History and Philosophy of Modern Physics*. 1995-; *International Studies in the Philosophy of Science* 1996-; *Principia* (Brazil), 1997 -; *Physics in Perspective*, 2008-.

## CONTRIBUTIONS TO CONFERENCES, SEMINARS

### (i) Talks at conferences, workshops:

Annual conference of the British Society for the Philosophy of Science, Southampton, 1988.  
International conference: *62 years of Uncertainty; historical, philosophical and physical inquiries into the foundations of quantum mechanics*, Ettore Majorana Centre for Scientific Culture, Erice, Sicily, 1989.

International conference: *Physical interpretations of relativity theory II*, London, 1990.

Joint Session of the Aristotelian Society and the Mind Association, Durham, 1991.

International conference: *Bell's theorem and the foundations of modern physics*, Cesena, Italy, 1991.

Beijing International Conference on Philosophy of Science, *Realism vs. Anti-Realism*, Beijing, 1992.

Philosophy of Science Association Biennial Meeting, Chicago, 1992 (paper co-authored by R. Sypel).

*Workshop on Foundations of Quantum Mechanics*, S N Bose National Centre for Basic Sciences, Calcutta, December 1992.

Seminar: *From J C Bose to Bohr's Complementarity - New light on Light*, Bose Institute, Calcutta, December 1992 (Inaugural address).

Workshop: *Semantical Aspects of Spacetime Theories*, Zentrum für interdisziplinäre Forschung, University of Bielefeld, March 1993.

Conference on the Philosophy of Physics (Sigma Club), University of Cambridge, May 20-1, 1994

3rd UK Conference on Foundations of Quantum Theory and Relativity, Cambridge, September 13-15, 1994.

International Conference: *Conceptual Problems of Relativistic Quantum Mechanics*, London, Ontario, October 7-9, 1994.

International Colloquium, *Science, philosophie et histoire des sciences en Europe*, Association Diderot of the Ecole Normale Supérieure, Paris, 9-10 December, 1994.

- Conference on the Philosophy of Physics (Sigma Club), University of Cambridge, May 19-20, 1995.
- Joint Session of the Aristotelian Society and the Mind Association; University of Liverpool, July 1995
- International Conference: *Quantum Theory without Observers*, ZiF Bielefeld, July 1995
- International Conference: *Scientific Thought from the Age of Galileo to the Present*, Lima, Peru 31 July-11 August 1995.
- 4th UK Conference on Conceptual Problems in Quantum Theory, Durham, September 1995.  
*Workshop on Geometry and Physics, 1900-1930*; Open University, 14-19 March 1996.
- One-Day Conference: *Relativity Theory: Conventionalism and Problems of Theory Choice*, University of Oxford, 18 May 1996.
- Conference: *The Electron. 100 years of Physics and History*, British Society for the History of Science, London, 11-12 April 1997.
- Conference: *The Electron and the Birth of Microphysics*, Dibner Institute for the History of Science and Technology, Cambridge, Boston; 9-10 May 1997.
- Conference in Memory of Robert Weingard*, University of Oxford, 31 May 1997.
- Conference in Honour of Michael Redhead*, Department of History and Philosophy of Science, University of Cambridge, 20-21 June 1997
- 6th UK Conference on Conceptual and Mathematical Foundations of Physics, University of Durham, September 1997.
- Mini-Meeting on Quantum Theory, Imperial College, University of London, 27 November, 1998.
- One-Day Conference: *Philosophy of General Relativity*, LSE, 22 May 1999; participation in panel discussion.
- 8th UK Conference on Foundations of Physics, Imperial College London, September 13-17, 1999.
- International Workshop *The Conceptual Foundations of Statistical Mechanics*, van Leer Institute, Jerusalem, May 22-25, 2000.
- Conference of the Australasian Association for the History, Philosophy & Social Studies of Science, University of Sydney, June 2000.
- 9th UK Conference on Foundations of Physics, University of Birmingham, September 11-15, 2000.
- 10<sup>th</sup> UK Conference on Foundations of Physics, Queen's University, Belfast, September 10-14, 2001.
- International conference: *New Directions in the Foundations of Physics*, American Institute of Physics, Maryland, May 3-5, 2002. Invited discussant 2003, 2004, 2007, 2008.
- International workshop: *Seven Pines Symposium VI*, May 15-19, 2002
- Conference: *Ideas of Albert Abraham Michelson in Mathematical Physics*, Mathematical Conference Center, Bedlewo (Poland), August 04-11, 2002
- 12<sup>th</sup> UK Conference on the Foundations of Physics, University of Leeds, September 2-5, 2003
- Conference: *Foundations of Space and Time*, Faculty of Philosophy, Oxford University, March 24-27, 2004.
- One-Day Conference on Philosophy of Physics, Centre for Time, University of Sydney, March 30, 2004.
- International Conference on the Ontology of Spacetime, Concordia University, Montreal, June 2006. Invited speaker.
- Philosophy of Science Association Meeting, Vancouver, November 2006.
- 15<sup>th</sup> UK and European Meeting on the Foundations of Physics, University of Leeds, March 29-31, 2007
- American Philosophical Association, Pacific Division, San Francisco, April 2007; Author meets critics session.

## (ii) Invited talks given at the following institutions since 1978

- Centre of Logic, Epistemology and History of Science, University of Campinas, Brazil, 1978, 1987, 1992, 2007
- Institute of Physics, Federal University of Rio Grande do Sul, Brazil, 1980
- Institute of Physics, University of São Paulo, Brazil, 1980, 1992
- Institute of Physics, University of Brasília, Brazil, 1981
- Department of Philosophy, Catholic University of Rio de Janeiro, Brazil, 1981
- Brazilian Centre for Research in Physics (CBPF), Rio de Janeiro, Brazil, 1982
- Department of Physics, University of Canterbury, NZ, 1982, 1996
- Department of Physics, Victoria University, NZ, 1982
- Institute of Theoretical Physics, São Paulo, Brazil (Inaugural Lecture for commencement of academic year, 1984)
- Department of History and Philosophy of Science, King's College, University of London 1985, 1991
- Department of Theoretical Physics, University of Oxford, 1985
- Sigma Club Meeting, University of Cambridge, 1986, 1988, 1992
- Department for Continuing Education, University of Oxford, 1986
- Centre de Philosophie des Sciences, Université Catholique de Louvain, 1988, 1991
- Department of Logic and Metaphysics, University of St. Andrews, 1989
- Department of Philosophy, University of Toronto, 1989
- Department of Philosophy, University of Western Ontario, 1989
- Department of Philosophy, Queen's University, Kingston, Ontario, 1989, 2006.
- Mathematical Institute, University of Oxford, 1990
- Institute of Mathematics, University of Campinas, Brazil, 1990, 1992
- Department of History and Philosophy of Science, University College, London, 1991
- Board of Extra-Mural Studies, University of Cambridge, 1991, 1992
- Atominstitut der Österreichischen Universitäten, Vienna, 1991
- Department of History and Foundations of Mathematics and Science, University of Utrecht, 1992
- Institute of Physics, University of Campinas, Brazil, 1992
- Department of Post-graduate Studies in Philosophy, Catholic University of Campinas, Brazil, 1992
- Department of History and Philosophy of Science, University of Cambridge, 1992, 1993, 1994.
- School of Architecture, Oxford Brookes University, 1993
- Société Belge de Logique et de Philosophie des Sciences, 1993
- Department of Philosophy, University of Leeds, 1994
- Interdisciplinary seminar on logic, language and mind: 'Paradoxes'; St Catherine's College, Oxford 1994
- Department of History, Philosophy and Communication of Science, University College, London 1994
- Department of Physics, University of Kent 1994
- Philosophy of Science Research Students Group Seminar, London School of Economics and King's College London, 1994
- Department for Continuing Education, University of Oxford, 1994
- Institut d'Histoire et Philosophie des Sciences et des Techniques, Université de Paris I, 1994

British Society for the Philosophy of Science, 1995, 2002.  
 Orkney Science Festival, September 1995.  
 Portsmouth and District Physical Sciences Society 1995  
 Department of Philosophy, King's College, University of London 1995.  
 Oxford University Philosophy Society, 1996  
 Sigma Club, University of Cambridge, 1996  
 Quantum Computation and Cryptography Seminar, University of Oxford, 1996  
 Department of Philosophy, University of Canterbury, NZ; 1996, 2006  
 Royal Society of New Zealand, Canterbury Branch, 1996  
 Department of Science and Technology Studies Speakers Series, University College London, 1996.  
 Institut Supérieur de Philosophie, Université de Louvain-la-Neuve, 1998, 1999, 2001, 2002.  
 Centre for Philosophical Studies, King's College London, 2000.  
 Philosophy of Physics Seminar, Oxford University, 2000, 2005.  
 Department of Philosophy, University of Bristol, 2001.  
 Catholic University of Rio Grande do Sul (PUC-RS), Porto Alegre, Brazil, 2002, 2007  
 Popper Seminar, LSE, June, 2004.  
 Department of Philosophy, University of Otago, New Zealand, August 2006  
 Perimeter Institute for Theoretical Physics, Waterloo, Nov 2006; Public Lecture.  
 Department of Physics and Astronomy, University of British Columbia, Nov 2006  
 Department of Philosophy, University of British Columbia, Nov 2006  
 Department of Physics, McGill University, Montreal, Nov 2006  
 Department of Philosophy, University of Toronto, Nov 2006  
 Departments of Physics and Philosophy, (inaugural lecture) Universidade do Vale do Rio dos Sinos (UNISINOS), Brazil, September 2007.

## MISCELLANEOUS ACTIVITIES

### Organisation of Conferences, Colloquia

*Colloquium on Philosophy of Quantum Field Theory*, Oxford, May 1986. Co-organiser H.R. Harré.  
*Colloquium on Philosophy of Vacuum*, Oxford, June 1987. Co-organisers H.R. Harré and S. Saunders.  
*Why General Relativity is a Perfectly Machian Theory*; Oxford, December 1993.  
*Complex Numbers in Quantum Mechanics*, Oxford, June 1995. Co-organiser J. Barbour.  
*Dispositions in Science*, retirement colloquium for H.R. Harré, Oxford, July 1995. Co-organiser B. Müller.  
*Vth UK Conference on Conceptual and Philosophical Problems in Physics*, Oxford, September 10-13, 1996; co-organiser M. Suarez.  
*Colloquium in Memory of Robert Weingard*, Oxford, 31 May 1997. Co-organiser H R Harré.  
*11th UK Conference on Foundations of Physics*, Oxford, September 9-13, 2002; co-organiser P. Morgan.  
*One-day Conference on Foundations of Physics in memory of Jeeva Anandan*, Oxford, November 15, 2006.

## Refereeing (since 1984)

Acted as referee for: *American Journal of Physics*, *Australasian Journal of Philosophy*, *British Journal for the Philosophy of Science*, *Foundations of Physics*, *International Studies in the Philosophy of Science*, *Journal of Physics A*, *Philosophy of Science*, *Physics Letters A*, *Studies in History and Philosophy of Modern Physics*, *Studies in History and Philosophy of Science*, *Transactions of the Royal Society*.

## Examination

Acted as occasional external examiner for the University of London and the University of Cambridge (1991-).

Acted as examiner of graduate theses in:

- (i) *philosophy*: Universities of Oxford (2 D.Phil.), Cambridge (5 Ph.D.), L.S.E. (4 Ph.D.), Nantes (1 Ph.D.), Hull (1 M.A.), Campinas (2 M.A.).
- (ii) *mathematics*: University of Oxford (1 M.Sc.)
- (iii) *physics*: Universities of Oxford (1 D.Phil.), Utrecht (2 Ph.D.), London (1 PhD)
- (iv) *mathematical sciences*: University of Durham (1 Ph.D.)

## Graduate Thesis supervision

**M.Sc.** (UNICAMP) Sílvio Chibeni (distinction) 1984

**B.Phil.** (Oxford) Roland Sypel (distinction) 1990; Oliver Pooley (distinction) 1998; Christopher Timpson 2000, Eleanor Knox (distinction) 2006.

**D.Phil.** (Oxford) Roland Sypel 1994; Tim Budden 1997; Jeeva Anandan 1997, Oliver Pooley (co-supervisor Simon Saunders, 2002), Katherine Brading (2002), Christopher Timpson (2004).

## Administration

Member of Joint Committee for Physics and Philosophy 1985 to present. Chairman of Joint Committee 1987-1989, 1992-1994, 1996-1999, 2003-6.

(The Joint Committee runs the undergraduate course in Physics and Philosophy at Oxford.)

Chair of Examiners for Physics and Philosophy 1989, 2001, 2003, 2005, 2007.

Curator of the Philosophy Centre, Oxford; 1997-1999. The Curator is Chairman of the Management Committee, which at the time was responsible for the administration staff, refurbishment and day-to-day running of the Philosophy Centre at 10 Merton Street.

Senior Nominator, 2004-5. (Responsible for appointing all the 2005 Philosophy examiners in Oxford.)

Regular convener of weekly Philosophy of Physics Research Seminar, Oxford.

Director of Graduate Studies, Philosophy Faculty, 2008-2010.

## PUBLICATIONS

### (i) Books

1. *Albert Einstein. A simple man of vision* (in Portuguese), Brasiliense, São Paulo, 1984. 107 pp.
2. H.R. Brown and H.R. Harré (eds.): *Philosophical Foundations of Quantum Field Theory*, Clarendon Press, Oxford, 1988. Reprinted in paperback, 1990.
3. S. Saunders and H.R. Brown (eds.): *The Philosophy of Vacuum*, Clarendon Press, Oxford, 1991.
4. *Physical Relativity: Space-time Structure from a Dynamical Perspective*, Oxford University Press, 2005. Paperback edition October 2007.

### (ii) Papers

1. H.R.B. and M.L.G. Redhead: 'A critique of the disturbance theory of indeterminacy in quantum mechanics', *Foundations of Physics* **11**, 1-20 (1981).
2. 'O debate Einstein-Bohr na mecânica quântica' (The Einstein-Bohr debate in quantum mechanics) *Cadernos de História e Filosofia da Ciência* (Brazil) **2**, 59-81 (1981).
3. 'The strange nature of quantum reality' (in Portuguese), *Ciência Hoje* (Brazil) **2**, 24-31 (1983).
4. H.R.B. and R. Martins: 'de Broglie's relativistic phase waves and wave groups', *American Journal of Physics* **52**, 1130-1140 (1984).
5. J. Bub and H.R.B., 'Curious properties of quantum ensembles which have been both preselected and post-selected', *Physical Review Letters* **56**, 2337-2340 (1986).
6. 'The insolubility proof of the quantum measurement problem', *Foundations of Physics* **16**, 857-870 (1986).
7. 'The problem of measurement in quantum mechanics: an evaluation of existing insolubility proofs' (in Portuguese), *Cadernos de História e Filosofia da Ciência* (Brazil) **9**, 5-33 (1986).
8. G. Svetlichny, M. Redhead, H.R.B. and J. Butterfield: 'Do the Bell inequalities require the existence of joint probability distributions?', *Philosophy of Science* **55**, 387-401 (1988).
9. S. Foster and H.R.B.: 'On a recent attempt to define the interpretation basis in the many worlds interpretation of quantum mechanics', *International Journal of Theoretical Physics* **27**, 1507-1531 (1988).

10. 'Discussion: Does the principle of relativity imply Winnie's (1970) equal passage times principle?', *Philosophy of Science* **57**, 313-324 (1990).
11. H.R.B. and G. Svetlichny: 'Nonlocality and Gleason's Lemma. Part I Deterministic Theories', *Foundations of Physics* **20**, 1379-1387 (1990).
12. 'Nonlocality in quantum mechanics', *The Aristotelian Society, Supplementary Volume LXV*, 141-159 (1991).
13. S. Saunders and H.R.B.: 'Reflections on Ether', in S. Saunders and H. Brown (eds.) *The Philosophy of Vacuum*, Clarendon Press 1991, Oxford, pp. 27-63.
14. P. Kaloyerou and H.R.B.: 'On neutron interferometer partial absorption experiments', *Physica B* **176**, 78-92 (1992).
15. H.R.B., J. Summhammer, R. Callaghan and P. Kaloyerou: 'Neutron interferometry with anti-phase modulation', *Physics Letters A*, **163**, 21-25 (1992).
16. R. Sypel and H.R.B.: 'When is a Physical Theory Relativistic?' *PSA 1992, Volume 1* (Proceedings of the 1992 Biennial Meeting of the Philosophy of Science Association), D. Hull, M. Forbes and K. Okruhlik (eds.), Philosophy of Science Association, East Lansing, Michigan 1992; pp. 507-514.
17. 'Bell's other theorem and its connection with nonlocality. Part I' in *Bell's Theorem and the Foundations of Modern Physics*, A. van der Merwe, F. Selleri and G. Tarozzi (eds.), World Scientific Publishing Company, Singapore, 1992; pp. 104-116.
18. 'Correspondence, Invariance and Heuristics in the Emergence of Special Relativity', in S. French and H. Kamminga (eds.), *Correspondence, Invariance and Heuristics; Essays in Honour of Heinz Post*, Kluwer Academic Press, Dordrecht, 1993; pp. 227-260.
19. A. Elby, H.R.B. and S. Foster, 'What makes a theory physically "complete"?' *Foundations of Physics* **23**, 971-985 (1993).
20. H.R.B. and A Maia Jr.: 'Light-speed constancy versus light-speed invariance in the derivation of relativistic kinematics', *British Journal for the Philosophy of Science*, **43**, 381-407 (1993).
21. E. Squires, L. Hardy and H.R.B., 'Non-locality from an analogue of the quantum Zeno effect', *Studies in the History and Philosophy of Science* **25**, 97-121 (1994).
22. H.R.B., C. Dewdney and G. Horton, 'Bohm particles and their detection in the light of neutron interferometry', *Foundations of Physics* **25**, 329-347 (1995).
23. J. Anandan and H.R.B., 'On the reality of space-time geometry and the wavefunction', *Foundations of Physics* **25**, 349-360 (1995).
24. H.R.B. and R. Sypel, 'On the meaning of the relativity principle and other symmetries', *International Studies in the Philosophy of Science* **9**, 233-251 (1995).

25. 'Bovine Metaphysics: Remarks on the significance of the gravitational phase effect in quantum mechanics', in R. Clifton (ed.), *Perspectives on Quantum Reality: Non-relativistic, Relativistic and Field-Theoretic*. Kluwer Academic Press, Dordrecht, 1996; pp. 183-193.
26. 'Mindful of quantum possibilities', *British Journal for the Philosophy of Science* **47**, 189-200 (1996).
27. H.R.B., A. Elby and R. Weingard 'Cause and effect in the pilot-wave interpretation of quantum mechanics', in J.T. Cushing, A. Fine and S. Goldstein (eds.), *Bohmian Mechanics and Quantum Theory: An Appraisal*, Kluwer Academic Publishers, Netherlands, 1996; pp. 309-319.
28. 1993 paper 'Correspondence, Invariance and Heuristics in the Emergence of Special Relativity' (see above) republished in J. Butterfield, M. Hogarth and G. Belot (eds.) *Spacetime*, International Research Library of Philosophy, Dartmouth Publishing Company, Sept. 1996.
29. J. Anandan and H.R.B. 'Quantum theory of measurement', in *Encyclopaedia of Physics*, Macmillan 1996.
30. 'On the role of special relativity in general relativity', *International Studies in the Philosophy of Science*, **11**, 67-81 (1997).
31. E. Sjöqvist, H.R.B. and H. Carlsen, 'Galilean non-invariance of geometric phase', *Physics Letters A*, **229**, 273-278 (1997). E-print: quant-ph/9610006.
32. H.R.B., M. Suárez and G. Bacciagaluppi, 'Are "sharp values" for observables always objective elements of reality?', in D. Dieks and P. Vermaas (eds.) *The Modal Interpretation of Quantum Mechanics*, Kluwer Academic Publishers, 1998; pp. 289-306.
33. H.R.B., E. Sjöqvist and G. Bacciagaluppi, 'Remarks on identical particles in de Broglie-Bohm theory', *Physics Letters A* **251**, 229-235 (1999). E-print: quant-ph/9811054.
34. H.R.B. and P.R. Holland, 'The Galilean covariance of quantum mechanics in the case of external fields', *American Journal of Physics* **67**, 204-215 (1999).
35. 'Aspects of objectivity in quantum mechanics', in *From Physics to Philosophy*, J. Butterfield and C. Pagonis (eds.), Cambridge University Press, 1999; 45-70. . E-print: PITT-PHIL-SCI 223.
36. HRB and O. Pooley, 'The problem of induction from the perspective of physics', *Manuscripto (Brazil)* **22**, 29-35 (1999).
37. H.R.B. and O. Pooley, 'The origin of the spacetime metric: Bell's 'Lorentzian pedagogy' and its significance in general relativity', in *Physics Meets Philosophy at the Planck Length*, C. Callender and N. Huggett (eds.), Cambridge University Press, 2001; pp. 256-272; e-print gr-qc/9908048; PITT-PHIL-SCI 1385.
38. 'The origins of length contraction: I the FitzGerald-Lorentz deformation hypothesis', *American Journal of Physics* **69**, 1044-1054 (2001). E-prints: gr-qc/0104032; PITT-PHIL-SCI 218.
39. H.R.B. and Jos Uffink, 'The origin of time-asymmetry in thermodynamics: the Minus First Law', *Studies in the History and Philosophy of Modern Physics* **32**, 503-510 (2001). A slightly longer version of this paper is found in E-print: PITT-PHIL-SCI 217.

40. O. Pooley and H.R.B. 'Relationism Rehabilitated? I: Classical Mechanics', *British Journal for the Philosophy of Science* **53**, 183-204 (2002). E-print: PITT-PHIL-SCI 220.
41. Portuguese translation of 34, with new introduction by H.R.B., in *Fundamentos da Física 2. Simpósio David Bohm*; O. Pessoa (ed.), Editora Livraria da Física, São Paulo, 2002.
42. H.R.B. and Katherine Brading, 'General covariance from the perspective of Noether's theorems', *Diálogos* (University of Puerto Rico) **79**, 59-86, 2002. (Invited contribution to festschrift for Roberto Torretti.) E-print: PITT-PHIL-SCI 821.
43. Christopher Timpson and H.R.B. "Entanglement and Relativity", in *Understanding Physical Knowledge*, R. Lupacchini and V. Fano (eds.), Preprint no. 24, Dipartimento di Filosofia, Università di Bologna, CLUEB, 2002.; pp. 147-166. Quant-ph/0212140.
44. "The non-relativistic limit of the Maxwell and Dirac equations: The role of Galilean and gauge invariance", with P Holland, *Studies in the History and Philosophy of Modern Physics* **34**, 161-187, 2003. PITT-PHIL-SCI 999.
45. "Michelson, FitzGerald and Lorentz: the origins of special relativity revisited", *Bulletin de la Société des Sciences et des Lettres de Łódź*, Volume LIII; *Série: Reserches sur les Déformations*, Volume XXXIX, pp. 23-35 (2003). e-print PITT-PHIL-SCI 987.
46. Katherine Brading and H.R.B. 'Symmetries and Noether's Theorems', in *Symmetries in Physics: Philosophical Reflections*, K. Brading and E. Castellani (eds.), Cambridge University Press, 2003; pp. 89—109.
47. H.R.B. and Peter Holland, 'Simple applications of Noether's first theorem in quantum mechanics and electromagnetism', *American Journal of Physics* **72** (1), 34-39 (2004). Quant-ph/0302062.
48. H.R.B. and Peter Holland, "Dynamical vs. variational symmetries: Understanding Noether's first theorem", *Molecular Physics* **102**, (11-12 Spec. Iss), 1133-1139 (2004). PITT-PHIL-SCI 2194.
49. K. Brading and H.R.B. "Gauge symmetry transformations observed?", *British Journal for the Philosophy of Science* **55**, 645-665 (2004). PITT-PHIL-SCI 1436.
50. H.R.B. and David Wallace, 'Solving the measurement problem: de Broglie-Bohm loses out to Everett', *Foundations of Physics* **35**, 517-540 (2005) quant-ph/0403094; PITT-PHIL-SCI 1659.
51. 'Einstein's misgivings about his 1905 formulation of special relativity', *European Journal of Physics* **26**, S85—S90 (2005) (special Einstein issue).
52. Christopher G. Timpson and H.R.B., 'Proper and Improper Separability'; *International Journal of Quantum Information* **3**(4), 679–690 (2005); quant-ph/0402094.
53. H.R.B. and O. Pooley, 'Minkowski space-time: a glorious non-entity'; in *The Ontology of Spacetime*, Dennis Dieks (ed.), Elsevier B. V., 2006; pp. 67-89. An earlier version is found in arXiv: physics/0403088 and PITT-PHIL-SCI 1661.

54. H.R.B. and Christopher G. Timpson, 'Why special relativity should not be a template for a fundamental reformulation of quantum mechanics', in *Physical Theory and Its Interpretation: Essays in Honor of Jeffrey Bub*, W. Demopoulos, I. Pitowsky (eds.), Springer, 2006; pp. 29-41. arXiv:quant-ph/0601182.

#### (iv) Reviews

1. Review of F.J. Belinfante, 'Measurement and Time Reversal in Objective Quantum Theory' (1975), in *British Journal for the Philosophy of Science* **30**, 187-191 (1979).

2. Review of J. Hendry, 'The creation of quantum mechanics and the Bohr-Pauli debate' (1984), in *British Journal for the Philosophy of Science* **37**, 497-506 (1986).

3. Review of A. Fine, 'The shaky game. Einstein, realism and the quantum theory', in *American Journal of Physics* **56**, 571-573 (1988).

4. Review of E.J. Squires, 'Conscious Mind in the Physical World', Adam Hilger UK, 1990, *Foundations of Physics* **24**, 807-810 (1994).

5. Essay Review of H. Price, "Time's Arrow and Archimedes' Point", 1996; *Contemporary Physics* **41**(5), 335-336 (2000).

6. Review of *Quo Vadis Quantum Mechanics?*, A. Elitzur, S. Dolev and N. Kolenda (Eds.), Springer, Berlin, Heidelberg, New York, 2005; in *Studies in History and Philosophy of Modern Physics*, **38**(4), 979-982 (2007).

#### (v) Other

1. 'Obituary: Robert Weingard 1942-1996', *Studies in the History and Philosophy of Modern Physics*, **28**, 145-146 (1997).

2. 'Physics and Philosophy at Oxford: a thriving example of interdisciplinarity', in *Inovação e Interdisciplinaridade na Universidade*, J. Audy and M. Morosini (eds.), ediPUCRS, Porto Alegre, Brazil, 2007, pp. 302-311 (Portuguese translation pp. 312-321).

#### (vi) Accepted for publication

'Comment on Valentini, "De Broglie-Bohm Pilot-Wave Theory: Many Worlds in Denial?"', to appear in *Many Worlds? Realism, Everett, and quantum mechanics*, (Eds.) S. Saunders, J. Barrett, A. Kent, D. Wallace, Oxford University Press, 2009. arXiv:0901.1278v1 [quant-ph].

'Boltzmann's *H*-theorem, its limitations, and the birth of (fully) statistical mechanics', with Wayne Myrvold; arXiv:0809.1304v1. To appear in *Studies in History and Philosophy of Modern Physics*.

## PODCASTS, VIDEOS

1. A series of seminars and lectures are found at PIRSA (Perimeter Institute recorded seminar archive; <http://pirsa.org/>); see in particular “Time and Motion”. Talk given in Public Lecture Series organized by the Perimeter Institute, Waterloo, Ontario, 1 November 2006.

2. Lakatos Award lecture LSE, April 18, 2007

<http://richmedia.lse.ac.uk/publicLecturesAndEvents/aHundredYearsOfRelativity.mp3>

3. Reply to Antony Valentini, Everett@50 Conference, Oxford, July 21, 2007.

<http://www.philosophy.ox.ac.uk/misc/everett/Brown%20-%20Comment.wmv>